ACTEON 2020
Redox-Temperature
User manual

IMPORTANT

Read the manual carefully before switching the device on.

In order to maintain and ensure the good working order of the device, users must comply with the safety precautions and warnings featured in this manual.

Assembly and activation:

- Assembly, electrical connection, activation, operation and maintenance of the measuring system must only be carried out by trained personnel duly authorised by the end-user.

- Trained personnel must be familiar with and comply with the instructions in this activation manual.

- Make sure the power supply complies with the specifications on the nameplate before connecting the device.

- A clearly labelled power switch must be positioned near the device.

- Check all connections before turning the power on.

- Do not use damaged equipment: it may represent a hazard and should be labelled as faulty.

- Repairs must only be carried out by the manufacturer or by a Ponsel after-sales service.

CONTENTS

Figures

1   The measuring system

1.1   The basic system

A measuring system requires the following basic elements:

1.1.1   A Redox-Temperature transmitter

PONACTEON2020-EH-T	ACTEON 2020 Redox meter and thermometer transmitter

The Redox-Temperature transmitter comes with a **240mV buffer solution** and a **user manual.**

1.1.2   A Redox sensor

Three sensors are available for different applications :

PONCPC-EH-10	Plastogel electrolyte Eh sensor (**platinum tip**) with 10m cable connection (perch mounting or in-pipe installation)
PONCPC-EHAN-10	Plastogel electrolyte Eh sensor (**platinum ring**) with 10m cable connection (perch mounting or in-pipe installation)
PONCPC-EH-RV-10	Glass bodied Eh **filling sensor** with 10-metre cable connection

For cold liquids with **very low conductivity** (less than 50µS/cm) and **contaminating media**, it is recommended to use a filling sensor.

1.1.3   A temperature sensor

Two sensors are available for different types of installation:

PONCPC-T-10	Temperature sensor with 10m cable connection (perch-mounting or in-pipe installation)

1.2   Accessories

1.2.1   Consumables

PONMANU-2020-EH-T	Additional ACTEON 2020 user manual
PONKCL-1M	KCI (1M) for Eh filling sensors
PONKCL-2M	KCI (2M) for Eh filling sensors
PONKCL-3M	KCI (3M) for Eh filling sensors
PONPEPNET	125ml bottle of pepsin cleaning solution for Eh and pH sensors
PONSOLCSV	125ml bottle of storage solution for pH/Eh sensors
PONEHSOL240	Buffer solution for Redox meters: 240mV at 25°C, 125ml bottle
PONEHSOL470	Buffer solution for Redox meters: 470mV at 25°C, 125ml bottle
PONFILP-EHAN	ACTEON 2020 earth wire

1.2.2   Sensor connector adapter

These adapters are used to connect ACTEON 2020 units to PONSEL sensors with connectors.

PONADAP-EHAN	ACTEON 2020 adapter for PONCPC-EHAN-S10 and PONCPC-EH-S10 sensors
PONADAP-T	Adapter for PONCPC-T-S10 sensor

1.2.3   Accessories for a tank-mounted installation without cleaning system

PON-BJAI-E PH/EH/T	Watertight IP 68 connection box with integrated pre-amplifier (supplied with 10 metres of cable) for pH/Eh and temperature sensors connections at distances over 10 metres (see Figure 3 – Installation with a connection box with integrated pre-amplifier
PONCBMC-9	9-conductor coated cable for the Connection box/Acteon connection
PON-ACT-24V	Optional 24VDC power supply
PON-PDPCV-1	PVC stand and protective hood for one ACTEON transmitter
PON-PDPCV-2	PVC stand and protective hood for two ACTEON transmitters
PON-CASQ-1	PVC protective hood for one ACTEON transmitter
PON-CASQ-2	PVC protective hood for two ACTEON transmitters
PONPPCC-PH/EH/T	Elbowed sensor-holder perch (ESHP) for pH/Eh or Temperature sensors. Supplied with nozzle and glued connector.
PONPPCD-PH/EH/T	Straight sensor-holder perch for pH/Eh and Temperature sensors supplied with nozzle and glued connector SPECIFIC APPLICATION
PONBUSE-PH/EH/T	Nozzle for pH/Eh (without cleaning system) and Temperature sensors. Complete with 50 diameter BP3P glued connector
PONCOUDE	90° elbow for sensor-holder perch closure
PONSPFR2C	Stainless steel ESHP or SSHP type mount for 2 perches -1 arm, 2 sliders
PONSPFR1C	Stainless steel ESHP or SSHP type mount for 1 perch -1 arm, 1 slider
PONSPFR-COUL	Additional slider for QRPM (Quick release perch mount) systems

1.2.4   Accessories for Redox filling sensors (**PONCPC-PH-RV-10**)

PONRAC-EH-RV	Connector for filling system
PONRES-EH-RV	5-litre capacity electrolyte tank for filling system
PONROB-EH-RV	Electrolyte tank tap for filling systems
PONROB-EH-RV	10-metre tube for connecting the tank to the strainer and for filling systems

| PONCREP-EH-RV | Filling system strainer |

1.2.5 Accessories for Redox (**PONCPC-EH-10**) and Temperature (**PONCPC-T-10)** sensor in-pipe installation

PON4020	Tee assembly fitted with 20 x 27 male/female sockets for AP1. To be fitted on PVC piping.
PON40	40 diameter glued tee assembly (without connectors) for AP1
PONAP1	Adapter sleeve for pH and temperature sensor in-pipe installation
PONVCPO-63	Stainless steel 63mm clamp type assembly for in-pipe installation (316 L) (for SS OXY, Eh, pH, Temp., C2E and C4E sensors) To be fitted with the appropriate nipple. To be fitted on stainless steel piping.
PONNIP-PH/EH	pH/Eh sensor nipple
PONNIP-PH/EH-T	Nipple for 2 pH/T or Eh/T or pH/Eh sensors
PONNIP-T	Temperature sensor nipple

2   Installation

2.1   Mounting the ACTEON 2020 transmitter box

ACTEON 2020 mounting diagram
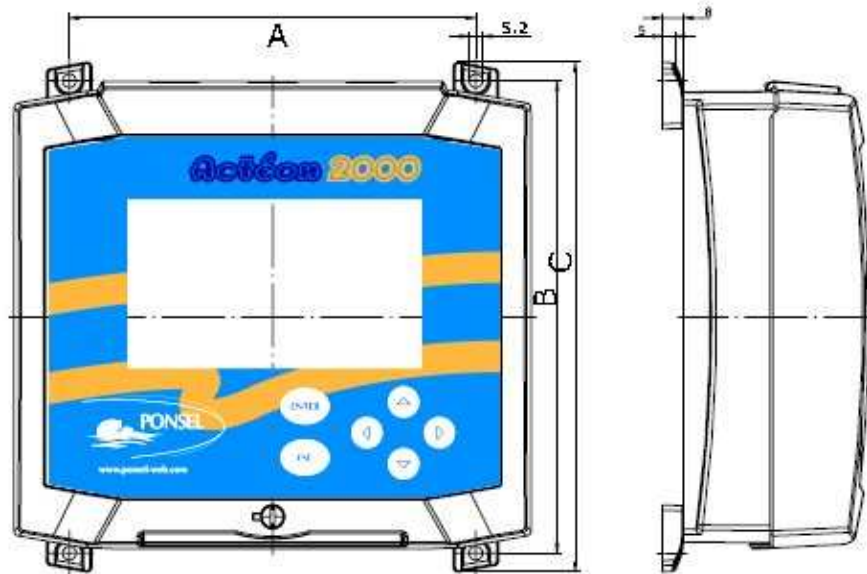
	A	B	C
Dimensions (mm)	156.5	181	195.3

Figure 1 - Transmitter mounting diagram

2.2 Connecting the ACTEON 2020 transmitter and pH and Temperature sensors

- Case 1 : the distance between the sensors and the transmitter is less than 10 meters

1 Power supply cable (230V/110 V~ or 24VDC)

2 Line out cable

3 Relay cable (2 channels)

4 4-20mA cable (2 channels)

5 Redox (ORP) sensor (**PONCPC-EHAN-10**)

6 Temperature sensor (**PONCPC-T-10**)
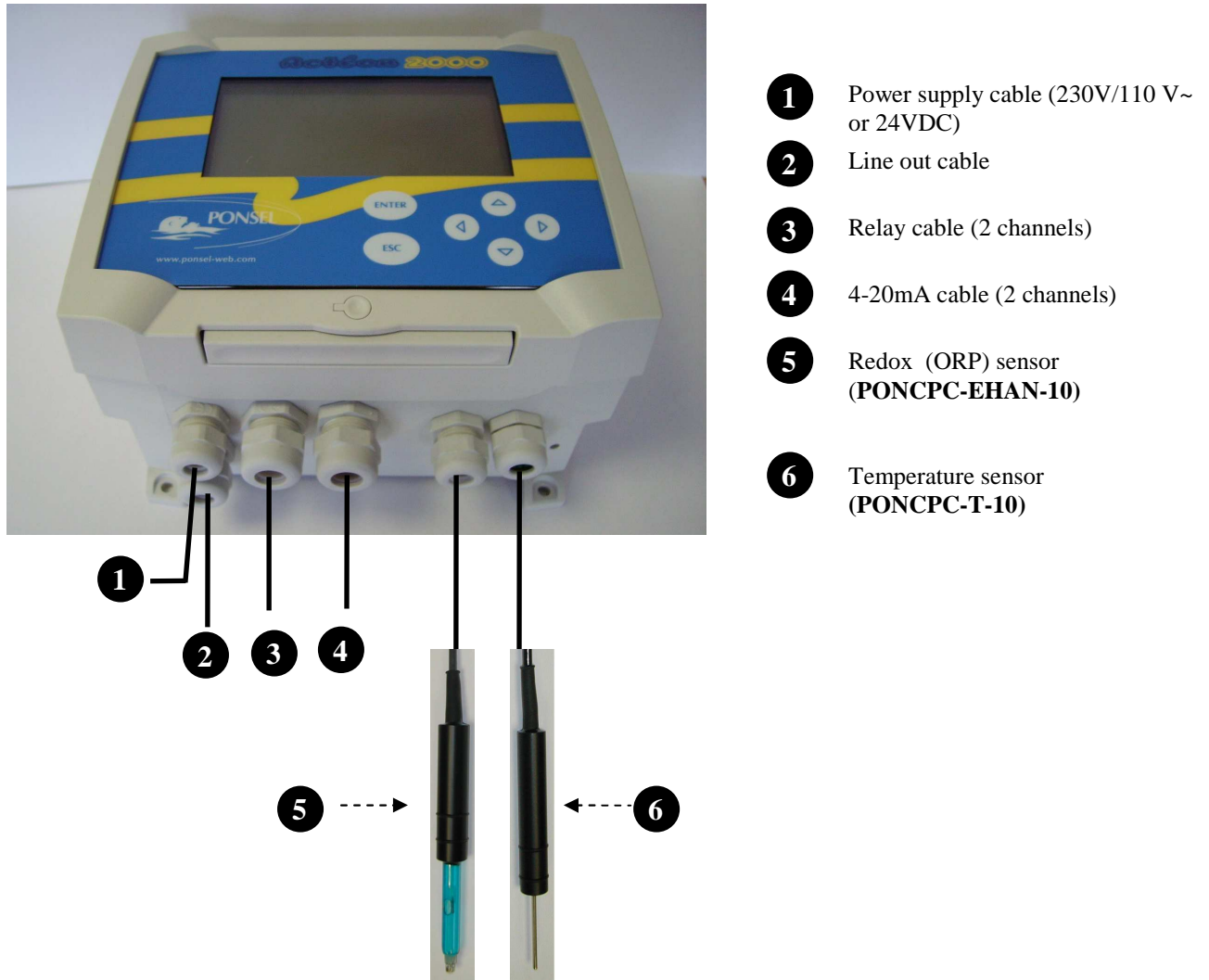
Figure 2 - Installing a measuring system

- Case 2 : the distance between the transmitter and the sensors is longer than 10 metres:

A **watertight IP 68** connection box with integrated pre-amplifier must be used (REF: **PON-BJAI-E PH/EH/°C**).

1   Power supply cable (230/110V~ or 24VDC)

2   Line out cable

3   Relay cable (2 channels)

4   4-20mA cable (2 channels)

5   Redox (ORP) sensor (**PONCPC-EHAN-10)**

6   Temperature sensor (**PONCPC-T-10)**

7   Connection box (**PON-BJAI-E PH/EH/T)**
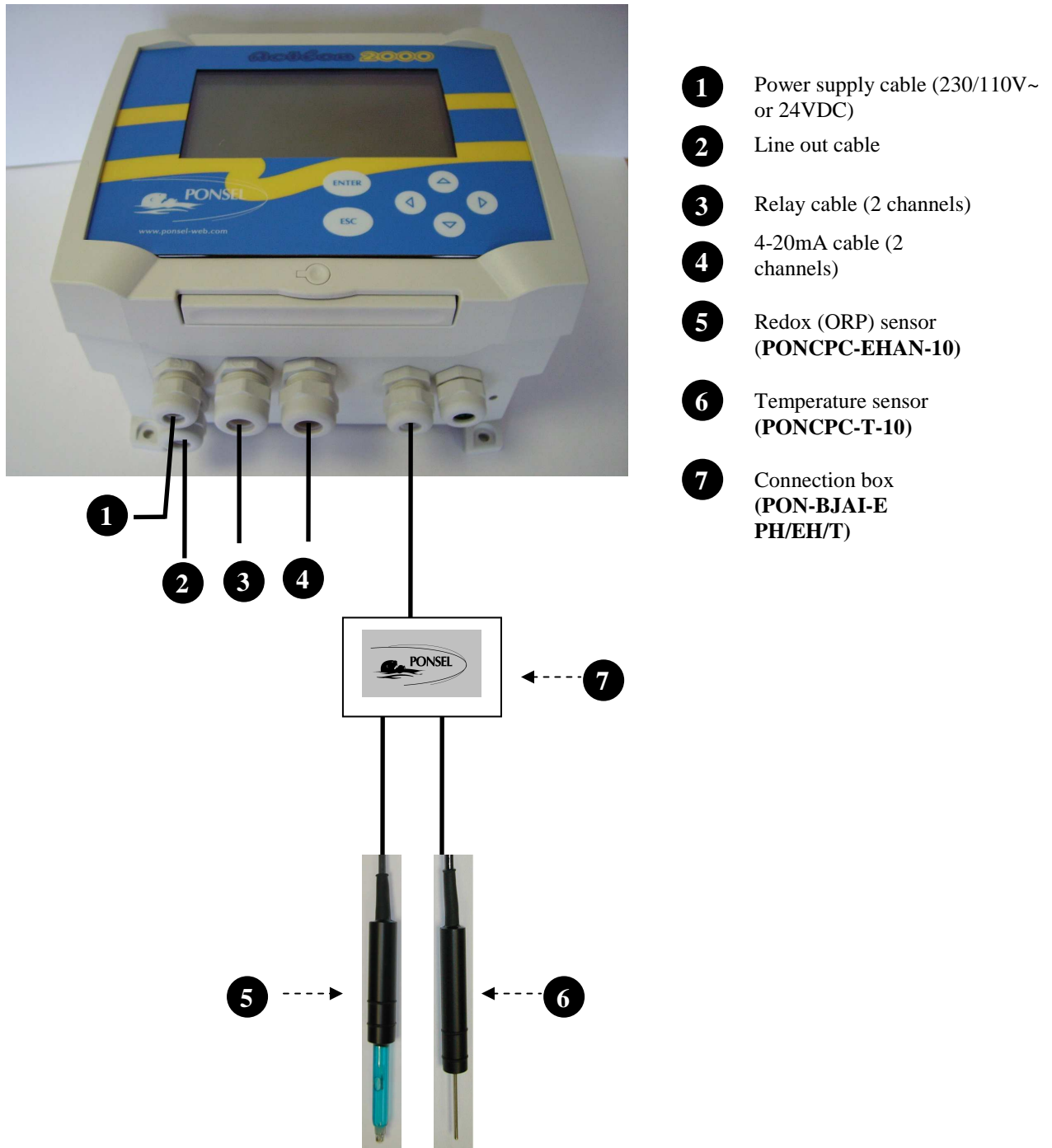
Figure 3 – Installation with a connection box with integrated pre-amplifier

2.2.1 ACTEON 2020 wiring

See appendix (§15) at the end of the document.

2.3 Tank-mounting:

2.3.1 Using the stand and protective hood

A protective hood (**PON-PDPVC-1**) is available for mounting the ACTEON 2020.

The hood is essential in the case of direct exposure to adverse weather or sunshine.
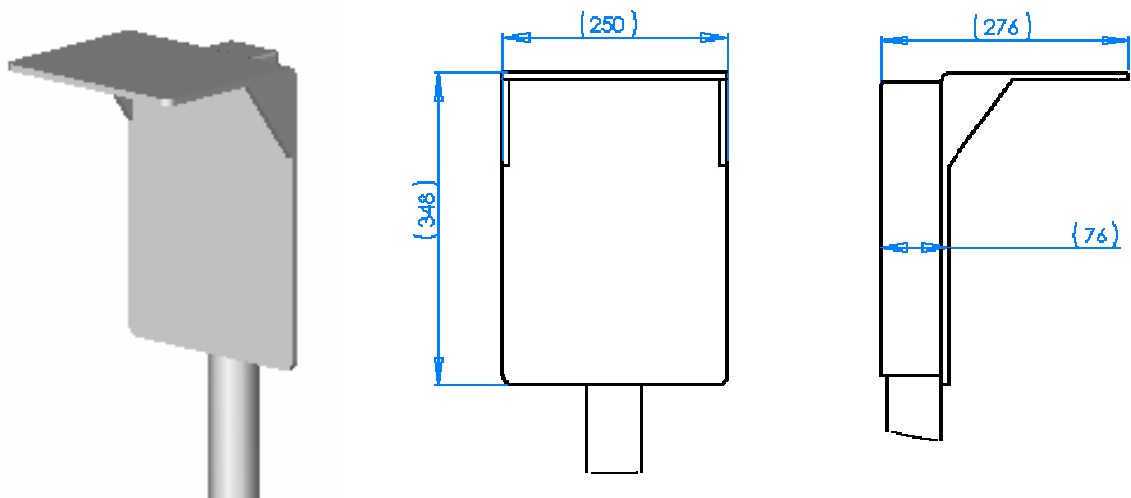
Figure 4 - Mount and hood for the transmitter

2.3.2 Installing the sensor with a sensor-holder perch (elbowed or straight) and nozzle (**PONPPCC-PH/EH** or **PONPPCD-PH/EH**)

It is best to use the elbowed sensor-holder perch when immersing the sensor in a tank.

⑦ Sensor-holder perch

⑧ Glued connector

⑨ Sensor-holder nozzle

⑩ Lock- nut
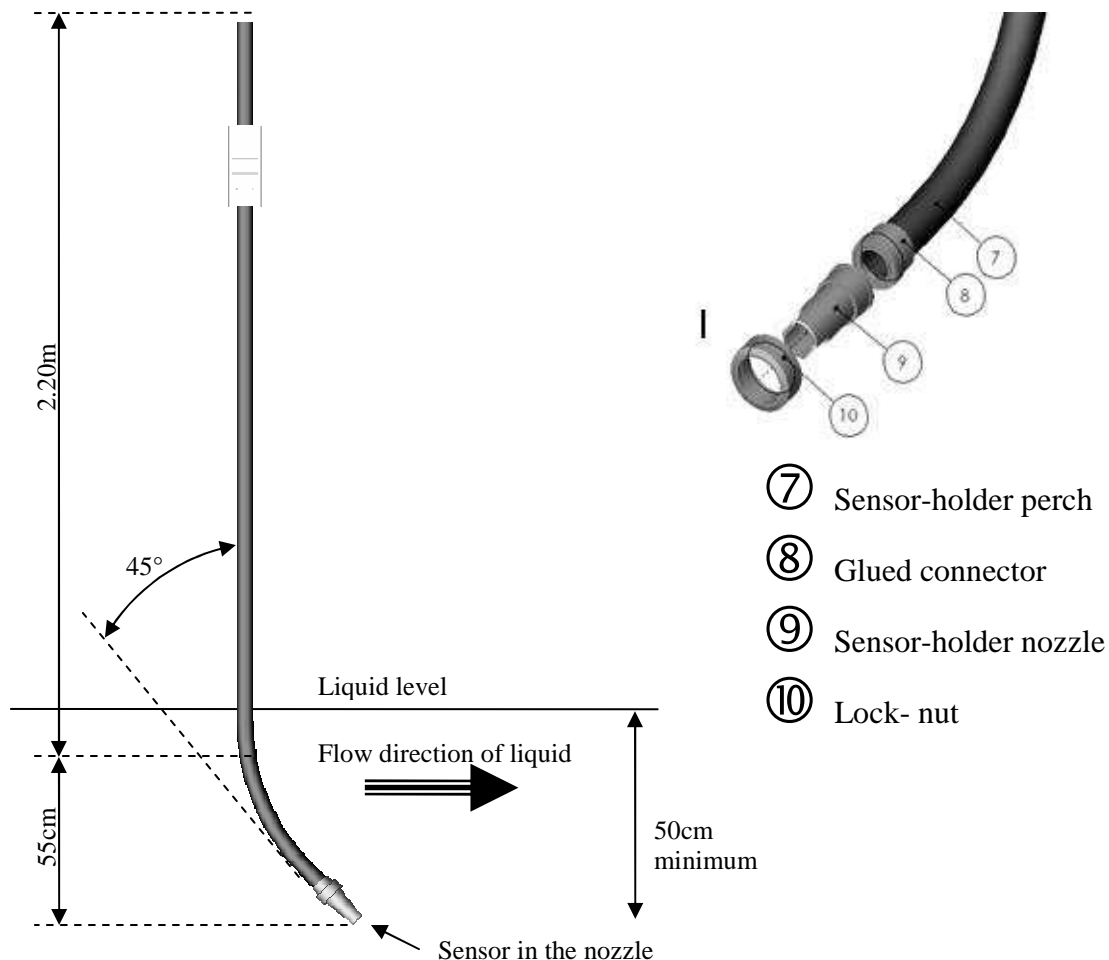
Figure 5 – PVC Elbowed Sensor-Holder Perch

Comment:

Use elbowed sensor-holder perches in heavily soiled tanks to prevent fibre build-up on the perch.

Installing the pH sensor in the nozzle:

1) Dismantle the sensor-holder perch then remove the nozzle from the bottom of the perch by removing its tightening screw.
2) Introduce a solid wire into the perch then a string.
3) Remove the sensor's protective casing and two O-ring seals.

Henceforth, handle the sensor with care. The warranty does not cover breakage of the glass bulb.

4) Attach the string to the end of the sensor and introduce it into the top of the perch. Use the string to pull the sensor to the bottom of the perch.
5) Remove the string and place the sensor in the nozzle. The sensor should protrude about twenty centimetres.
6) Replace only the O-ring seal nearest the glass section of the sensor.
7) Adjust the tip of the sensor exactly flush with the end of the nozzle. Secure the sensor in place with the tightening screw.
8) Replace the nozzle on the perch and secure it with the tightening screw.
9) Use the stand with a slider or another sort of system to set the perch in a vertical position. Adjust the immersion parameters so that the nozzle always remains submerged and the submerged section is always at least 0.50m below the surface.
10) To prevent fibre build-up, position the sensor so that the nozzle is facing in the same direction as the flow.

Diagram of the sensor in the nozzle without cleaning system
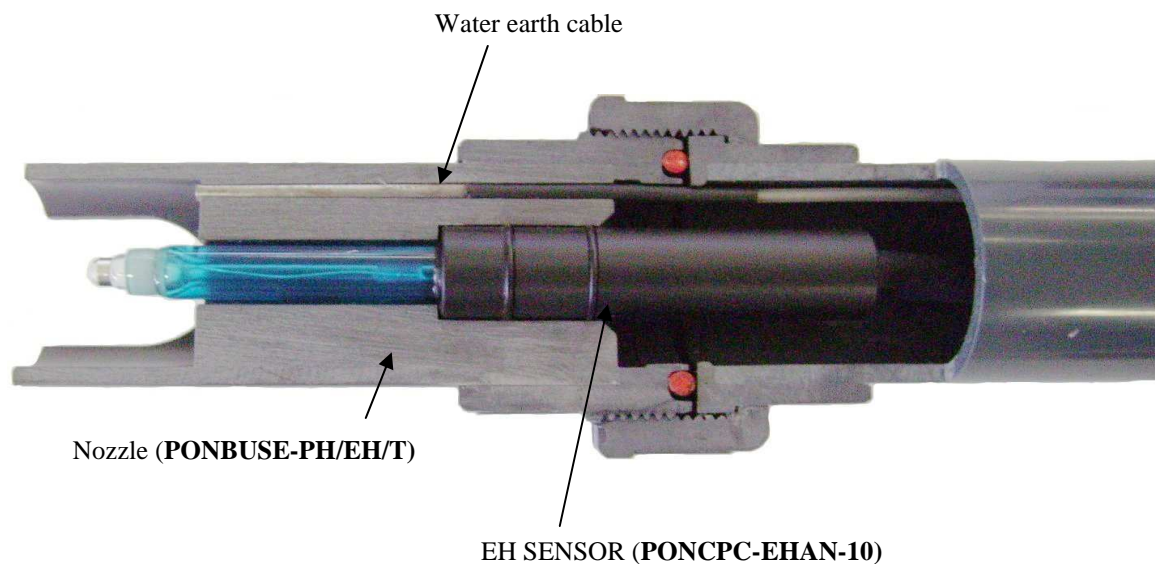
Figure 6- Cross section diagram of the sensor nozzle without cleaning system

Comment: The line out cable is to be connected to the ACTEON 2000 earth terminal.

2.3.3 Installing an Elbowed Sensor-Holder Perch (ref: **PONPPCC-CIR**) or Straight Sensor-Holder Perch (ref: **PONPPCD-CIR)** on QRPM (ref: **PONSPFR** and **PONSPFR2**)

1) Fix the stainless steel QRPM to the infrastructure.
2) Next, fix a sensor-holder perch to the stainless steel QRPM as shown in the diagram below.
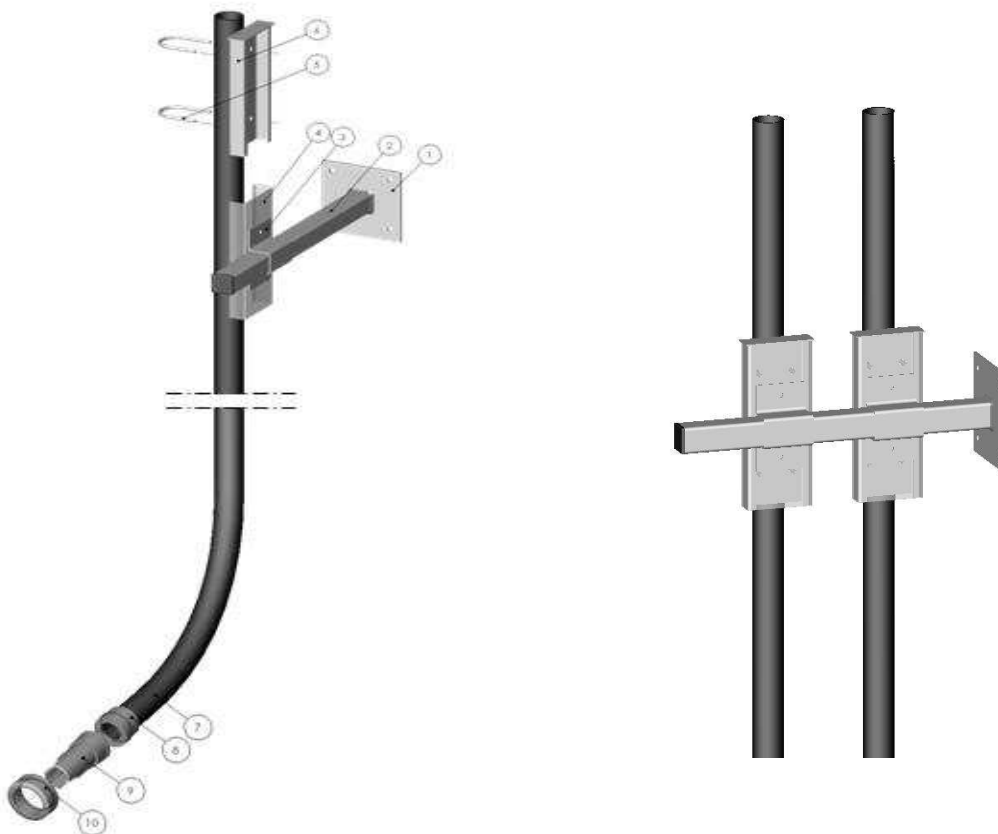
Figure 7 – Installing a perch on a QRPM with one or two sliders

A second slider may be added to install a second sensor-holder perch for the temperature sensor (see diagram above).

2.4 In-pipe installation

For in-pipe installations, use the tee assembly (**PON-4020**) and the adapter sleeve (**PONAP1**).

Redox sensor (**PONCPC-EH-10
or PONCPC-EHAN-10)**

Sleeve (**PONAP1**)

Tee (**PON4020**)

20x27 connectors
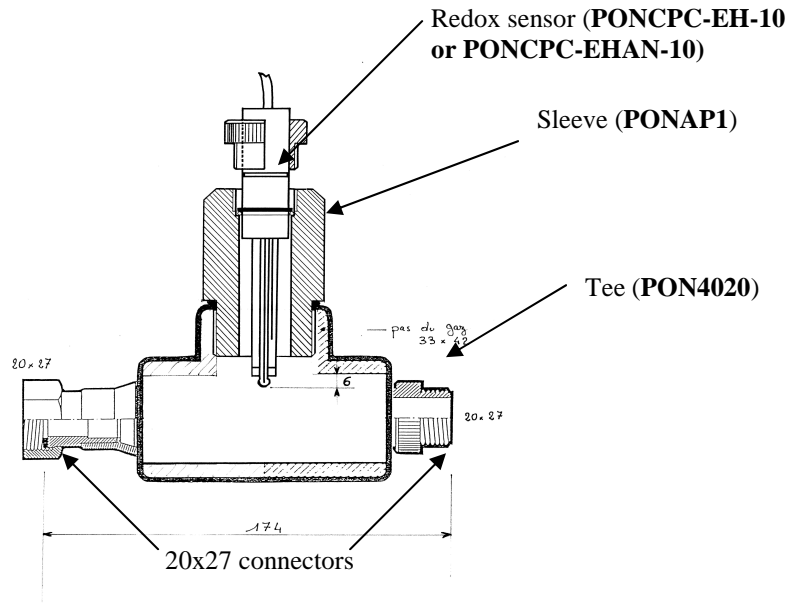
Figure 8 - Installing a temperature sensor inside a pipe

Temperature sensor (**PONCPC-T-10**)

Sleeve (**PONAP1**)

Tee (**PON4020**)

20x27 connectors
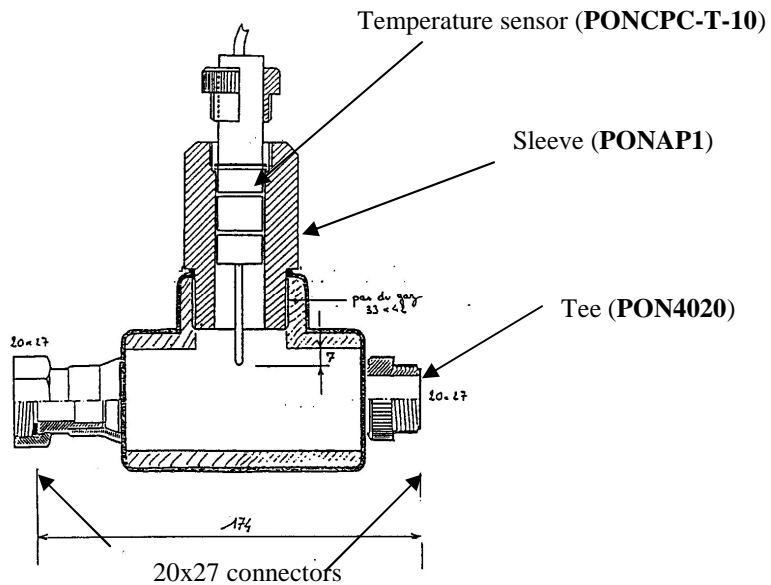
Figure 9 - Installing a temperature sensor in a pipe

3 ACTEON 2020 transmitter

3.1 Control console

1	ENTER key for accessing menus or confirming actions
2	ESC key for exiting menus or cancelling actions
3	◁ for moving left in menus
4	▷ for moving right in menus
5	△ for increasing a value or selecting the menu above
6	▽ for decreasing a value or selecting the menu below
7	Control screen
8	Quarter-turn screw to seal cover

4   Block diagram of ACTEON 2020 menus

```
                                    ┌─ Redox sensor ─────────────────────────┐
                                    │   ┌──────────────────────────────┐     │
                   HISTORY          │   │  Gain adjust (§6.1.2)         │     │
                                    │   └──────────────────────────────┘     │
                                    │   ┌──────────────────────────────┐     │
                                    │   │  Complete calibration (§6.1.1)│     │
                   CALIBRATION ◄────┤   └──────────────────────────────┘     │
                                    │   ┌──────────────────────────────┐     │
                                    │   │  Theoretical calibration (§6.1.3)│  │
                                    └───└──────────────────────────────┘─────┘

                   CALIBRATION      ┌─ Temperature sensor ───────────────────┐
                   LOGGER           │   ┌──────────────────────────────┐     │
                                    │   │  Gain adjust (§6.1.5)         │     │
                                    │   └──────────────────────────────┘     │
                                    │   ┌──────────────────────────────┐     │
                                    │   │  Complete calibration (§6.1.4)│     │
                                    │   └──────────────────────────────┘     │
                                    │   ┌──────────────────────────────┐     │
                                    │   │  Theoretical calibration (§ 6.1.6)│ │
                                    └───└──────────────────────────────┘─────┘
```

Adjusting the graphic screen (§9.2)

CONFIGURATION

4-20mA output adjustment → Config. of 4mA and 20mA stop switches (§9.3.1)

4-20mA output calibration (§9.3.2)

Relay adjustment → Threshold adjustment in mode 1 (§0)

Threshold adjustment in mode 2 (§9.4.2)

Measure unit configuration (§9.5)

Language configuration (§9.6)

Factory default configuration reminder (§9.7)

MEASURE

GENERAL INFORMATION

5 The measurement window

In measure mode the measurement screen displays various information:
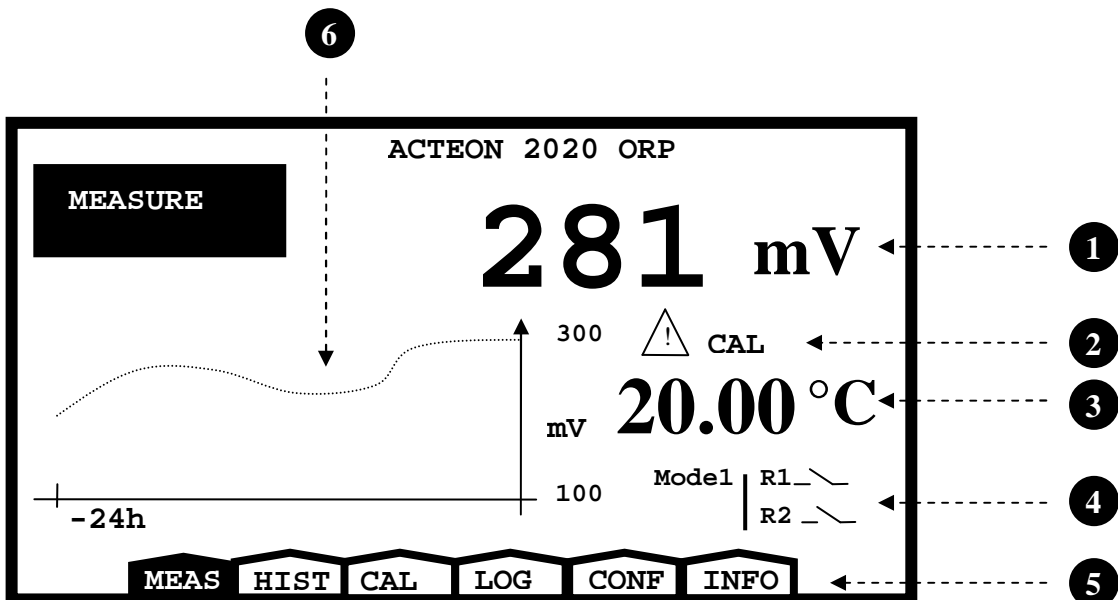
1 Redox measurement

2 Measurement state indicator:

($!$) THEOR CAL   : Use of the theoretical coefficients as calibration coefficients.

⚠ CAL   : Incorrect calibration point on the probe.

No icon displayed   : The last calibration is correct.

3 Temperature transmitted by the temperature sensor

In the event of faulty wiring or uninstalled sensor, the temperature will not be displayed.
Comment: The following icon is displayed if the temperature is higher than the operating temperature (55°C)   ($!$) HOT

4 R1 and R2 relays: state and operating mode ⊣\⊢ Contact is inactive.

⊣⊢ Contact is active.

5 ACTEON menu

6 Trend line can be configured from 1 min to 24 hours (with automatic scaling)

6 Calibrating the ACTEON 2020

6.1 Calibrating the sensors

Select the calibration menu in the measurement window:

```
        ACTEON 2020 ORP

MEASURE        290  mV

                         300
                            20.00 °C
                         mV

                         200   Model  R1
        -24 hrs                       R2
        MEAS  HIST  CAL  LOG  CONF  INFO
```
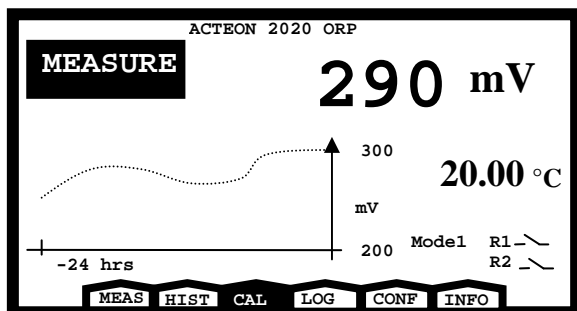
☞ Use the ▷ and ◁ keys to navigate the ACTEON menu

☞ Select the ▢CAL▢ menu then press ENTER

```
CALIBRATION      SENSORS CALIBRATION
                     ORP SENSOR
     ▶ Gain adjust
     ▶ Complete calibration
     ▶ Theoretical calibration
                  TEMPERATURE SENSOR
     ▶ Gain adjust
     ▶ Complete calibration
     ▶ Theoretical calibration

       ENTER: Validate the choice
```
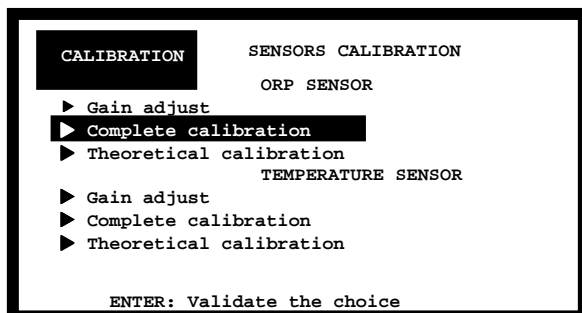
6.1.1 Two point Redox (ORP) sensor calibration (complete calibration)

Use the following procedure to calibrate your Redox sensor.
You will need the 240mV or 470mV Redox buffer solution for this procedure.
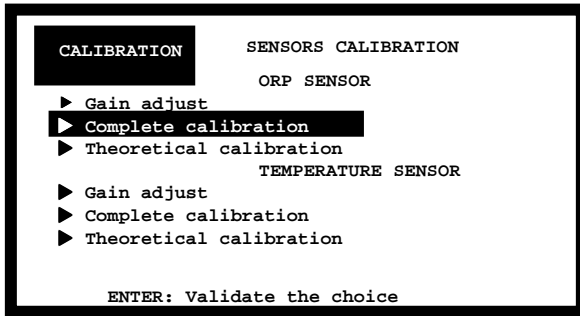
```
CALIBRATION       SENSORS CALIBRATION
                     ORP SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration
                  TEMPERATURE SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration

       ENTER: Validate the choice
```

☞
Use the △ and ▽ keys to
select the type of calibration
and the probe to be calibrated.

☞
Select the ▶ Complete calibration menu and press
ENTER.

```
CALIBRATION       ORP SENSOR



   Enter your name:
   Durant



   ESC: Cancel the procedure
   ENTER: Start calibration
```
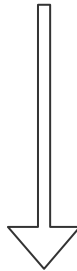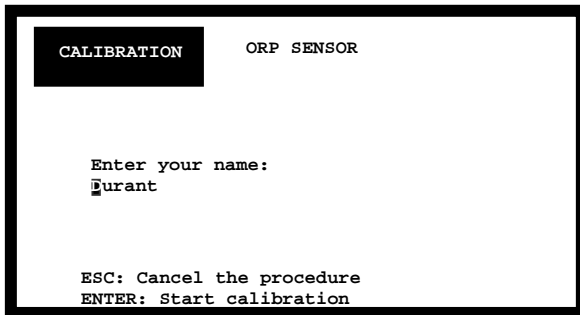
☞
Use the ▷ and ◁ keys to move the
cursor in the name section.
Use the △and▽ keys to change the
letters. (The scrolling order of the
letters is A…Z,0..9,?,>,space)
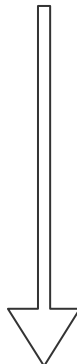
☞
Enter your name or reference then press ENTER

```
┌─────────────────────────────────────────────┐
│                                               │
│  ┌───────────────┐    ORP SENSOR              │
│  │ CALIBRATION   │                            │
│  └───────────────┘   Automatic zero           │
│                                               │
│        Standard:    0   mV                    │
│        Measure:     0   mV                    │
│                                               │
│                                               │
│        ESC: Cancel the procedure              │
│        ENTER: Validate the pH7                │
└─────────────────────────────────────────────┘
```
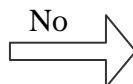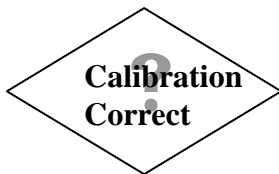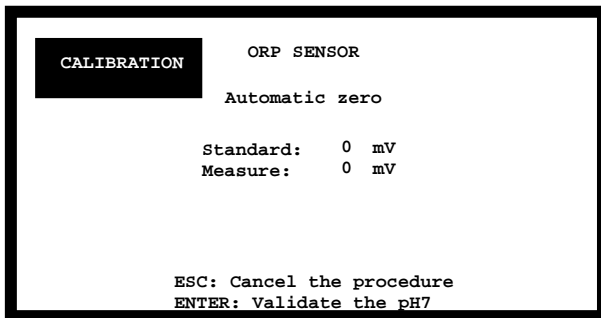
Calibration Correct? — No → If the automatic zero is incorrect, an error message window appears (see "Error message information" chapter §6.2.1)

Yes
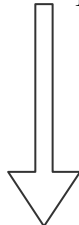
Immerse the Redox sensor in the 240mV or 470mV ORP standard solution

```
┌─────────────────────────────────────────────┐
│                                               │
│  ┌───────────────┐    ORP SENSOR              │
│  │ CALIBRATION   │                            │
│  └───────────────┘  Immerse the sensor in     │
│                     an ORP standard solution  │
│        Standard:   ▊240▊  mV                   │
│        Measure:     234   mV                   │
│                                               │
│        WAIT: Nonstable measurement            │
│                                               │
│        ESC: Leave the current slope           │
│        ENTER: Validate the new slope          │
└─────────────────────────────────────────────┘
```
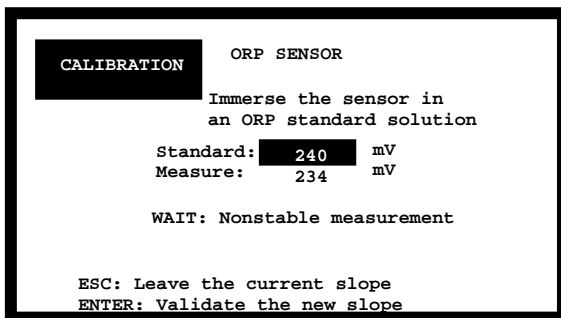
☞ Use the △ and ▽ keys to adjust the buffer value (from 0mV to 999mV)
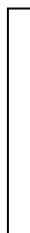
⌛ AWAIT MEASUREMENT STABILISATION

☞ Press the ENTER key to confirm the second calibration point

.

Calibration Correct?

No → If the second calibration point is incorrect, an error message window appears (see "Error message information" chapter §6.2.2)

Yes ↓

```
           ACTEON 2020 ORP

 MEASURE          290  mV

                  ┃         300
          ........┃
      ....        ┃      20.00 °C
  ....            ┃
                  ┃         mV
                  ┃
                  ┃         200   Model  R1 ─╲
   -24 hrs                               R2 ─╱╲

    MEAS  HIST  CAL  LOG  CONF  INFO
```
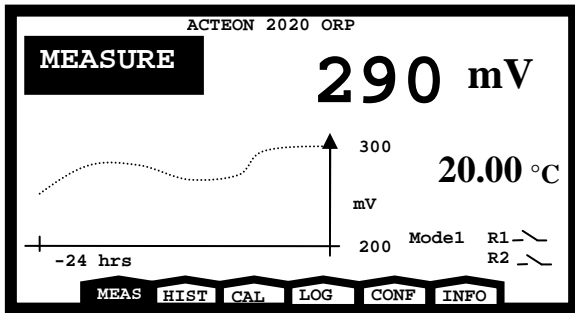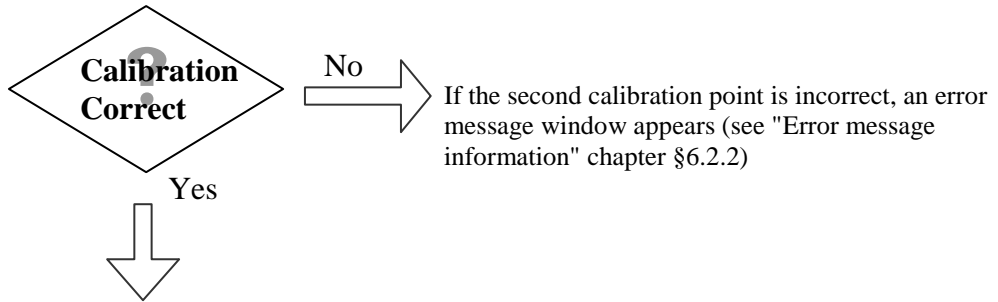
Comment: The measurement window is displayed again once the calibration has been correctly carried out.

6.1.2 Redox sensor slope adjustment

You can only adjust the slope of your sensor by carrying out the following procedure :
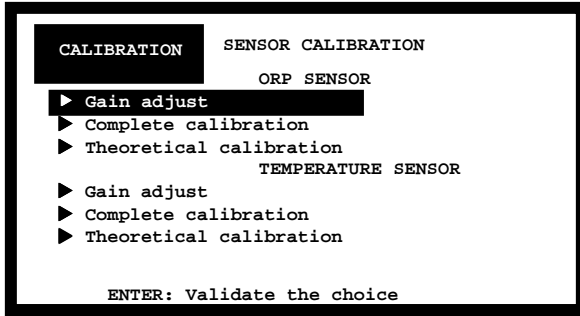
```
CALIBRATION    SENSOR CALIBRATION
                    ORP SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration
                 TEMPERATURE SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration

     ENTER: Validate the choice
```

☞ Use the △and ▽keys to select the type of calibration and the probe to be calibrated.

☞ Select the ▶ Gain adjust menu and press ENTER.

Immerse the Redox sensor in the 240mV or 470mV ORP standard solution.

```
CALIBRATIO    ORP SENSOR
N
            Immerse the sensor in
            an ORP standard solution
  Standard:     240    mV
  Measure:      234    mV

    WAIT: Nonstable measurement

  ESC: Leave the current slope
  ENTER: Validate the new slope
```
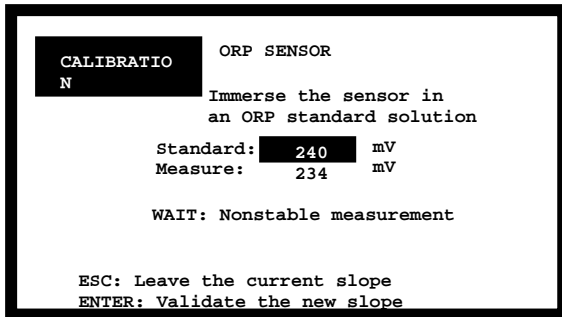
☞ Use the △and ▽ keys to adjust the buffer value (0mV to 999mV)
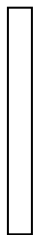
⌛ AWAIT MEASUREMENT STABILISATION

☞ Press the ENTER key to confirm gain adjust.
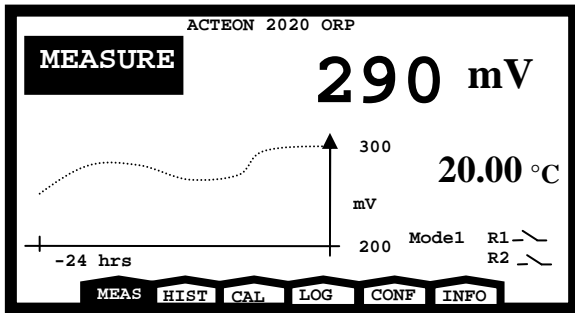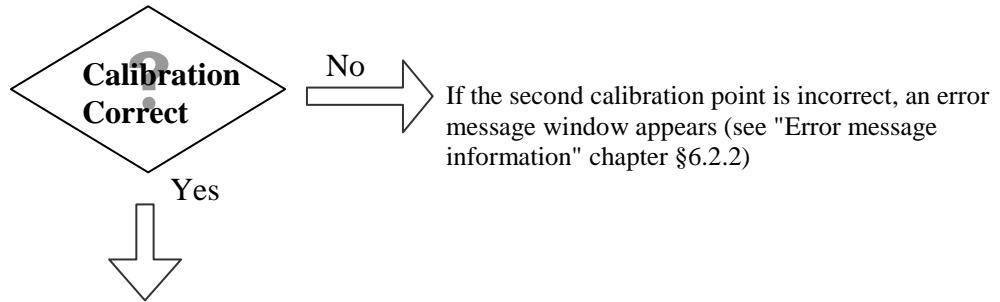
Calibration Correct?

No → If the second calibration point is incorrect, an error message window appears (see "Error message information" chapter §6.2.2)

Yes ↓

```
        ACTEON 2020 ORP
┌─────────────────────────────────┐
│ MEASURE        290 mV           │
│                                 │
│              300    20.00 °C    │
│              mV                 │
│              200  Model  R1 ╲   │
│ -24 hrs                  R2 ╱   │
│ MEAS HIST CAL LOG CONF INFO     │
└─────────────────────────────────┘
```

Comment: The measurement window is displayed again once gain adjust has been correctly carried out.

6.1.3 Returning to REDOX measurement theoretical calibration

Theoretical calibration is carried out using the theoretical coefficients.
Follow the instructions below to carry out theoretical calibration:
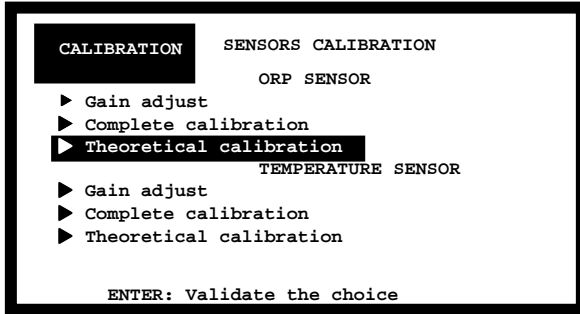
```
CALIBRATION      SENSORS CALIBRATION
                     ORP SENSOR
    ▶ Gain adjust
    ▶ Complete calibration
    ▶ Theoretical calibration
                 TEMPERATURE SENSOR
    ▶ Gain adjust
    ▶ Complete calibration
    ▶ Theoretical calibration

        ENTER: Validate the choice
```

☞ Use the △and▽keys to select the type of calibration and the probe to be calibrated.

☞ Select the ▶ Theoretical calibration menu and press ENTER.

```
CALIBRATION      THEORETICAL CALIBRATION

    ATTENTION, you will erase your
    calibration coefficients to return to
    the theoretical coefficients!
                    ▶ Yes
                    ▶ No

        Esc: Cancel the procedure
        Enter: Validate the choice
```

☞ Use the △and▽keys to select the procedure confirmation.

☞ Select ▶ Yes and press ENTER to return to the theoretical coefficients.

```
            ACTEON 2020 ORP
MEASUR
—              290 mV
                    ! THEOR CAL
         300
                    20.00 °C
         mV
                    Model  R1
         200              R2
 -24 hrs
    MEAS  HIST  CAL  LOG  CONF  INFO
```
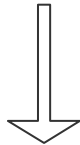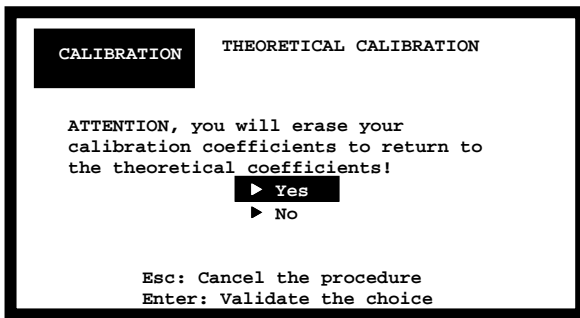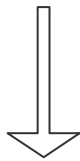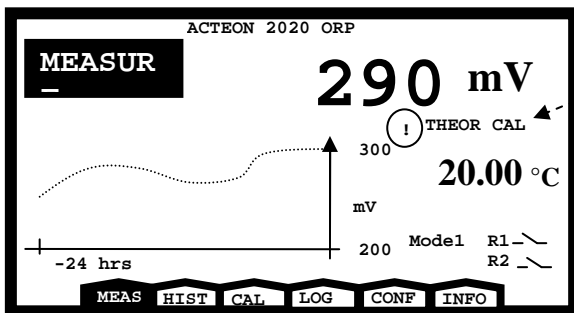
Indicates that the device has been calibrated with the theoretical coefficients.

6.1.4 Two point temperature sensor calibration (complete calibration)

Use the following procedure to completely calibrate your temperature sensor.

You will need a precision thermometer and water at 0°C for this procedure.
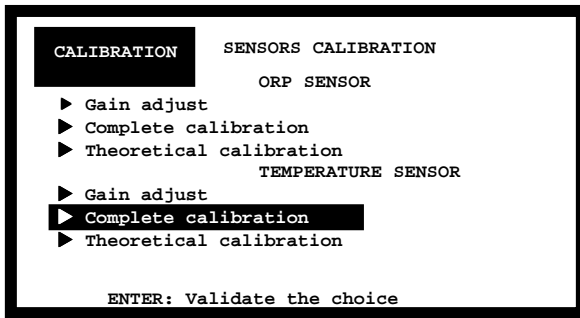
```
CALIBRATION      SENSORS CALIBRATION
                      ORP SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration
                  TEMPERATURE SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration

      ENTER: Validate the choice
```

☞ Use the △ and ▽ keys to select the type of calibration and the probe to be calibrated.

☞ Select the ▶ Complete calibration menu of the temperature sensor and press ENTER.
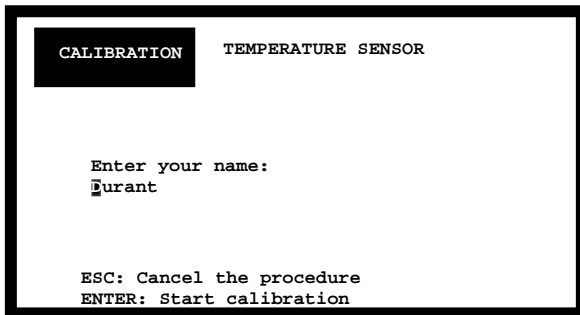
```
CALIBRATION      TEMPERATURE SENSOR



  Enter your name:
  Durant



  ESC: Cancel the procedure
  ENTER: Start calibration
```

☞ Use the ▷ and ◁ keys to move the cursor in the name section.

Use the △ and ▽ keys to change the letters. (The scrolling order of the letters is A…Z,0..9,?,>,space)
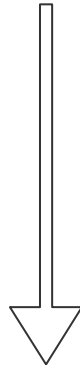
☞ Enter your name and reference and press ENTER.

Immerse the sensor in a water and crushed ice mixture at 0.00°C.

```
┌─────────────────────────────────────────────┐
│  CALIBRATIO     TEMPERATURE SENSOR           │
│  N                                           │
│            Immerse the sensor in             │
│               water and ice                  │
│       Standard:  0.00    °C                  │
│       Measure:   0.15    °C                  │
│                                              │
│        WAIT: Nonstable measurement           │
│                                              │
│                                              │
│     ESC: Cancel the procedure                │
│     ENTER: Validate the zero                 │
└─────────────────────────────────────────────┘
```

☞

Use the △ and ▽ keys to adjust the water temperature value.

⌛ AWAIT MEASUREMENT STABILISATION

☞ Press the ENTER key to confirm the first calibration point.

Calibration Correct ? — No → If the first calibration point is incorrect, an error message window appears (see "Error message information" chapter §6.3.1)

Yes

Immerse the sensor in water at ambient temperature.

```
┌─────────────────────────────────────────────┐
│  CALIBRATION     TEMPERATURE SENSOR          │
│                                              │
│            Immerse the sensor in             │
│        water at ambient temperature          │
│       Standard:  20.00   °C                  │
│       Measure:   20.20   °C                  │
│                                              │
│        WAIT: Nonstable measurement           │
│                                              │
│                                              │
│     ESC: Leave the current slope             │
│     ENTER: Validate the new slope            │
└─────────────────────────────────────────────┘
```

☞

Use the △ and ▽ keys to adjust the water temperature value.

⌛ AWAIT MEASUREMENT STABILISATION

☞ Press the ENTER key to confirm the second calibration point.

Calibration Correct ?

No → If the second calibration point is incorrect, an error message window appears (see "Error message information" chapter §6.2.2)

Yes ↓

```
ACTEON 2020 Redox
MEASURE        290  mV
                        300
                              20.00 °C
                        mV
                        200    Mode1  R1
-24 hrs                        R2
MEAS  HIST  CAL  LOG  CONF  INFO
```

Comment: The measurement window is displayed again once the calibration has been correctly carried out.

6.1.5 Temperature sensor slope adjustment

If you observe a small measurement error, you may only adjust the slope of your sensor by carrying out the following procedure:
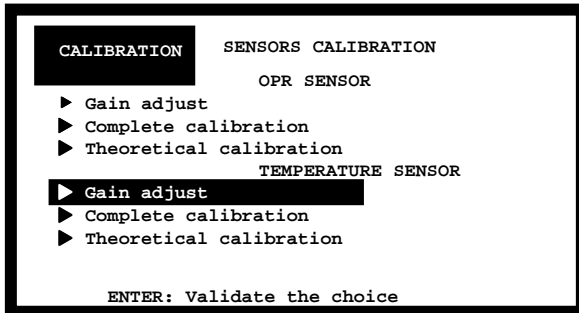
```
CALIBRATION    SENSORS CALIBRATION
                    OPR SENSOR
   ▶ Gain adjust
   ▶ Complete calibration
   ▶ Theoretical calibration
                 TEMPERATURE SENSOR
   ▶ Gain adjust
   ▶ Complete calibration
   ▶ Theoretical calibration

      ENTER: Validate the choice
```

☞ Use the △ and ▽ keys to select the type of calibration and the probe to be calibrated.

☞ Select the ▶ Gain adjust menu and press ENTER.

Immerse the sensor in water at ambient temperature.

```
CALIBRATION    TEMPERATURE SENSOR

           Immerse the sensor in
         water at ambient temperature
   Standard:  20.00   °C
   Measure:   20.20   °C

      WAIT: Nonstable measurement

   ESC: Leave the current slope
   ENTER: Validate the new slope
```
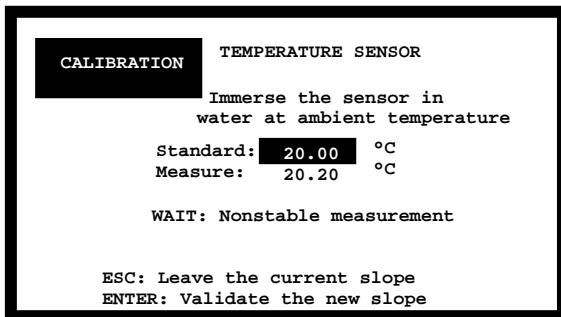
☞ Use the △ and ▽ keys to adjust the ambient water temperature value.

⧗ AWAIT MEASUREMENT STABILISATION

☞ Press the ENTER key to confirm slope adjustment.
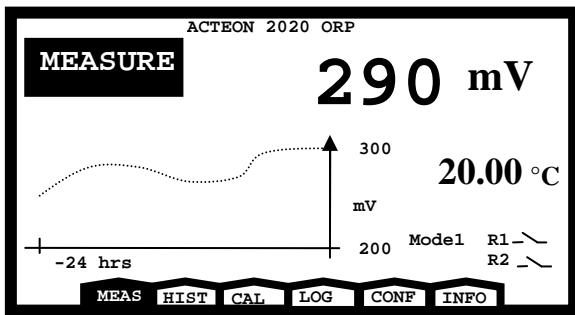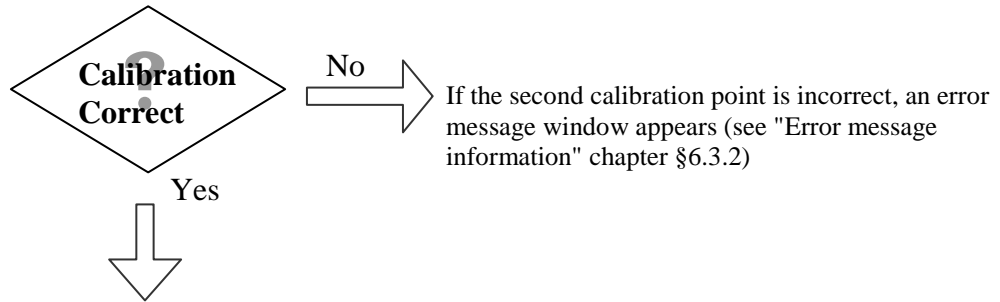
Calibration Correct

No → If the second calibration point is incorrect, an error message window appears (see "Error message information" chapter §6.3.2)

Yes ↓

```
              ACTEON 2020 ORP
 MEASURE        290 mV

                300
                      20.00 °C
                mV
                                Model  R1
                200             R2
 -24 hrs
   MEAS  HIST  CAL  LOG  CONF  INFO
```

Comment: The measurement window is displayed again once gain adjust has been correctly carried out.

6.1.6 Returning to temperature measurement theoretical calibration

Theoretical calibration is carried out using the theoretical coefficients (PT100 theoretical slope and offset zeroing).
Follow the instructions below to carry out theoretical calibration

```
CALIBRATIO        SENSORS CALIBRATION
N                     ORP SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration
                   TEMPERATURE SENSOR
  ▶ Gain adjust
  ▶ Complete calibration
  ▶ Theoretical calibration

      ENTER: Validate the choice
```

☞

Use the △ and ▽ keys to select the type of calibration and the probe to be calibrated.

☞ Select the ▶ Theoretical calibration menu and press ENTER.

```
CALIBRATION     THEORETICAL CALIBRATION

  ATTENTION, you will erase your calibration
  coefficients to return to the theoretical
  coefficients!
                    ▶ Yes
                    ▶ No

        Esc: Cancel the procedure
        Enter: Validate the choice
```
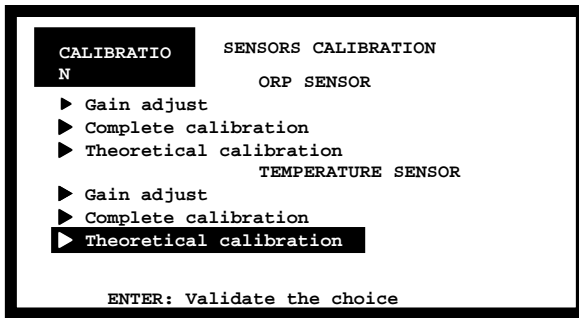
☞

Use the △ and ▽ keys to select the procedure confirmation.

☞ Select ▶ Yes and press ENTER to return to the theoretical coefficients.

```
              ACTEON 2020 ORP

MEASURE        290 mV

                            300
                                  20.00 °C
                            mV
                            200  Model  R1 ⌐
  -24 hrs                             R2 ⌐
  MEAS  HIST  CAL  LOG  CONF  INFO
```
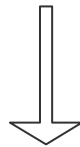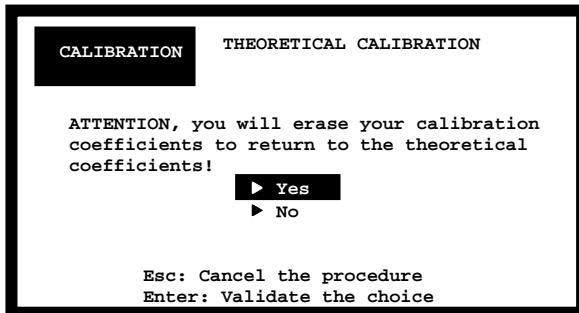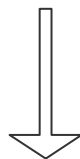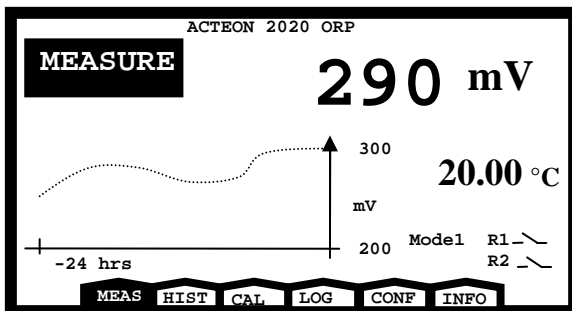
6.2 Redox sensor calibration error message

6.2.1 Automatic zero measurement error

```
┌─────────────────────────────────────────────┐
│                                               │
│  ██████████     ORP SENSOR                    │
│  CALIBRATION    ██████████████████████        │
│  ██████████     CALIBRATION IMPOSSIBLE        │
│                                               │
│                 Offset:                       │
│                        ████████████           │
│                        NON CORRECT            │
│                                               │
│                                               │
│              Esc: Escape menu                 │
│                                               │
└─────────────────────────────────────────────┘
```
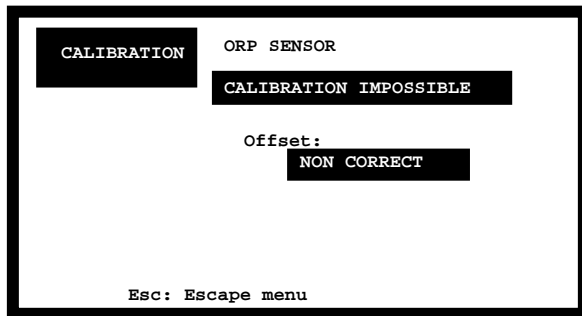
If you observe an error during automatic zero measurement: Contact the after-sales service (see last page)

6.2.2 240mV or 470mV buffer solution calibration error

```
┌─────────────────────────────────────────────┐
│                                               │
│  ██████████     ORP SENSOR                    │
│  CALIBRATION    ██████████████████████        │
│  ██████████     CALIBRTION IMPOSSIBLE         │
│                                               │
│                                               │
│                 Slope:                        │
│                        ████████████           │
│                        NON CORRECT            │
│                                               │
│              Esc: Escape menu                 │
│                                               │
└─────────────────────────────────────────────┘
```
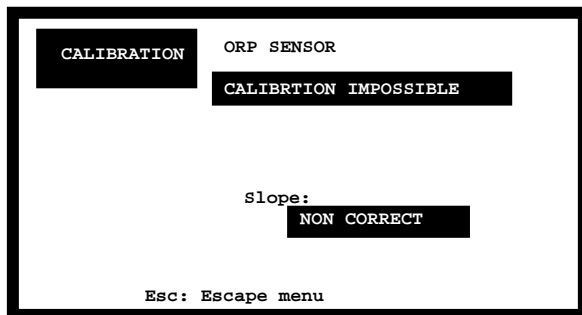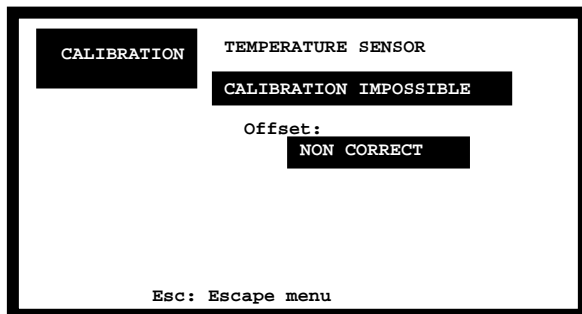
If an error occurs during calibration with the 240mV or 470mV buffer:
1) Check if the buffer is fouled or out-of-date.
2) Check the connection between the sensor and ACTEON 2020.
3) Clean the platinum electrode (the sensor's response will be weak if the platinum electrode is soiled).

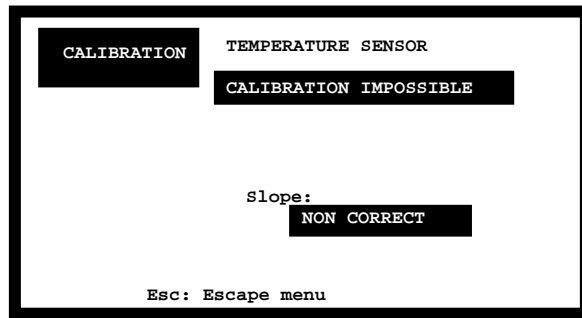## 6.3 Temperature sensor calibration error message information

6.3.1 0℃ calibration error

```
┌─────────────────────────────────────────────┐
│                                               │
│  ██████████     TEMPERATURE SENSOR            │
│  CALIBRATION    ██████████████████████        │
│  ██████████     CALIBRATION IMPOSSIBLE        │
│                 Offset:                        │
│                        ████████████           │
│                        NON CORRECT            │
│                                               │
│                                               │
│                                               │
│              Esc: Escape menu                 │
│                                               │
└─────────────────────────────────────────────┘
```

If an error occurs during calibration in water at 0°C:

1) Check the water temperature with a precision thermometer.
2) Check the connection between the temperature sensor and ACTEON 2020.

6.3.2 Ambient water calibration error

```
┌─────────────────────────────────────────────┐
│                                               │
│  CALIBRATION    TEMPERATURE SENSOR            │
│                 CALIBRATION IMPOSSIBLE         │
│                                               │
│                                               │
│                 Slope:                         │
│                     NON CORRECT                │
│                                               │
│        Esc: Escape menu                        │
│                                               │
└─────────────────────────────────────────────┘
```
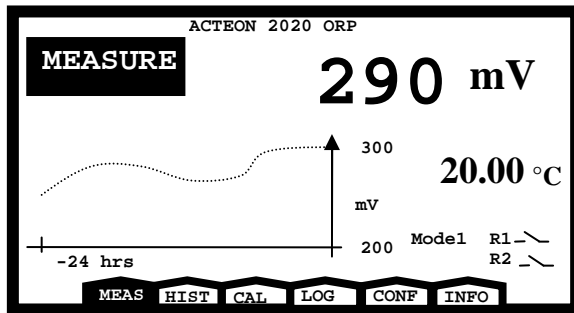
If an error occurs during calibration in water at ambient temperature:
1) Check the water temperature with a precision thermometer.
2) Check the connection between the temperature sensor and ACTEON 2020.

7 VIEWING MEASUREMENT HISTORY

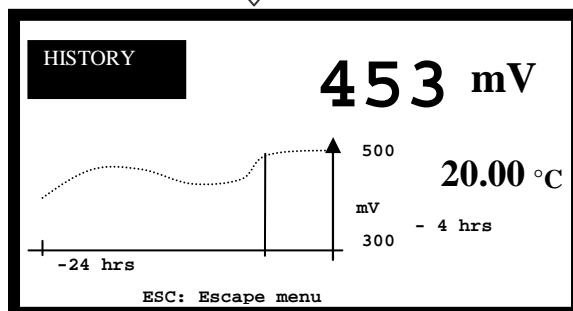The history menu can be used to consult the last 100 data items recorded and displayed on the trend line.

To view this data, follow the instructions below :

ACTEON 2020 ORP

MEASURE

290 mV

300

20.00 °C

mV

200   Mode1   R1
              R2

-24 hrs

MEAS HIST CAL LOG CONF INFO

☞ Use the ▷ and ◁ keys to navigate the ACTEON menu.

☞ Select the HIST menu and press ENTER.

HISTORY

453 mV

500

20.00 °C

mV
            - 4 hrs
300

-24 hrs

ESC: Escape menu

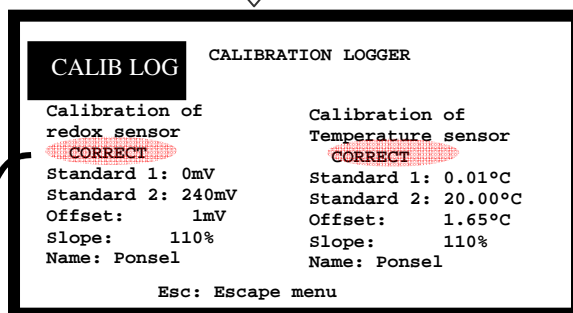☞ Use the ▷ and ◁ keys to move the cursor along the trend line.

8 VIEWING THE SENSOR CALIBRATION REPORT

The calibration logger is used to check the reports of the most recent calibrations.
Follow the instructions below to access this information:
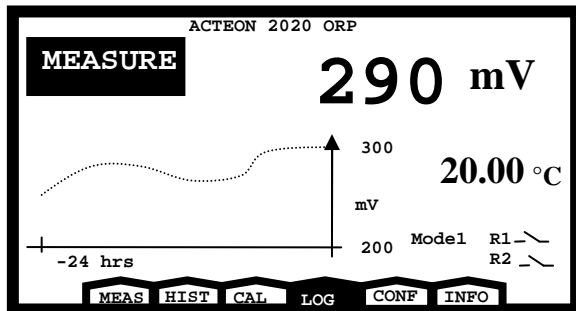
☞ Use the ▷ and ◁ keys to navigate the ACTEON menu.
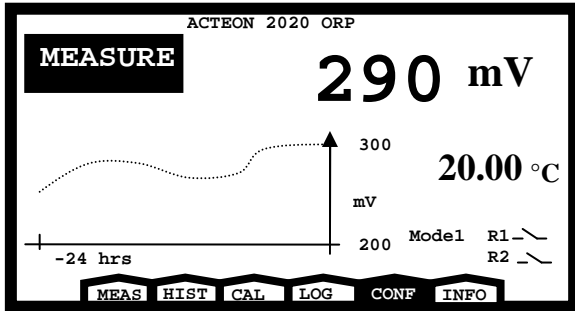
☞ Select the LOG menu and press ENTER.

List of diagnostic messages from the last calibration :

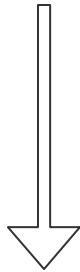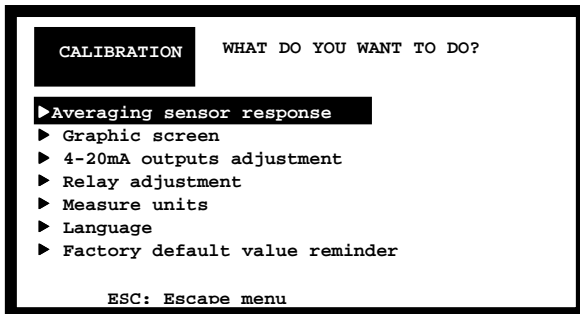| Message	Explanation
CORRECT	ACTEON 2020 has been calibrated correctly.
THEORETICAL coef.	ACTEON 2020 is using the theoretical coefficients (slope and offset); this message is displayed after a theoretical calibration.
THEORETICAL slope	ACTEON 2020 is using the theoretical slope.
THEORETICAL offset	ACTEON 2020 is using the theoretical offset.
INCORRECT slope	ACTEON 2020 is incorrectly calibrated because the slope calculated during calibration is incorrect (in this case ACTEON 2000 is using the last correctly calculated slope).
INCORRECT offset	ACTEON 2020 is incorrectly calibrated because the offset calculated during calibration is incorrect (in this case ACTEON 2020 is using the last correctly calculated offset).

9 CONFIGURING ACTEON 2020

Select the configuration menu in the measurement window:

```
        ACTEON 2020 ORP
MEASURE        290  mV

                        300
                               20.00 °C
                        mV

                        200  Mode1  R1 ⌐\
    -24 hrs                       R2 ⌐\
    MEAS  HIST  CAL  LOG  CONF  INFO
```

☞ Use the ▷ and ◁ keys to navigate the ACTEON menu.

☞ Select the CONF menu and press ENTER.

```
CALIBRATION    WHAT DO YOU WANT TO DO?

▶Averaging sensor response
 ▶ Graphic screen
 ▶ 4-20mA outputs adjustment
 ▶ Relay adjustment
 ▶ Measure units
 ▶ Language
 ▶ Factory default value reminder

     ESC: Escape menu
```
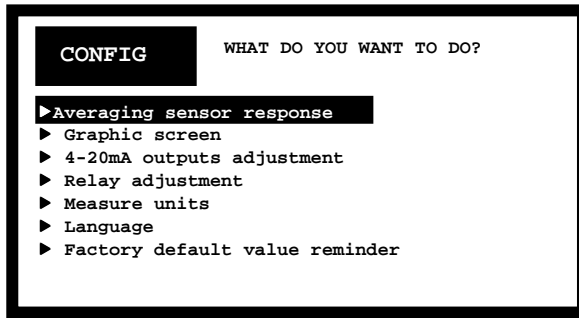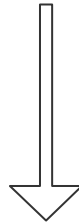
9.1 Configuring sensor response averaging

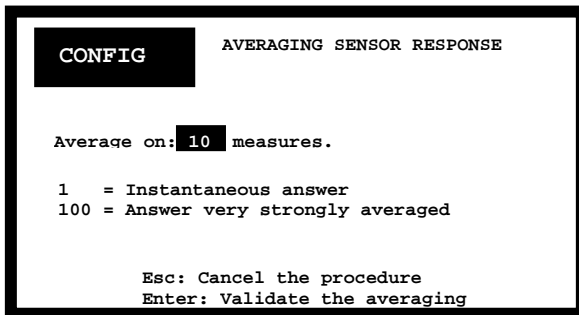This configuration makes the sensor response more stable and responsive.

By default, the averaging procedure involves 10 measurements. This means that the displayed value is the average measurement over the last 10 seconds:
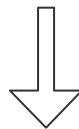
```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
 ▶ Graphic screen
 ▶ 4-20mA outputs adjustment
 ▶ Relay adjustment
 ▶ Measure units
 ▶ Language
 ▶ Factory default value reminder
```

☞ Use the △ and ▽ keys to select the configuration required.

☞ Select the ▶ Averaging sensor response menu and press ENTER.

```
CONFIG          AVERAGING SENSOR RESPONSE


Average on: 10  measures.

1   = Instantaneous answer
100 = Answer very strongly averaged


    Esc: Cancel the procedure
    Enter: Validate the averaging
```

☞ Use the △ and ▽ keys to increase and decrease the averaging.

☞ Select the averaging desired and press ENTER.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
 ▶ Graphic screen
 ▶ 4-20mA outputs adjustment
 ▶ Relay adjustment
 ▶ Measure units
 ▶ Language
 ▶ Factory default value reminder
```
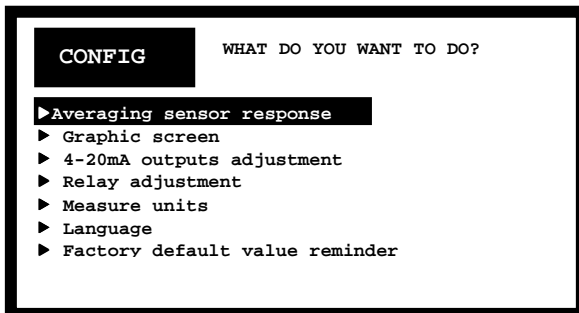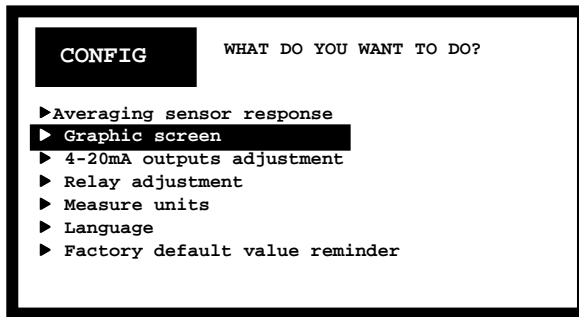
Comment:
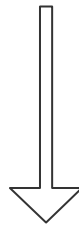Increase the averaging if your measurement is unstable.

Decrease the averaging if the measurement process is too slow.
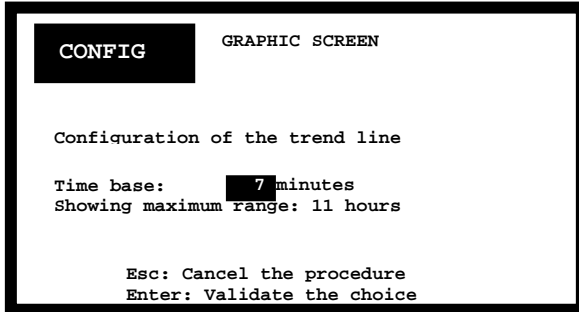
9.2 Configuring the trend line

The trend line can be used to check regulation cycles and detect anomalies.
Follow the instructions below to adapt the time base to the trend line:

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
 ▶ Graphic screen
 ▶ 4-20mA outputs adjustment
 ▶ Relay adjustment
 ▶ Measure units
 ▶ Language
 ▶ Factory default value reminder
```

☞ Use the △and▽keys to select
the configuration required.

☞ Select the ▶ Graphic screen menu and press
ENTER

```
CONFIG          GRAPHIC SCREEN


Configuration of the trend line

Time base:        7 minutes
Showing maximum range: 11 hours


      Esc: Cancel the procedure
      Enter: Validate the choice
```

☞ Use the △and▽ keys to increase
the time base in order to adjust the
duration of the trend curve. (1 sec to
15 min).
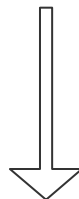
☞ Select the time base chosen and press ENTER.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
 ▶ Graphic screen
 ▶ 4-20mA outputs adjustment
 ▶ Relay adjustment
 ▶ Measure units
 ▶ Language
 ▶ Factory default value reminder
```
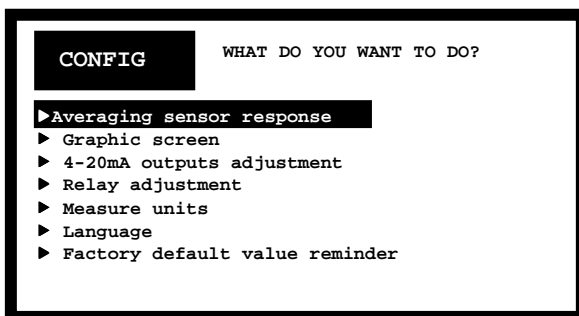
9.3   Configuring the two 4-20mA outputs

Comment:
For greater 4-20mA output precision, it is advised to calibrate the outputs during activation.

```
┌─────────────────────────────────────────────────┐
│ ┌─────────────┐                                  │
│ │   CONFIG    │   WHAT DO YOU WANT TO DO?         │
│ └─────────────┘                                  │
│ ▶Averaging sensor response                       │
│ ▶ Graphic screen                                 │
│ ▶ 4-20mA outputs adjustment                      │
│ ▶ Relay adjustment                               │
│ ▶ Measure units                                  │
│ ▶ Language                                        │
│ ▶ Factory default value reminder                 │
└─────────────────────────────────────────────────┘
```
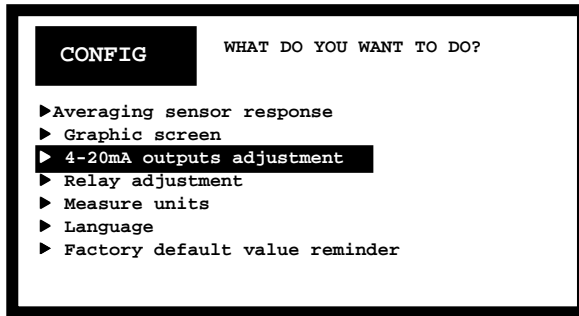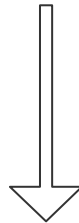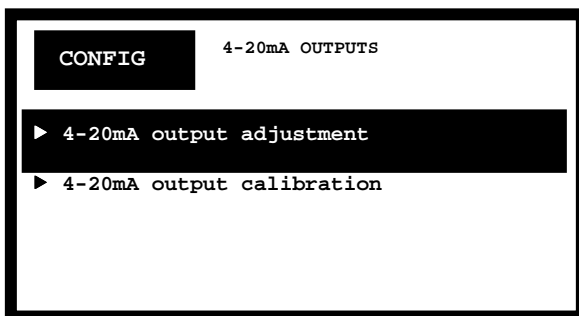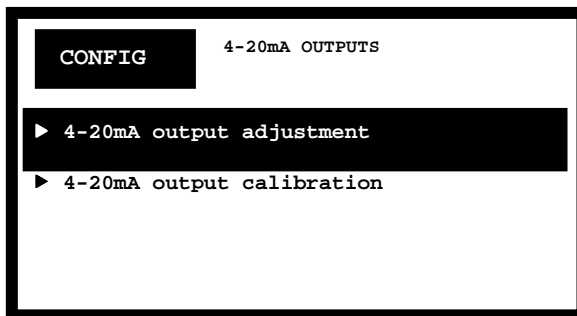
☞
Use the △ and ▽ keys to select
the configuration required.

☞ Select the ▶ 4-20mA output adjustment menu and press ENTER.

```
┌─────────────────────────────────────────────────┐
│ ┌─────────────┐    4-20mA OUTPUTS                │
│ │   CONFIG    │                                  │
│ └─────────────┘                                  │
│                                                  │
│ ▶ 4-20mA output adjustment                       │
│                                                  │
│ ▶ 4-20mA output calibration                      │
│                                                  │
│                                                  │
└─────────────────────────────────────────────────┘
```

9.3.1 Adjusting 4-20mA output stop thresholds
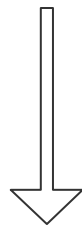
```
CONFIG        4-20mA OUTPUTS

▶ 4-20mA output adjustment

▶ 4-20mA output calibration
```

☞
Use the △ and ▽ keys to select the configuration required.

☞
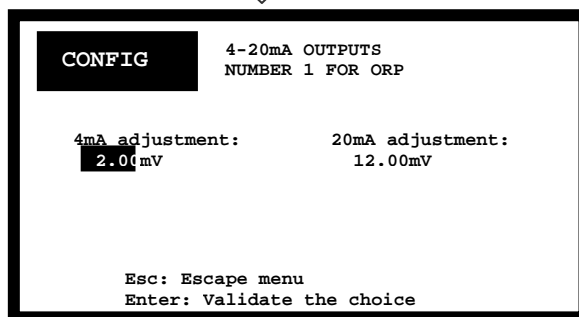Select the 4-20mA output adjustment menu and press ENTER.
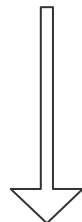
```
CONFIG        4-20mA OUTPUTS
              NUMBER 1 FOR ORP


4mA adjustment:      20mA adjustment:
  2.00mV               12.00mV




Esc: Escape menu
Enter: Validate the choice
```

☞
Use the △ and ▽ keys to increase and decrease the 4 and 20mA stop values.
Use the ◁ and ▷ keys to select 4mA or 20mA.

☞
Configure the ORP 4-20mA output and press ENTER.
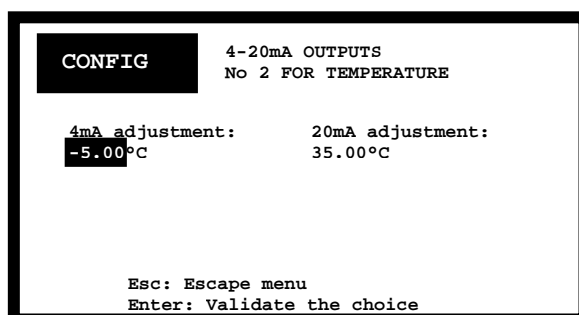
```
CONFIG        4-20mA OUTPUTS
              No 2 FOR TEMPERATURE


4mA adjustment:      20mA adjustment:
-5.00°C              35.00°C




Esc: Escape menu
Enter: Validate the choice
```

☞
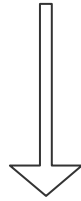Use the △ and ▽ keys to increase and decrease the 4 and 20mA stop values.
Use the ◁ and ▷ keys to select 4mA or 20mA.

☞
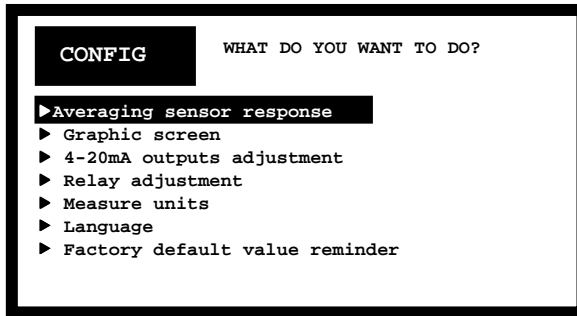Configure the 4-20mA output for temperature and press ENTER.

```
┌──────────────────────────────────────────┐
│ ┌─────────────┐                            │
│ │  CONFIG     │   WHAT DO YOU WANT TO DO?  │
│ └─────────────┘                            │
│ ▶Averaging sensor response                 │
│ ▶ Graphic screen                           │
│ ▶ 4-20mA outputs adjustment                │
│ ▶ Relay adjustment                         │
│ ▶ Measure units                            │
│ ▶ Language                                 │
│ ▶ Factory default value reminder           │
│                                            │
└──────────────────────────────────────────┘
```

Comment: **Both 4-20mA outputs have been configured correctly.**

9.3.2 Calibrating 4-20mA outputs

Calibrating the 4-20mA outputs improves their level of accuracy by taking into account the device load.

```
┌─────────────────────────────────────┐
│  ┌──────────┐   4-20mA OUTPUTS       │
│  │ CONFIG   │                        │
│  └──────────┘                        │
│                                      │
│  ▶ 4-20mA output adjustment          │
│  ┌──────────────────────────────┐    │
│  │▶4-20mA output calibration     │    │
│  └──────────────────────────────┘    │
│                                      │
└─────────────────────────────────────┘
```
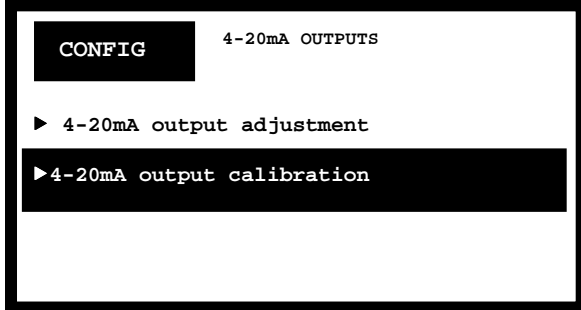
☞ Use the △and▽keys to select the configuration required.

☞ Select the ▶ 4-20mA output calibration menu and press ENTER.

```
┌─────────────────────────────────────┐
│  ┌──────────┐  Procedure:            │
│  │ CONFIG   │  Insert an ammeter on  │
│  └──────────┘  4-20mA outputs.       │
│   ACTEON 2000                        │
│   ┌────┐         ⌐ AMMETER           │
│   │    │        ┌──┐                 │
│   │    │        │▭ │      LOAD        │
│   │ ◇◇ │        └──┘                  │
│   └────┘     ┌────────────┐          │
│   ────────────            ──────      │
│                                      │
│   ENTER: To continue                 │
│   ESC: Escape menu                   │
└─────────────────────────────────────┘
```
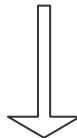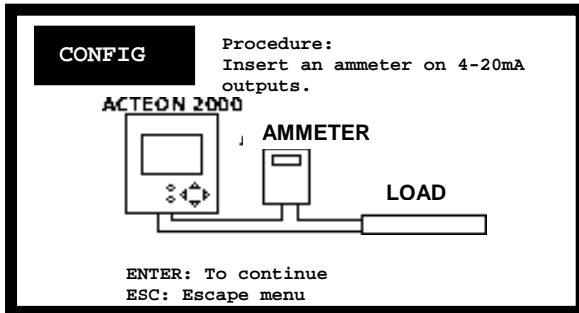
☞ Connect an ammeter to the 4-20mA outputs and press ENTER.

```
┌─────────────────────────────────────┐
│  ┌──────────┐  4-20mA OUTPUTS        │
│  │ CONFIG   │  CURRENT GENERATION OF 4mA│
│  └──────────┘                        │
│                                      │
│  Enter the value     Enter the value read│
│  read on the ORP     on the temperature│
│  4-20mA output       4-20mA output    │
│  ┌──────┐            ┌──────┐         │
│  │ 4.00 │mA          │ 4.00 │mA       │
│  └──────┘            └──────┘         │
│                                      │
│   ESC: Escape menu                   │
│   ENTER: To continue                 │
└─────────────────────────────────────┘
```

☞ Use the △and▽ keys to increase and decrease the 4mA value.
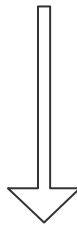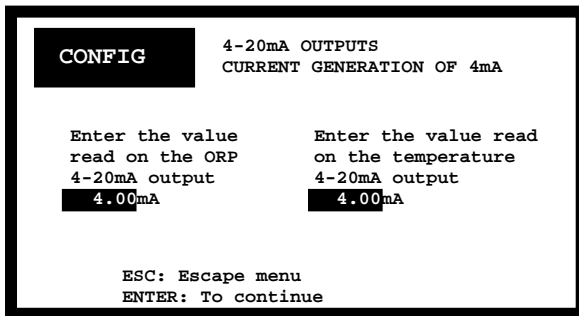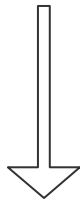
Use the ◁ and ▷ keys to select the ORP 4-20mA output or the temperature 4-20mA output.

☞
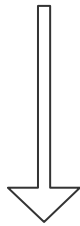
Adjust the 4mA outputs and press ENTER.
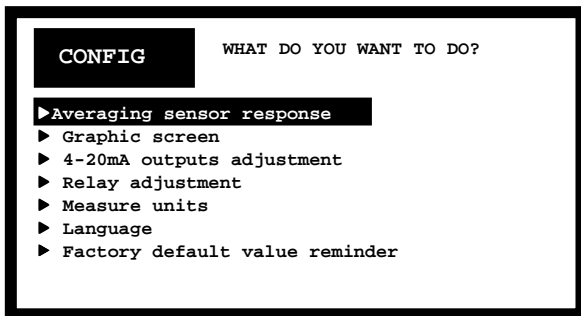
```
CONFIG      4-20mA OUTPUTS
            CURRENT GENERATION OF 20mA


  Enter the value      Enter the value read
  read on the ORP      on the temperature
  4-20mA output        4-20mA output
   20.00mA              20.00mA
```

☞
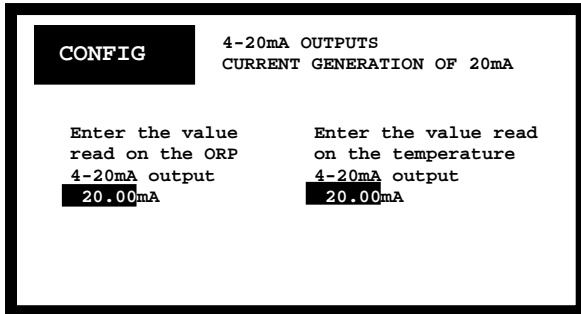
Use the △ and ▽ keys to increase and decrease the 20mA value.

Use the ◁ and ▷ keys to select the ORP 4-20mA output or the temperature 4-20mA output.

☞

Adjust the 20mA outputs and press ENTER.

```
CONFIG      WHAT  DO  YOU  WANT  TO  DO?

▶Averaging sensor response
▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value reminder
```
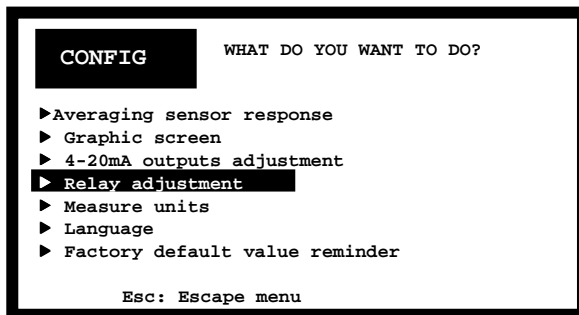
9.4   Adjusting relay outputs

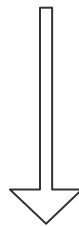The 2 relays can be configured in 2 different modes:
- Mode 1 is used to configure relay R1 on a Redox measurement value and relay R2 on a temperature measurement value.
- Mode 2 is used to configure relays R1 and R2 on two Redox measurement values.

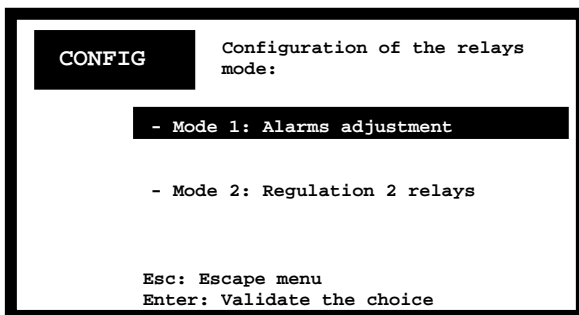The 2 relays can be configured with the following attributes:
- Alarm threshold: Threshold trigger value
- Hysteresis: Hysteresis value for relay switching (prevents relay hunting)
- Triggering direction:
    Above: Means the relay contact is closed above the alarm threshold.
    Below: Means the relay contact is open below the alarm threshold.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
 ▶ Graphic screen
 ▶ 4-20mA outputs adjustment
 ▶ Relay adjustment
 ▶ Measure units
 ▶ Language
 ▶ Factory default value reminder

      Esc: Escape menu
```

☞ Use the △and▽keys to select the configuration required.

☞ Select the ▶ Relay adjustment menu and press ENTER.

```
CONFIG          Configuration of the relays
                mode:

       - Mode 1: Alarms adjustment

        - Mode 2: Regulation 2 relays


      Esc: Escape menu
      Enter: Validate the choice
```

☞ Use the △and▽keys to select the configuration required.

9.4.1 Configuring relays in mode 1:

```
CONFIG          MODE 1: ADJUSTMENT OF THE
                THRESHOLDS AND HYSTERESIS

Rel 1 connected to redox measurement:
Alarm threshold:  50mV Hyst: 10mV
Below the threshold, R1 is on

Rel 2 connected to temperature measurement:
Alarm threshold: 20.01°C Hyst: 0.06°C
Above the threshold, R2 is on

         Esc: Cancel the procedure
         Enter: Validate the choice
```
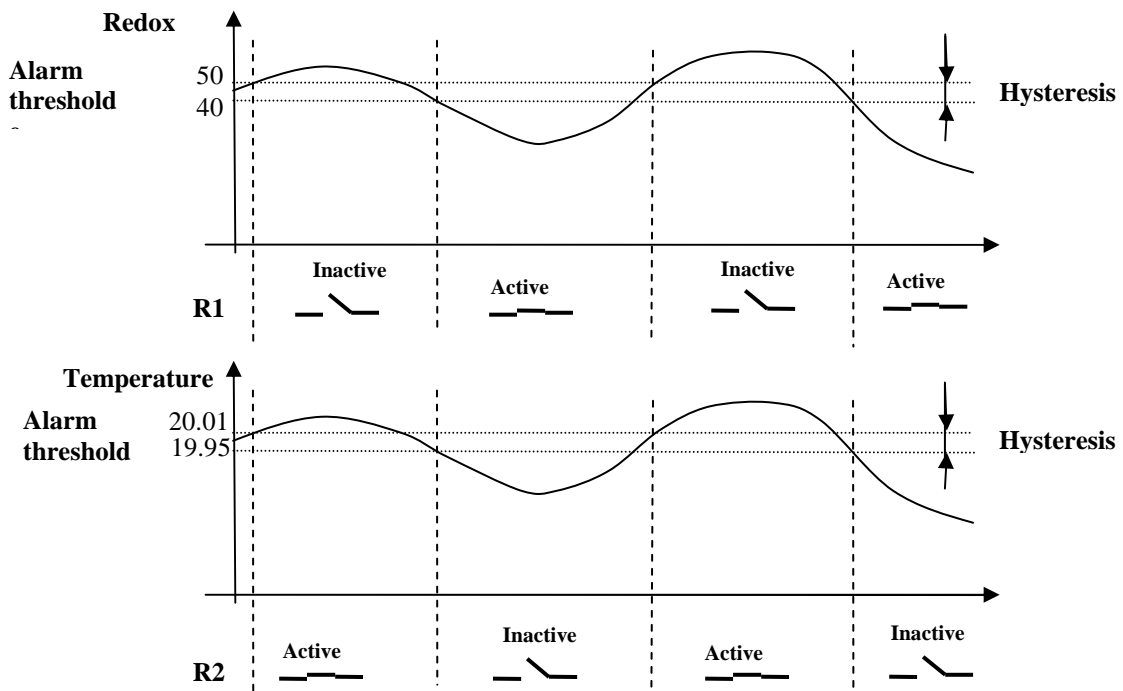
☞
Use the △ and ▽ keys to increase the values.
Use the ◁ and ▷ keys to navigate the selections.

☞ Configure the two relays and press ENTER.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value reminder
```

In the above example, the relays are configured as indicated below:

Redox

Alarm threshold
50
40

Hysteresis

R1   Inactive   Active   Inactive   Active

Temperature

Alarm threshold
20.01
19.95

Hysteresis

R2   Active   Inactive   Active   Inactive

9.4.2 Configuring relays in mode 2:

```
CONFIG          MODE 2: ADJUSTMENT OF THE
                THRESHOLDS AND HYSTERESI

Rel 1 connected to redox measurement:
Alarm threshold: -150mV Hyst: 10mV
Below        hreshold, R1 is on

Rel 2 connected to redox measurement:
Alarm threshold: 50mV Hyst: 10mV
Above the threshold, R2 is on

        Esc: Cancel the procedure
        Enter: Validate the choice
```

☞
Use the △ and ▽ keys to increase the values.
Use the ◁ and ▷ keys to navigate the selections.
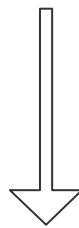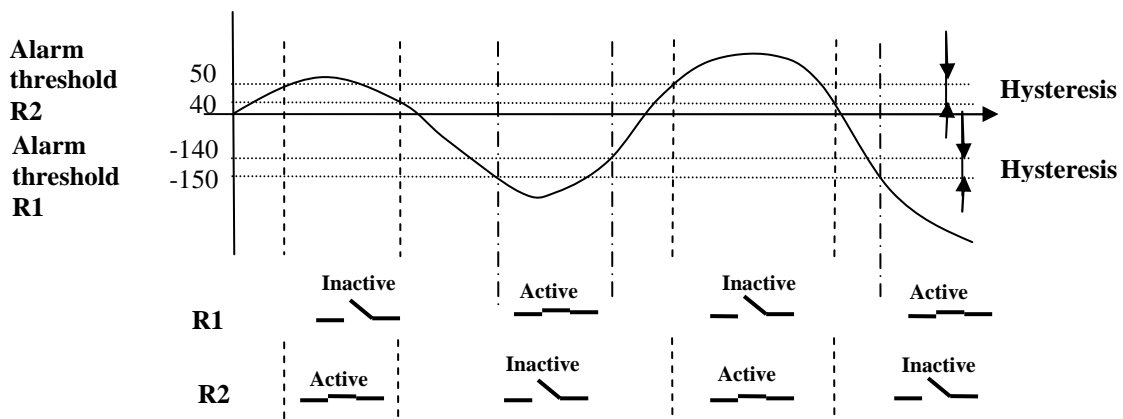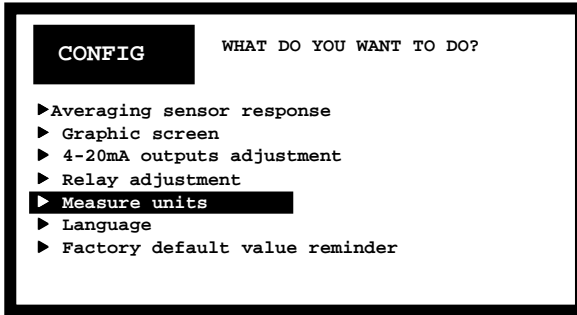
☞
Configure the two relays and press ENTER.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value reminder
```

In the above example, the relays are configured as indicated below:

Alarm threshold R2
Alarm threshold R1

50
40
-140
-150

Hysteresis

Hysteresis

R1
Inactive — Active — Inactive — Active

R2
Active — Inactive — Active — Inactive

9.5 Adjusting measurement units

ACTEON 2020 can be configured in °C and °F for temperature measurement.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value reminder
```

☞ Use the △and▽keys to select
the configuration required.
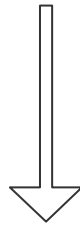
☞ Select the ▶ Measure units menu and press ENTER.

```
CONFIG          UNITES


Temperature:
    ▶  °C: degree Celsius
    ▶  °F: degree Fahrenheit



    Esc: Cancel the procedure
    Enter: Validate the choice
```
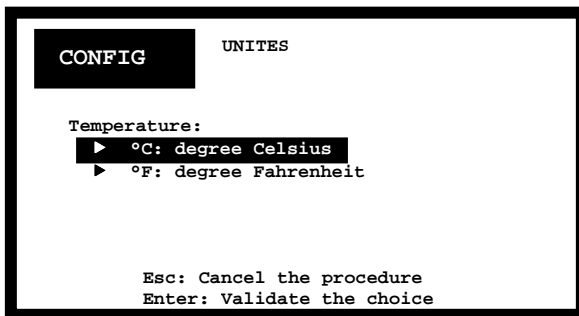
☞ Use the △and▽keys to select the
unit desired.

☞ Select the required measurement unit and press ENTER.

```
CONFIG          WHAT DO YOU WANT TO DO?

▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value reminder
```
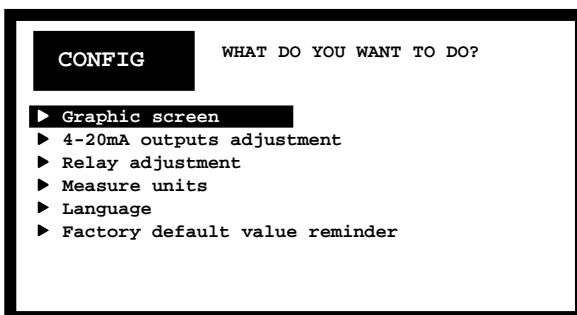
9.6 Setting the language

ACTEON 2020 can be configured in French or English.

```
┌─────────────────────────────────────────┐
│  CONFIG        WHAT DO YOU WANT TO DO?    │
│                                           │
│  ▶Averaging sensor response               │
│  ▶ Graphic screen                         │
│  ▶ 4-20mA outputs adjustment              │
│  ▶ Relay adjustment                       │
│  ▶ Measure units                          │
│  ▶ Language                               │
│  ▶ Factory default value reminder         │
└─────────────────────────────────────────┘
```
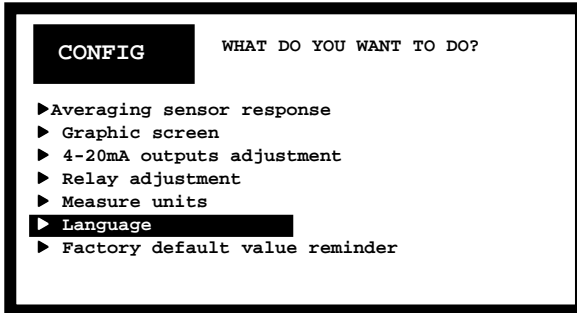
☞
Use the △ and ▽ keys to select the configuration required.

☞ Select the ▶ Language menu and press ENTER.

```
┌─────────────────────────────────────────┐
│  CONFIG        LANGUAGE                    │
│                                           │
│   Select the language:                    │
│                    ▶ French               │
│                    ▶ English              │
│                                           │
│                                           │
│        Esc: Cancel the procedure          │
│        Enter: Validate the choice         │
└─────────────────────────────────────────┘
```
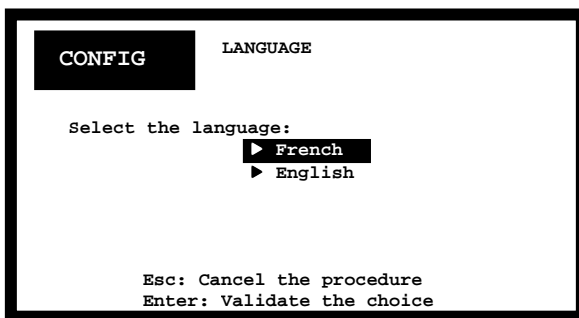
☞
Use the △ and ▽ keys to select the language required.
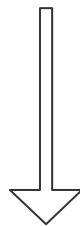
☞ Configure the language and press ENTER.

```
┌─────────────────────────────────────────┐
│  CONFIG        WHAT DO YOU WANT TO DO?     │
│                                           │
│  ▶ Graphic screen                         │
│  ▶ 4-20mA outputs adjustment              │
│  ▶ Relay adjustment                       │
│  ▶ Measure units                          │
│  ▶ Language                               │
│  ▶ Factory default value reminder         │
└─────────────────────────────────────────┘
```
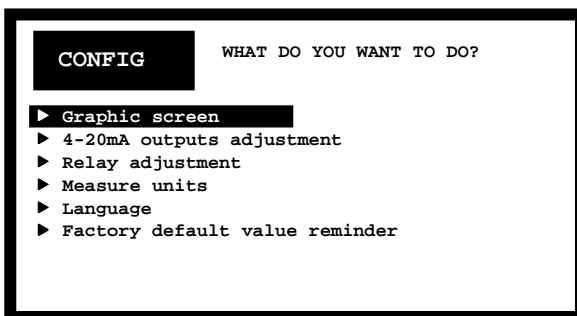
9.7 Resetting factory default values

ACTEON 2020 can be reinitialised with the default parameters:

```
CONFIG          WHAT DO YOU WANT TO DO?

▶Averaging sensor response
▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value
```
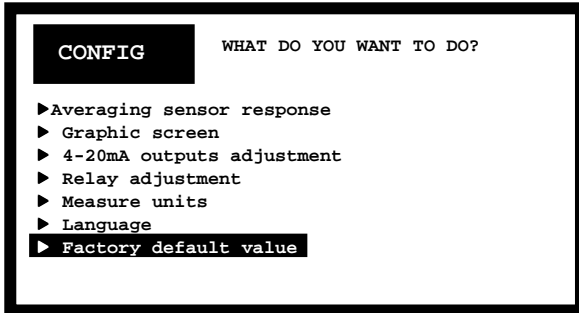
☞ Use the △ and ▽ keys to select the configuration required.
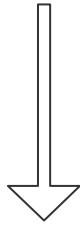
☞ Select the ▶ Factory default value menu and press ENTER.
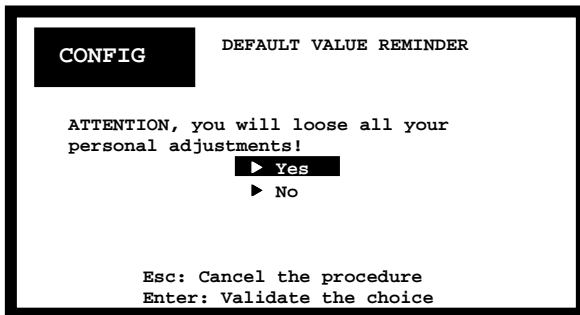
```
CONFIG          DEFAULT VALUE REMINDER

ATTENTION, you will loose all your
personal adjustments!
                  ▶ Yes
                  ▶ No


Esc: Cancel the procedure
Enter: Validate the choice
```

☞ Use the △ and ▽ keys to select the procedure confirmation.

☞ Select ▶ Yes and press ENTER.
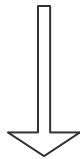
```
CONFIG          WHAT DO YOU WANT TO DO?

▶ Graphic screen
▶ 4-20mA outputs adjustment
▶ Relay adjustment
▶ Measure units
▶ Language
▶ Factory default value reminder
```
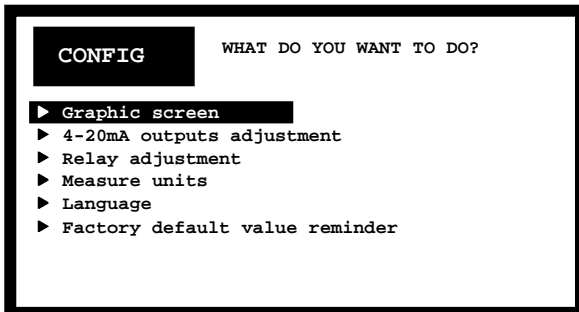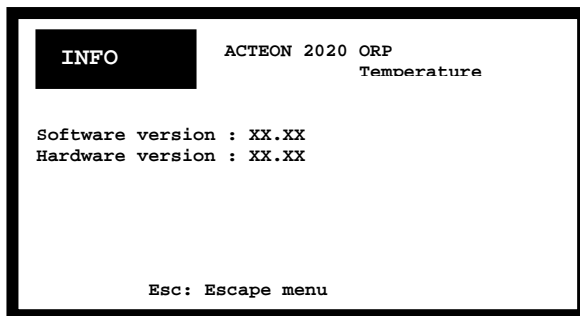
After having reset the factory default parameters, ACTEON 2020 will be configured with the following parameters:

| Sensor response averaging	10 measurements
Time base for trend line display	1 minute
4-20mA output adjustment	Redox output: The 4mA stop is set to -500mV and the 20mA stop is set to 500mV Temp. °C output: The 4mA stop is set to -5°C and the 20mA stop is set to 35°C.
Relay output adjustment	The relays are configured in mode 1: - R1: threshold: 0mV hysteresis: 5mV above the threshold, the R1 relay is active - R2: threshold: 50.00°C; hysteresis: 0.10 above the threshold, the R2 relay is active
Temperature measurement unit	°C
Language	English

10 Information menu

The INFO window provides information on the type and version of the device. The software and hardware versions will be requested when you call PONSEL Technical support or After-sales service.

```
┌──────────────────────────────────────────┐
│ ┌──────────┐   ACTEON 2020 ORP            │
│ │  INFO    │           Temperature        │
│ └──────────┘                              │
│                                           │
│   Software version : XX.XX                │
│   Hardware version : XX.XX                │
│                                           │
│                                           │
│                                           │
│         Esc: Escape menu                  │
│                                           │
└──────────────────────────────────────────┘
```

11 ADJUSTING THE ACTEON 2020 DISPLAY CONTRAST

The LCD screen contrast can be adjusted to modify the display. This adjustment is only possible from the measurement window.
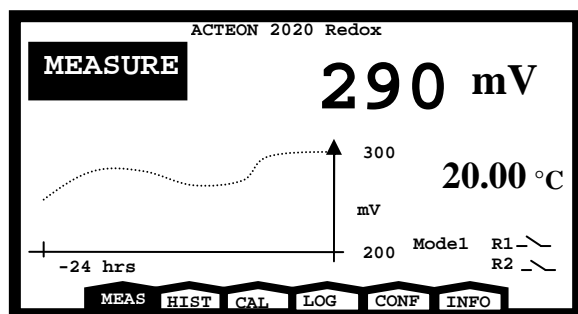
☞ Press the ESC and ▽ keys simultaneously to reduce the contrast.
Press the ESC and △ keys simultaneously to increase the contrast.

12 Technical specifications:

Technical specifications	
Measurement range	Redox potential: -1,000mV to 1,000mV
pH measurement accuracy	±1%
Temperature measurement range	-10.00 to +50.00°C
Temperature measurement accuracy (°C)	±0.1°C
Casing	ABS (IP 65)
Display	Liquid crystal display (LCD) screen
Operating temperature	-25°C to +55°C
Power supply	230/115VAC 60Hz, optional: 12-24VDC Protected by a 250mA fuse
Max power consumption	10VA
4-20mA outputs	2 galvanic isolation outputs (max resistive load 700ohms): - Adjustable from -1,000mV to 1,000mV - Adjustable from 10.00°C to +50.00°C
Relay outputs	2 relays that can be configured in 2 different modes: - Adjustment in alarm mode (1 Redox and 1 temperature (°C) threshold) - Adjustment in adjustment mode (2 Redox thresholds) Interrupting capacity: 3A under 230VAC or 50VDC
Standard	CE

13 Sensors

13.1 REDOX (ORP) sensor

13.1.1 Specifications:

Length of glass section: 65mm
Working range: 0 +/-2,000mV
Stability: < 3mV shift in 24 hours
Temperature of use: -5 to 50°C
Pressure: Max. 5 bars
Cable: anti-static coaxial cable, max. length 10m
Response time: < 20 seconds (for 95% of the response)
Minimum measurement volume: 0.5ml
Reference solution: 4M KCL polysaccharide gel

13.1.2 Description:

Eh sensor (platinum ring):
The 4M KCL polysaccharide gel that the Ag/AgCl bar is steeped in, communicates electrically with the "Redox" medium through reverse junction burn-in.
The ring shaped electrode is suitable for continuous measuring: The KCL permeates outwards through this reverse junction burn-in: The high osmotic pressure generated, increases the protection against contamination: The sensor can operate for up to 4 years.
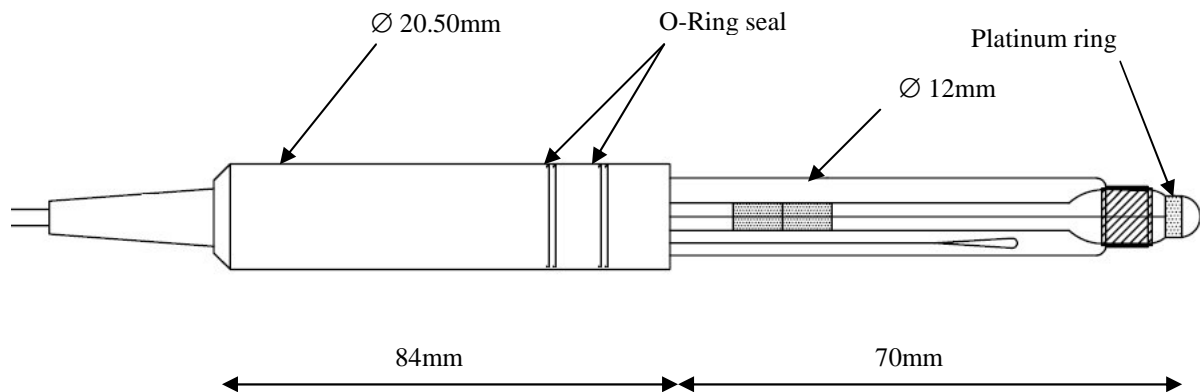

Figure 10 - Redox sensor diagram

13.1.3 Activation:

- Remove the protective casing by pulling and twisting the entire assembly.
- Connect the electrode to the measurement box.
- Dip the electrode in the water to be analysed.

Comment:

    The sensor must be rinsed in deionised water between measurements. Failing this, use a demineralised water.

13.1.4 Maintenance:

- After use, rinse the electrode in demineralised water.
- Return the sensor to the protective casing after having checked that the casing contains several drops of storage solution or if not available, KCL saturated solution.

Do not store the REDOX sensor in the protective casing filled with water (especially very clean water) for long periods of time.
Although the reference solution may have a considerable amount of KCl salt content, it may be depleted and used up prematurely if the salt is distributed in water with a low ionic strength.
If you have no suitable storage solution or saturated KCl solution (a few drops is sufficient in both cases), you can simply moisten the inside of the protective casing before storage so as to maintain an atmosphere conducive to hydration of the glass pH bulb.

13.1.5 Cleaning:

- Rinsing in demineralised water is normally quite adequate.
- If the sensor is dirty, soak it in an Eh cleaning solution (pepsin + HCl) for one hour.
- In the case of extreme poisoning (sulphur, etc.), gently rub the platinum ring with a scotch-brite light duty scrub type sponge for example.
- From time to time, grease the O-Ring seals on the delrin shaft with vaseline. The casing will slide easier and storage water-tightness is improved.

13.2 Temperature sensor

Stainless steel sensor with DELRIN shaft

Working temperature: -20 to 55°C
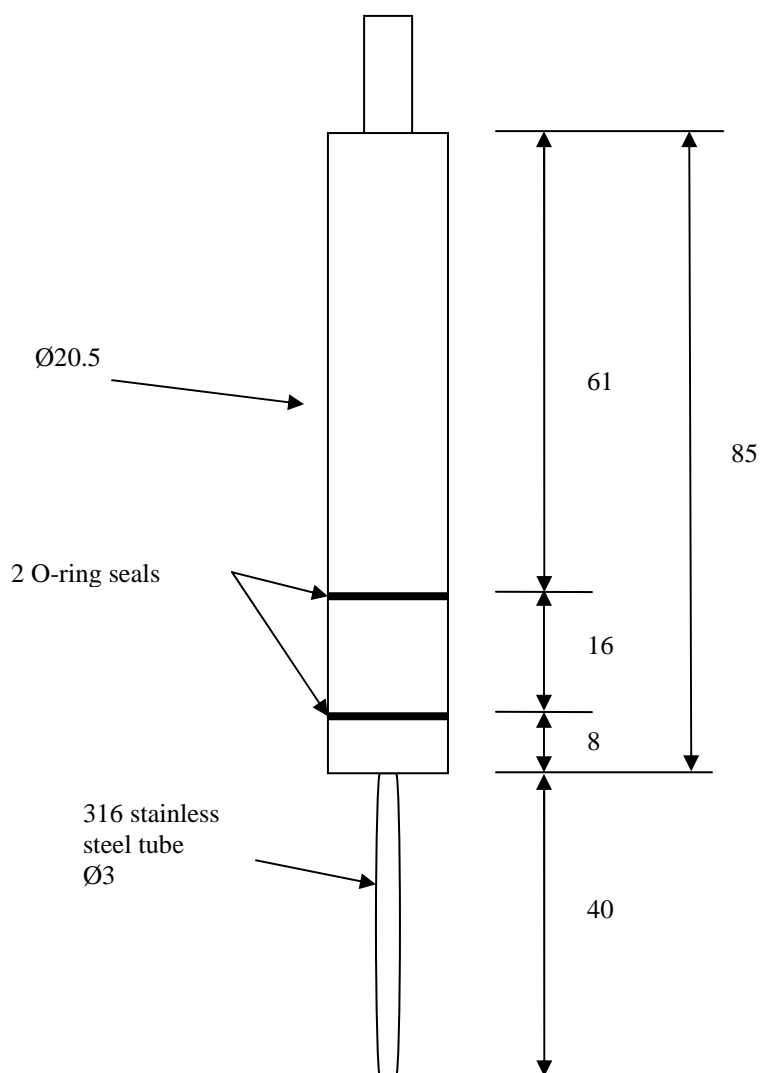**Pressure:** 5 bars max
Cable: stranded
Measurement principle: PT100 (3-wire assembly)

13.2.1 Maintenance:

Rinse the temperature sensor with a water jet every 3 months.

13.2.2 Mechanical diagram

Ø20.5

2 O-ring seals

316 stainless
steel tube
Ø3

61

85

16

8

40

14 Questions & Answers

14.1 Display screen troubleshooting

The LCD screen is too dark

Press ESC then press the ▽ key several times to reduce the contrast.

Strange characters are displayed on the LCD screen

RESET the microcontroller and follow the instructions below to reinitialise the LCD screen:

1) Open the ACTEON 2000 transmitter box.

2) Insert a LEAD or PLASTIC PENCIL in the hole located on the upper part of the box. DO NOT USE SCREWDRIVERS OR METAL INSTRUMENTS.
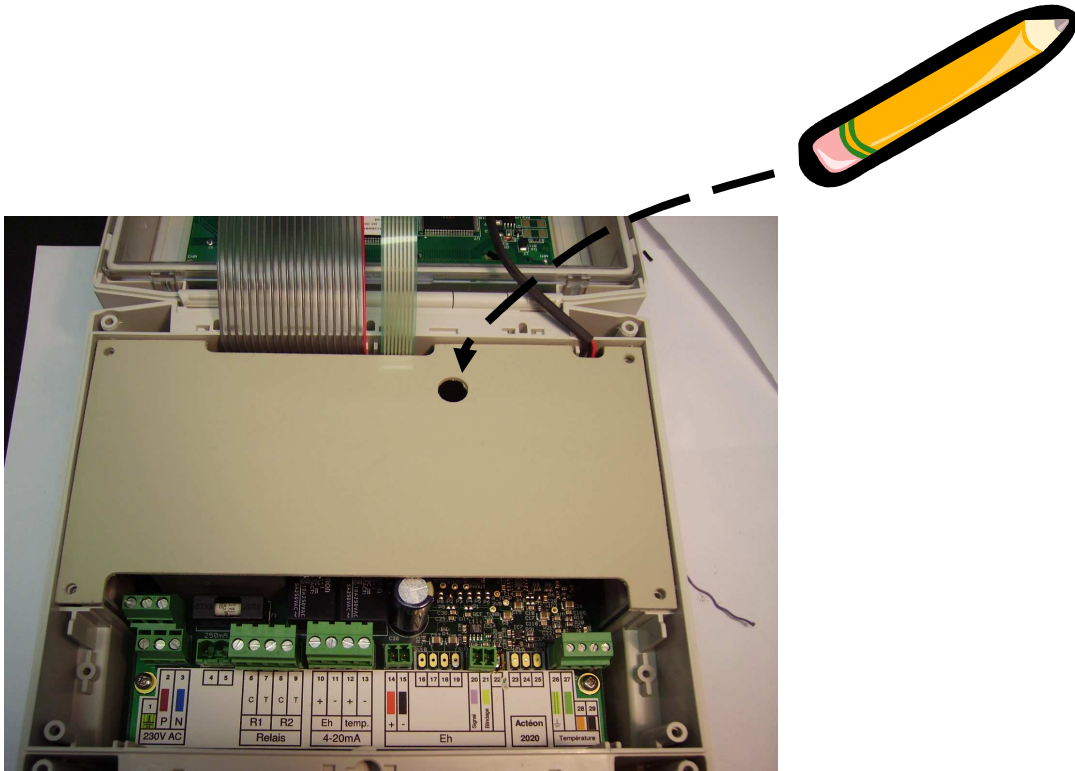

Figure 11 - Resetting ACTEON 2000

3) Check that the display screen restarts.

Comment:

Your settings and calibrations are not lost but saved on the EEPROM.

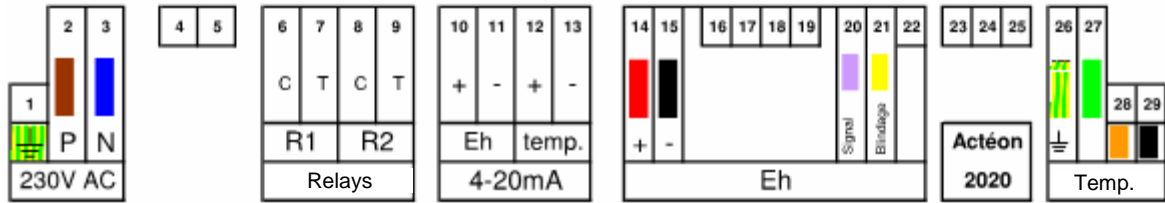## 15 Appendix:

Wiring diagram for the ACTEON 2000 terminal:

Figure 12 - Transmitter wiring terminal layout

If the temperature sensor is not connected, terminal points 28 and 29 must be connected to the shunt (supplied with the terminal).
If the temperature sensor is connected, the shunt between terminal points 28 and 29 must be removed.

Before shutting the ACTEON cover, check that the cover sealing joint is correctly positioned in its groove.

After sales service:

PONSEL MESURE

AFTER SALES SERVICE

35 rue Michel MARION

56850 CAUDAN - FRANCE

sav@ponsel.fr

TEL.: +33 (0)2 97 89 25 30

FAX: +33 (0)2 97 76 55 72

Serial number: