

# TEPEX

The straight burden checker

## INSTRUCTION MANUAL



## DISTANCEMETER TEPEX 2S

CODA TECHNOLOGIES - 327 voie romaine - 24100 LEMBRAS [France] - ☎ +33 (0)5 53 22 82 36

[www.coda.tepex.eu](http://www.coda.tepex.eu)

# **TABLE OF CONTENTS**

	Page
I - PRESENTATION OF THE EQUIPMENT .....	1
II - TECHNICAL SPECIFICATIONS .....	2
III - THE EMITTER PROBE .....	3
IV - THE READING BOX.....	4
V - THE LASER TELEMETER .....	4
VI - TAKING A MEASURE .....	5
VII - INSTRUCTIONS	
• A - CONTROL KEYS .....	5
• B - WORKING SCREENS.....	7
• C - CONNECTION TO PC.....	10
APPENDIX	
• HOW TO CHECK THAT THE TEPEX 2S IS WORKING PROPERLY .....	12

# I - PRESENTATION OF THE EQUIPEMENT

The **TEPEX 2S** is designed to control the position of mine holes before charging the explosive ; it allows a direct measure of the bench thickness : distance separating the bore hole from the frontal face.

The kit is made up (see *fig. 1*) of a transmitter probe introduced into the bore hole and a reading box held, at distance, in front of the frontal face.

The reading box integrates a distancemeter to measurement traversing.

A laser telemeter comes in addition.

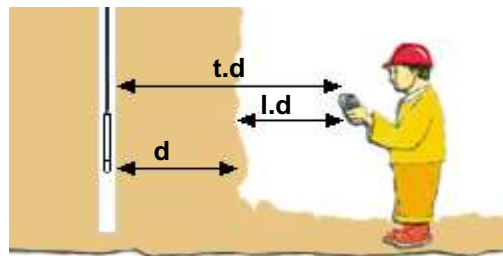


Fig. 1 - Reading box held vertically, operator elbows to body

- The reading box, associated with the emitting probe, is used to measure the total distance - **t.d** (distance separating the probe from the reading box) ;
- The laser telemeter measure the distance - **l.d** - separating the rock massif from the box.

The measurement - **d** - from the bench results in the difference between the two measures.

The **TEPEX 2S** is appropriate for quarries and civil engineering.

The measurement range stretches from 2,5 m to 15 m.

This measurement is expressed in meters (m) and by centimeters (cm) up to 6 m, by 2 cm from 6 to 8 m, by 5 cm from 8 to 10 m and by 10 cm over and above 10 m.

The centimeters display doesn't represent the precision of the measurement, but makes the search easier for the minimum thickness by indicating the direction of the variation.

The accuracy of the measurement stays inferior to  $\pm 5\%$  of the scale total.

**NOTE:** **TEPEX 2S** is not affected by a certification and a labeling under the legal metrology : it enter not into categories of instruments regulated by decree n° 2001-387 of 3 May 2001 or in the category of material measures or dimensional measuring instruments mentioned in annexes to directive 2004/22/EC of 31/03/2004 on measuring instruments.

The **TEPEX 2S** is made up of the following elements :

- a transport case,
- a measuring box,
- a probe,
- a laser telemeter to measure the distance separating the rock massif from the operator,
- a graduated rope.
- a sound device to control the good working of the probe

## II - TECHNICAL SPECIFICATIONS

### THE PROBE :

**Diametre: 50 mm - Length : 450 mm - Weight : 1,2 kg**

- Body made of polymer. Equipped with a ring allowing for it to be attached.
- Around 20 hours of autonomy in real live situation.
- Transmission of information “low battery” to the reading box
- Waterproof under 20 m of water.
- Use of accus forbidden
- Verify the right shutting of the stainless cap before use.
- Not forget to take off the battery after use.

### THE READING BOX :

**Dimensions : 210 x 105 x 55 mm – Weight : 0,6 kg.**

- Box made of 3mm thick polycarbonate, protected against dust and water projections in all directions.
- Inclined screen adapted to the vertical hold of the box.
- Automatic stopping.
- USB liaison for transmission of measures to PC.

### THE ELECTRIC POWER SUPPLY :

- The probe and the reading box are both supplied by a 9V alkaline battery, 6LR61. Use of accus forbidden.

### THE LIMITS OF USE :

The **TEPEX 2S** use an electromagnetic signal which can be disrupted by the material being gone through or the type of environment.

The disruption remains negligible as long as the rock contains little or no metallic mineral elements and the level of interference remains that of a quarry blasting zone.

## WARNING

The **TEPEX 2S** is designed to control the drilling which takes place before the introduction of the explosive charge.

Under no circumstances can the **TEPEX 2S** be used as an instrument associated with the handling of explosives.

The **TEPEX 2S** is built to function from -15°C to +35°C. Use in extreme temperatures provokes a surcharge of consumption above normal.

The **TEPEX 2S** is an instrument of measure which must be conserved and used as such. In particular, excessive force applied to the probe, dropped too quickly in the hole, or a fall, can provoke the break up of the aerial.

In case of doubt of normal usage, check the accuracy of the measurements with the help of a graduated ribbon held between the probe and the box, held vertically at about 1,5 m from the ground. A difference of measurement superior  $\pm 5\%$  indicates a disfunctionment of the **TEPEX 2S**.

Choose a testing ground outside of the concrete flag stone and away from possible parasites, for example, computers and their screens.

## I III - THE EMITTER PROBE

The probe is realized in polymer and is equipped with a ring that allows the attachment.

A screw cap provides access to the housing of the 9 volt battery.

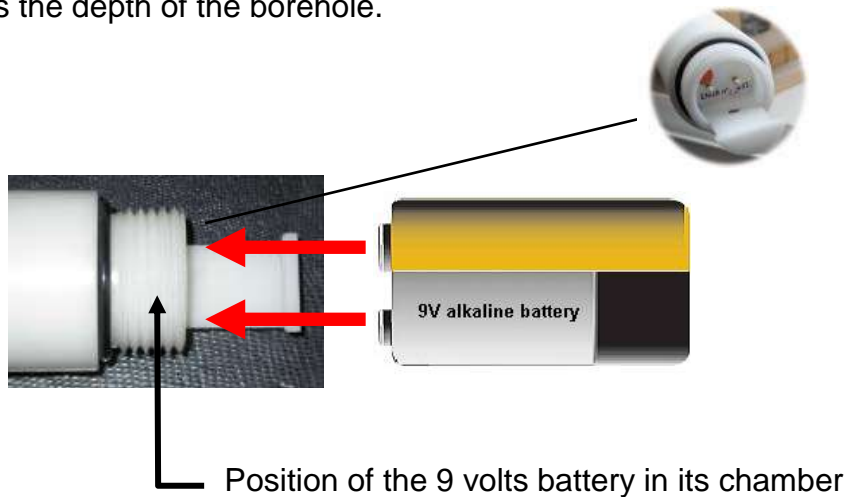
To ensure a maximum sealing of the battery housing, take care that the seal surface stays clean and in the right position.

The cap must be tightened correctly.

The probe's power supply cuts automatically when the probe is in horizontal position or when the voltage is insufficient.

The information « low battery » is transmitted to the reading box.

The rope provided is graduated every meter from the bottom of the probe. It measures the depth of the borehole.



### Advice of use :

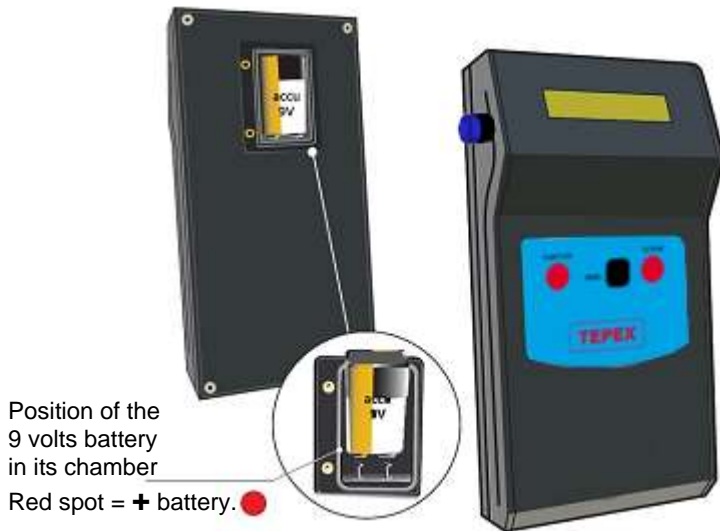
*The user can introduce the bore in a sheath to allow its extraction in case of jamming in a borehole. So, as the bore is jamed the user can take it out of the sheath by pulling the fixing rope.*

*The tube can be composed of a standard Post sheath diameter 60 mm joined to the bore. The 3 grooves allow to tighten differently according to the real diameter of the sheath.*



## IV - THE READING BOX

It is equipped with an LCD display (2 lines with 16 characters) and three keys (**see diagram below**).



Position of the 9 volts battery in its chamber

Red spot = + battery. ●

The **trap door** of the battery chamber is situated at the back of measuring box.

To open, unscrew the two screws with the help of a flat screwdriver.

The electric power supply of the reading box is guaranteed by a 9 volts battery.

The reading box contains an autonomy of around 4 hours on continual use.

A screwdriver is supplied with the unit.



**Don't throw the used batteries. Keep them and return them in the collection sites.**



## V - THE LA

The laser telemeter measures the distance between the rock mass and the reading box. A function subtracts a fixed distance for 5m to the measured distance between the reading box and the probe.

The use of a laser telemeter allows a safe distance between the operator and the coalface.

A visible laser beam identifies the target point. The scope is 30 m with an accuracy of 2 mm.



For all information, see the instructions in the description of the laser telemeter.

# VI - TAKING A MEASURE

## IMPLEMENTATION

### A : MEASURE



- 1** Be stand to 5 m from the frontal face. Control using the laser telemeter
- 2** Slowly lower the probe into the drill hole.
- 3** Search the weakest distance.
- 4** To confirm the position of the probe make lateral movements.

### B : VERIFY

- a** : the thickness of the blasting burden
- b** : the entrance of the drill hole

### C : DECIDE

- Validate the firing plan - Adjust the explosive charge.
- Drill another hole.

# VII - INSTRUCTIONS

## A - CONTROL KEYS

### ● FUNCTION = measurement

Allows the startup and shutdown of the reading box by a long press. In working mode, a short press allows to enter the minimum distance. An another short press clears the distance for a new measurement.

### The **measurement** mode allows

- to memorize the minimum distance and to validate it by a short press on **MEMO**,
- to activate/deactivate the **loupe** mode using the screen of localization.

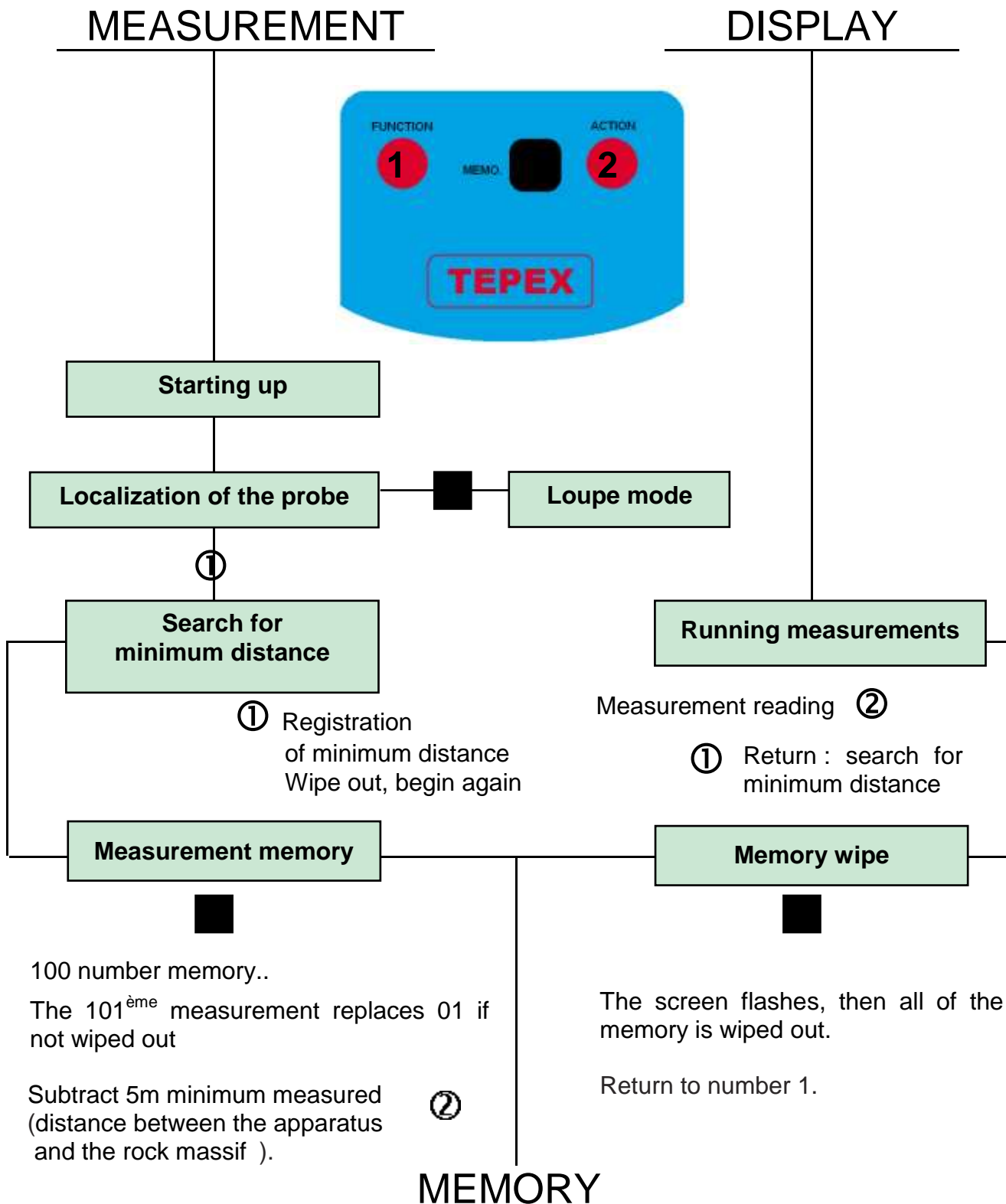


- **ACTION = display**

Allows the reading of the previous measurement which figures by pressing successively (Back out of the display by a short press on **FUNCTION**) and the subtracting the distance between the apparatus and the rock massif after pressing **MEMO** in search of minimum distance.

The **display mode** allows to wipe out all of the memorized data by an extended press on **MEMO** as long as the screen flashes.

- **MEMO. = mémoire**

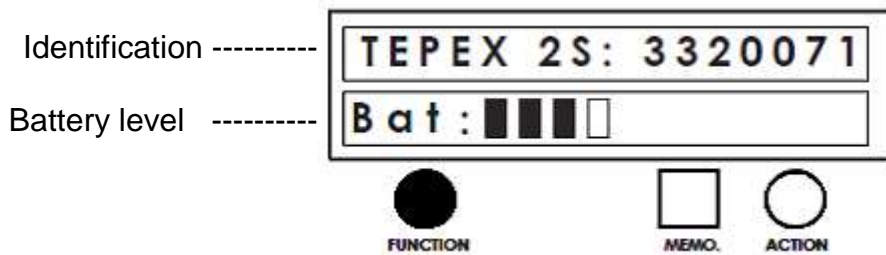




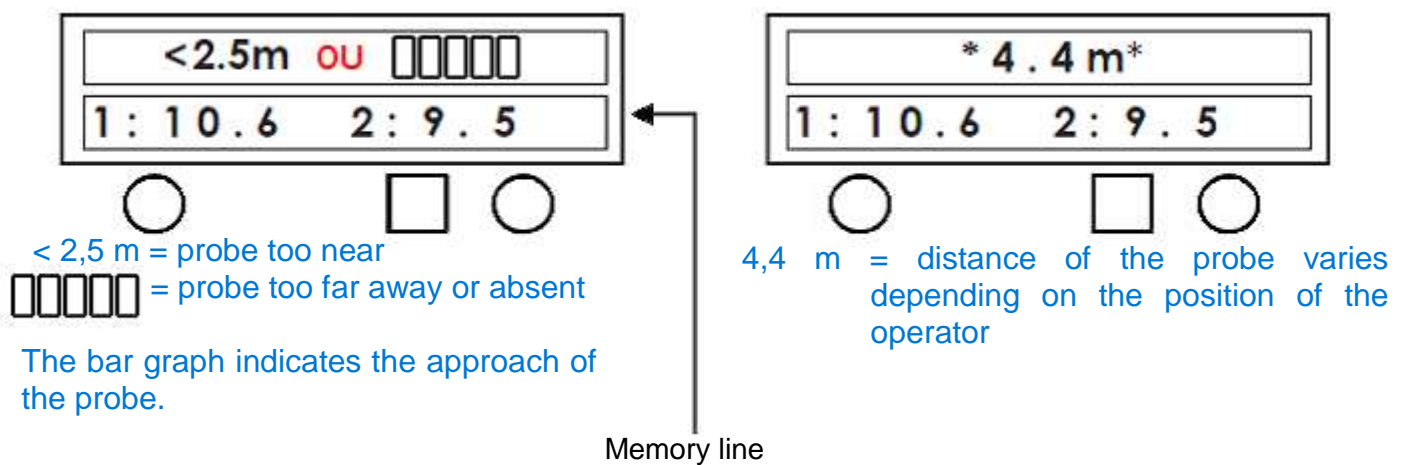
# B - WORKING SCREENS

## 1 - Working measurement

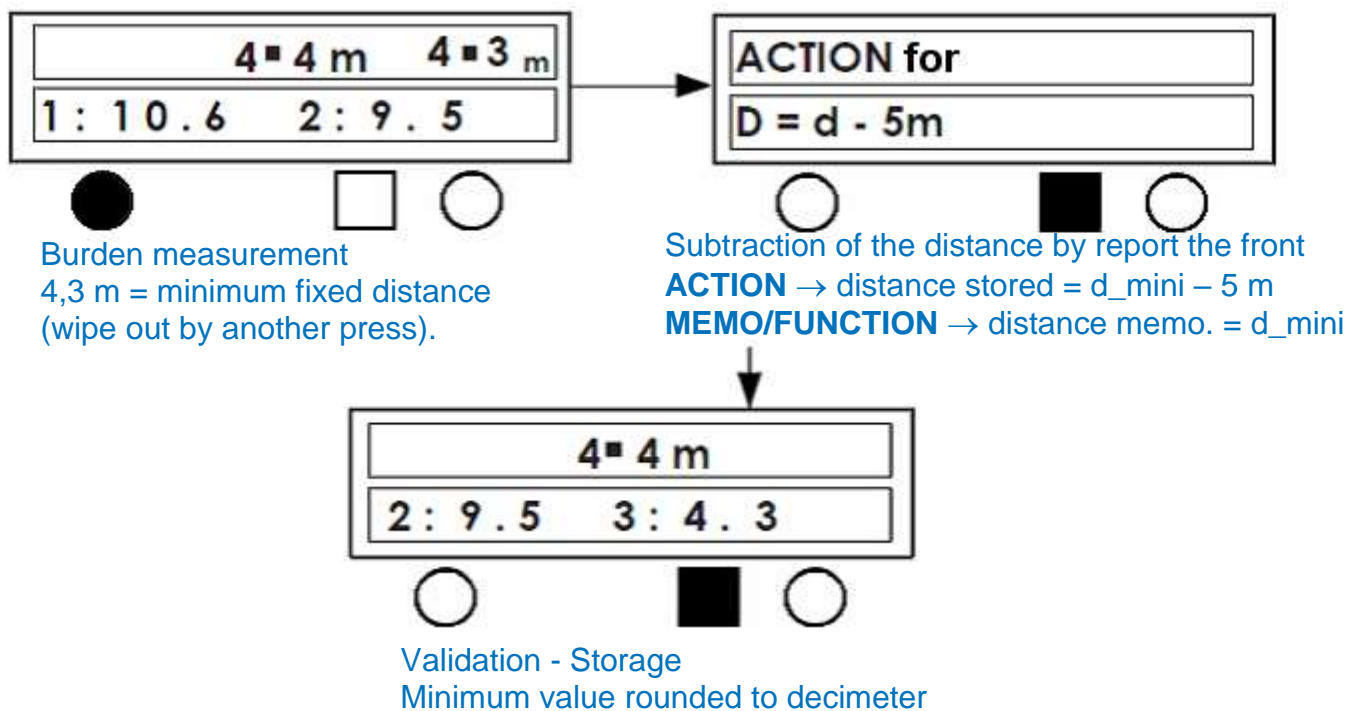
### START UP



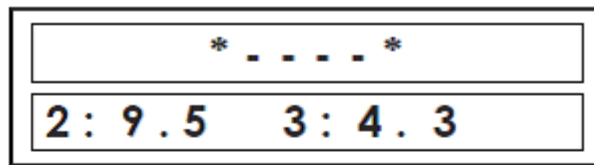
### LOCALIZATION



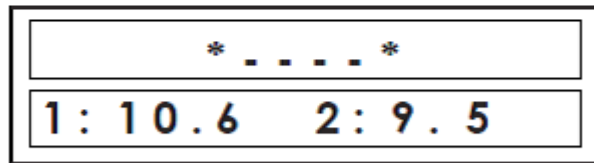
### MEASUREMENT



## READING

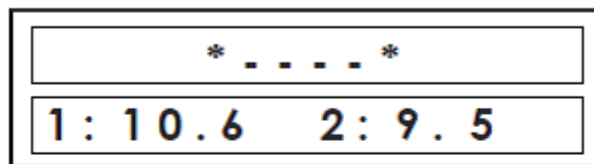


Enter in memory display  
(Out by pressing on FUNCTION)

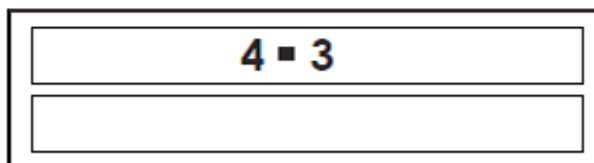


Running of memorized measurements

## WIPE OUT



Completing memory wipe out.  
Flashing screen.



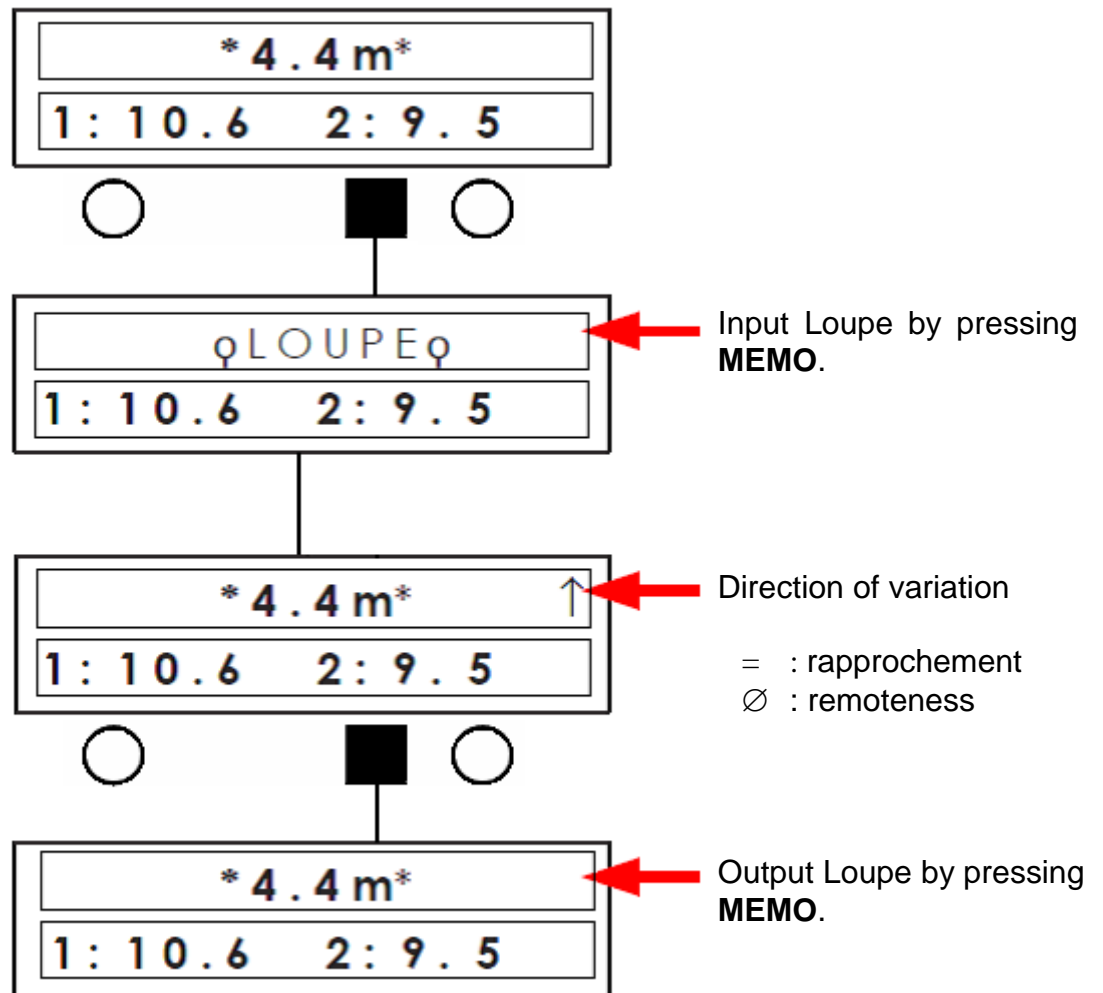
Memory wiped out  
Return to measurement

### 3 - Loupe - Precise localization

The Loupe mode allows finely locate the probe in difficult cases. The sensitivity of the reading box is increased at the signal of the probe.

This function allows only the location of the probe. The value is not stored.

## LOCALIZATION



## C - Connection to PC

### 1- connection reading box-PC



The connection reading box is read by any USB port on a PC running Windows.

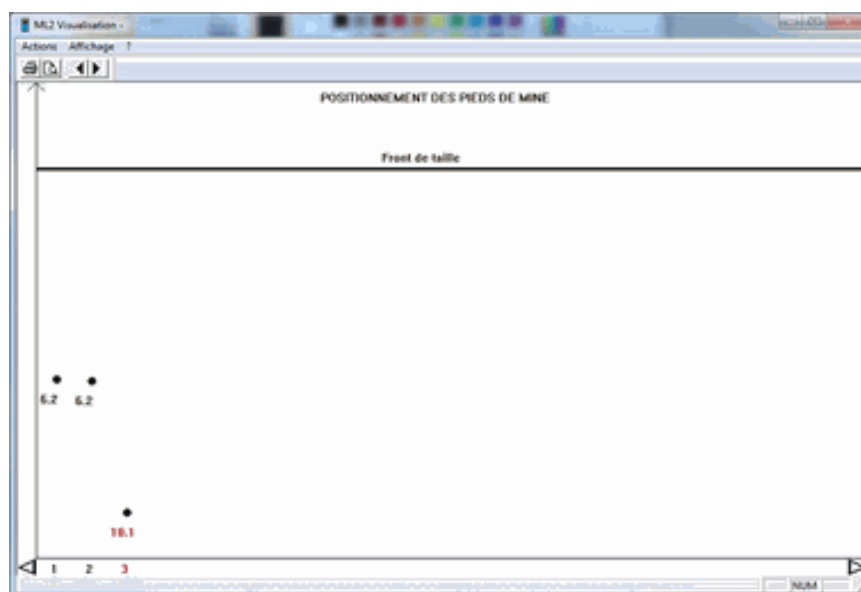
The USB connection is used to communicate with the viewer software or configuration [2S.exe].

The installer is available on the website <https://www.coda.tepex.eu/> in the heading « DISTANCEMETER ».

### 2 - Editing software plug control - drilling

The software « Visualisation » can extract the values recorded in the reading box. The installer is available for download on the site <https://www.coda.tepex.eu/> in the heading « DISTANCEMETER ».

This software allows to edit a plug « control - drilling ».



Documentation on the site



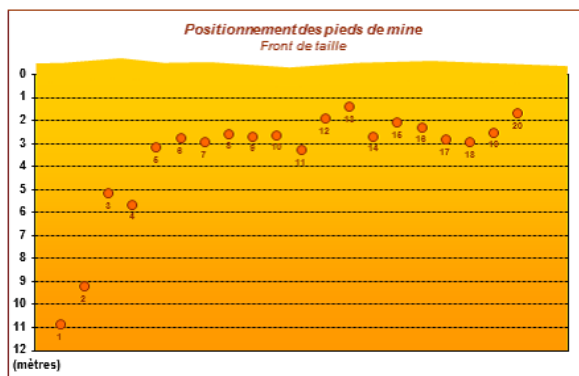
### CONTRÔLE FORATION RELEVÉ TEPEX 2S

**Lieu du contrôle**  
XXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXX

**Date du contrôle**  
9 mai 2014

**Opérateur**  
XXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXX

Numéro	Distance	Observations
1	10,8	
2	9,2	
3	5,2	
4	5,6	
5	3,1	
6	2,7	
7	2,9	
8	2,5	
9	2,7	
10	2,6	
11	3,3	
12	1,9	
13	1,4	
14	2,7	
15	2,1	
16	2,3	
17	2,8	
18	2,9	
19	2,5	
20	1,7	



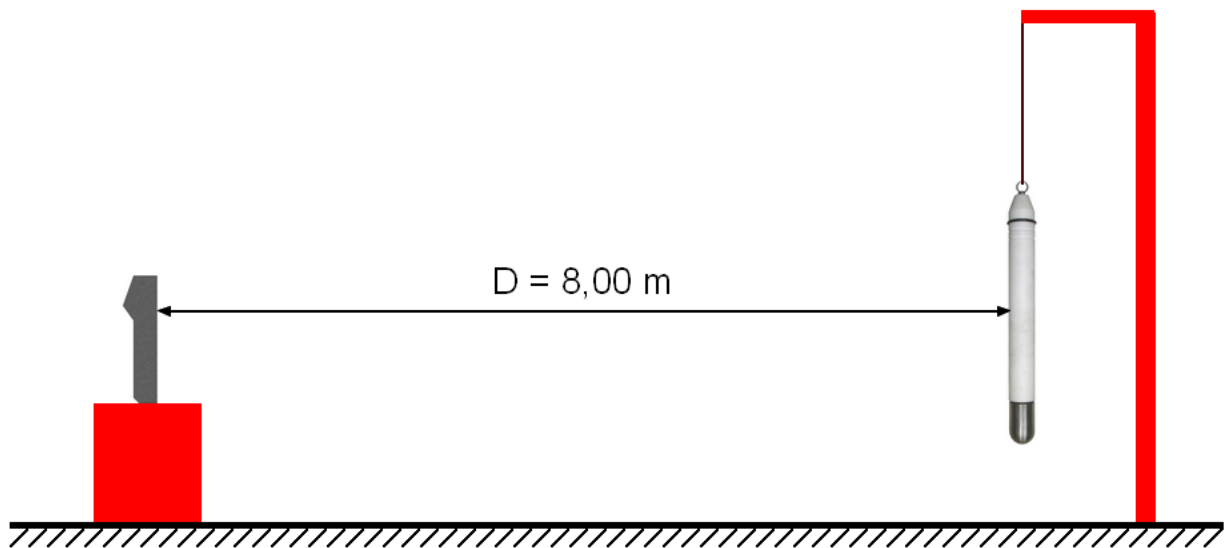
XXXXXXXXXXXXXXXXXXXX, le 9 mai 2014

Plug « control - drilling »



## HOW TO CHECK THAT THE TEPEX 2S IS WORKING PROPERLY

- The distance **D** between the probe and the reading box must be 8.00 metres. The probe must be vertical as well as the reading box. They must be positioned at the same height.
- Put new batteries in the reading box and in the probe.
- The test must be carried out on natural horizontal ground free of magnetic or electromagnetic disturbance.



~~Ferrous slab, soil containing ferrite,  
presence of bulky metal objects...~~