USER MANUAL

SOIL DENSITY METER

PCE-SCD 50

ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

CONTENTS

I. Introduction 3

II. Operation of EDG 5

EDG Main 5

Calibration MODE 5

Project Test 8

Export Data 12

System Settings 13

III. Notice 13

IV. Watch for suspicious readings 14

I.INTRODUCTION

Features

EDG utilizes advanced electromagnetic technology to obtain accurate soil density readings. Primary features:

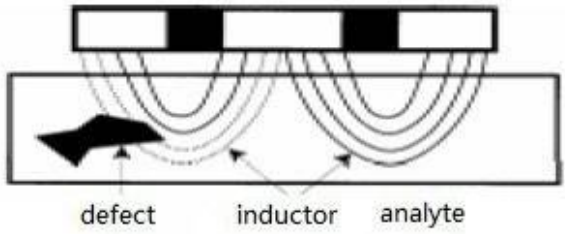
- No radioactive materials or special license required
- Light weight and easy to use
- 12 hours of portable operation
- Measures density in common units (g/cm3)
- Measures for soil temperature
- Stores 4200 readings on internal Data Logger
- Optional download to computer
- GPS inside m,

How does it work?

The density of soil is directly proportional to the measured dielectric constant of the material. EDG uses electrical waves to measure dielectric constant using an innovative, toroidal electrical sensing field established by the sensing plate.

The electronics in the EDG convert the field signals into material density readings and displays the results. Once calibrated, direct density readings can be consistently obtained.

As shown below:



PACKING LIST

The EDG shipment package includes the items listed below. Please contact your dealer if any part missing.

- One USB flash disk
- One EDG unit
- One battery charger (220V/50Hz) with USB cable
- User manual, warranty card

CHARGING THE BATTERY

Charging the Battery
Note: Be sure to use the original charger for charging.
EDG is powered by lithium batteries which weigh less and smaller.
Under normal operation, EDG can operate in excess of 12 hours at full charge. The internal 3.7 volt battery is designed to be recharged in approximately 10 hours, using the charger with 5V output.

Warning!

Attempting to recharge the unit in any other way than with the recharger supplied with the unit can result in damage to the unit and can present a safety hazard. Use of any charging means other than the recharger supplied with the unit will void the unit's warranty.

To charge the unit, proceed as follows:

- Turn EDG off
- Connect the charger to the charger connector
- Plug the charger into a standard AC outlet
- When complete, unplug the charger from the power source first then from the connector.

II. OPERATION OF EDG

Starting EDG for the first time. Turn EDG on by flipping the POWER switch on the left. The internal buzzer emits a beep sound. Then the unit begins self-test and starts. After a few seconds the display will show the MAIN menu.

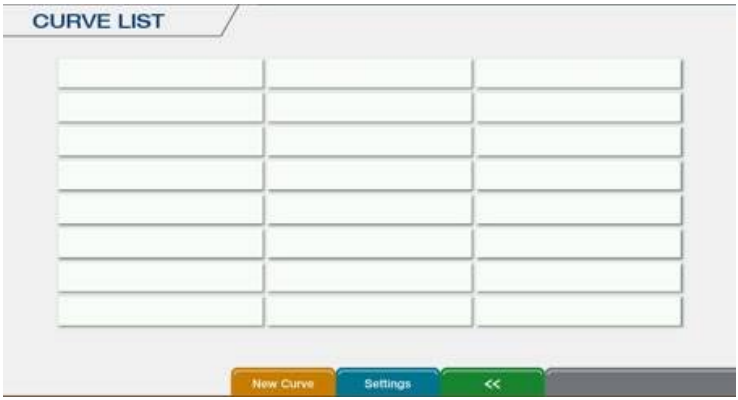
EDG MAIN

After boot up, the screen displays as follows:



CALIBRATION MODE

In the EDG MAIN menu, click the button „Calibration Mode“, the screen displays as follows



New Curve

Click the button „New Curve“ and input a name:

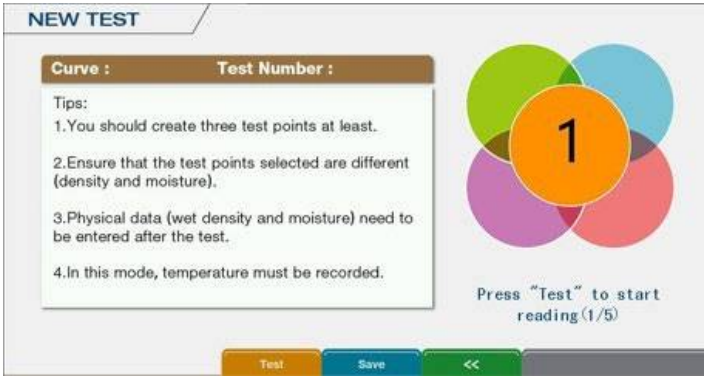




New Test Point
In the „Curve List“ menu, button „Settings“ has two kinds of state. You can amendment the curve and calibration again by clicking the name of a curve when it shows „Settings“. Menu as follows:



Press „New Point“, Menu as follows:



Obtain readings at the positions as shown below.



Draw a circle around the sensor's outer edge of EDG and take readings in the center (1) and at 2 o'clock, 5 o'clock, 8 o'clock and 11 o'clock positions. After reading number 5 is complete, the average of the 5 readings will be stored.

Change the position to create at least three points.

Input physical data



In the menu „Curve Settings", input the wet density and moisture by pressing „Modify".



To calculate compactness and moisture content, input the maximum dry density and optimum moisture content. Then a curve is calibrated. The thickness is only used to record the information of the soil.

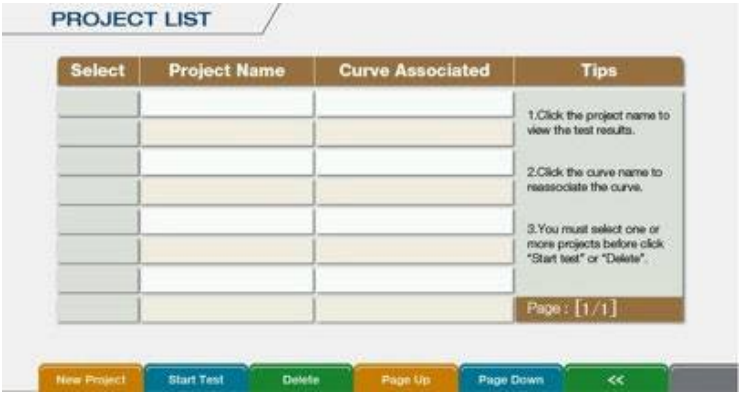
Delete a test point

In the „Curve Settings" menu, you can delete one or more curves which is selected by pressing „Delete" button.

Fit

You should make three tests at least, then press „Fit" to fit the curve.
Delete a curve
In the „Curve List" menu, you can delete one or more curves which is selected when the button „Settings" turn to „Delete".

PROJECT TEST



New Project



Input a name of the new project, then click “Save”. You can see as follows:



Associate with a curve

Click „Not Associate“ area, it shows as follows:



Click the button „curve1“, it will be associated with the current project.



Start Test

Select a project, and click the button „Start Test“, test menu will be show:



EDG can be used in three different measurement or run modes, respectively:

- Continuous Reading Mode
- Single Reading Mode
- Average Reading Mode

Continuous Reading Mode:

Continuous reading mode is used to provide instantaneous density measurements for quality control purposes. When in continuous mode, EDG will display a screen and update values of density, temperature and compaction continuously.

Note: The data cannot be saved in this mode.

Single Reading Mode:

Single reading mode is used to provide density measurement for one specific point, and conduct single reading each time.

In the mode, click “Test” to start a reading. The unit begins to read and display data from the probe four seconds later after pressing “Test”.

Note: Any touch to the unit by hand or other metal objects is prohibited once the countdown of reading begins, otherwise will distort the reading seriously.

The data gained can be stored on internal data logger. Once a single reading is completed, press „Save“ to save measured data.

Note: the unit allows maximum storage of data for 4200 points. You will be prompted to delete data, if exceed this number.

Average Reading Mode:

As shown below:



Draw a circle around the sensor’s outer edge of EDG and take readings in the center (1) and at 2 o‘clock, 5 o‘clock, 8 o‘clock and 11 o’clock positions. After reading number 5 is complete, calculate the average of the 5 readings. Press key „Save“ to save the data after the measurement is completed.

Delete a project

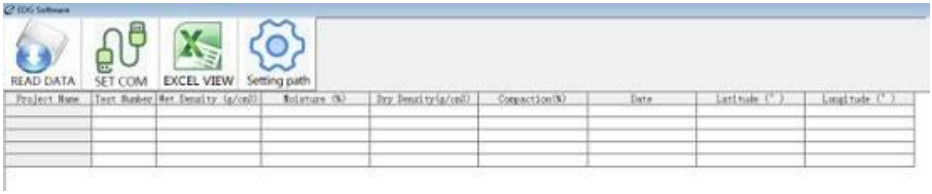
Select one or more projects, then click „Delete“.

Data Management

In the project List menu, click the area of project names. You will enter the menu which you can view results and delete test points.

EXPORT DATA

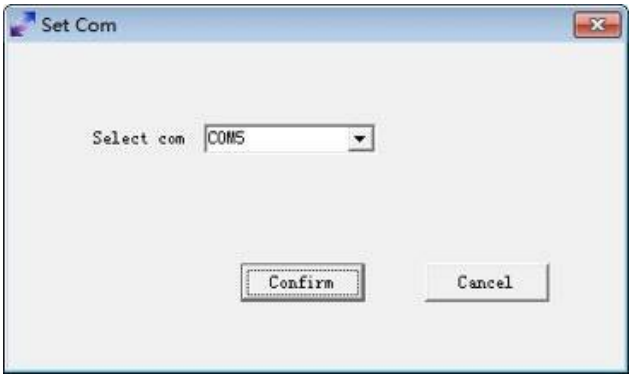
In the EDG MAIN menu, connect EDG to a PC using the cable. Open EDG software on your computer, you can export the data to your computer.



After EDG and computer connected, we should check the com of the computer as follows:

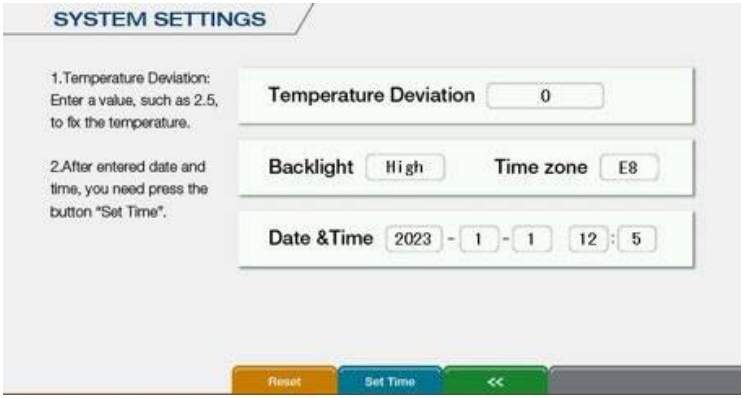


Then press „SET COM“ and select the com named „USB-SERIAL CH340“.



Then press „READ DATA“, data is showing on the computer after a few seconds. We can check the data with office software by pressing „EXCEL VIEW“.

SYSTEM SETTINGS



In this menu, you can set temperature deviation, time and backlight.

III. NOTICE(ROUTINE OPERATIONS)

1. Once calibrated the EDG is ready to be used at each job site and asphalt mix. It is suggested that 5 readings be taken at each site following the average reading pattern.

2. Keep EDG bottom surface clean and dry. For accurate readings, the EDG should have a clean, dry and smooth interface with the mat. Therefore, you should wipe the EDG probe surface dry and clean after each reading.

3. Before placing the EDG on the mat, you should check the surface of the mat to make sure there is no loose material on the surface. If a buildup of asphalt begins to form on the probe surface, clean the surface with WD-40.

4. Choose a flat measuring point. While the EDG contains moisture correction algorithms, the most accurate readings will be obtained if areas with low moisture levels are measured. If a measurement area has noticeable surface moisture, you should either wait for the moisture to evaporate or remove the moisture with an absorbent cloth.

IV. WATCH FOR SUSPICIOUS READINGS

If a reading seems unusual or suspicious, check for possible measurement errors (dirty surface, wet surface, low battery voltage) and retake the reading.

Rest results are obtained when moisture levels for a series of readings are kept relatively constant. If the moisture level for a reading is more than a percentage point higher or lower than the previous readings, the reading should be treated as suspicious.

Don't touch the EDG while it is making a measurement. Touching any part of the EDG while it is performing a measurement can distort the reading.

DISPOSAL

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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