



Electrical Density Gauge

H-6500.3F

Humboldt's next generation, Non-Nuclear, soil density, field and in-lab gauge, the EDGe (model e). The EDGe provides Nuclear-Free, Field Density Measurements Based On In-Lab Proctor Test Data.

The new EDGe will determine the density and moisture content of aggregate, soil aggregate, compacted type I or II base, or native soil materials that are suitable for shallow foundations, such as secondary roads or base aggregate that is compacted in-place prior to asphalt or concrete placement in the final grade. The EDGe quality assurance / quality control (QA/QC) system is lightweight, easy to use, and nuclear free.

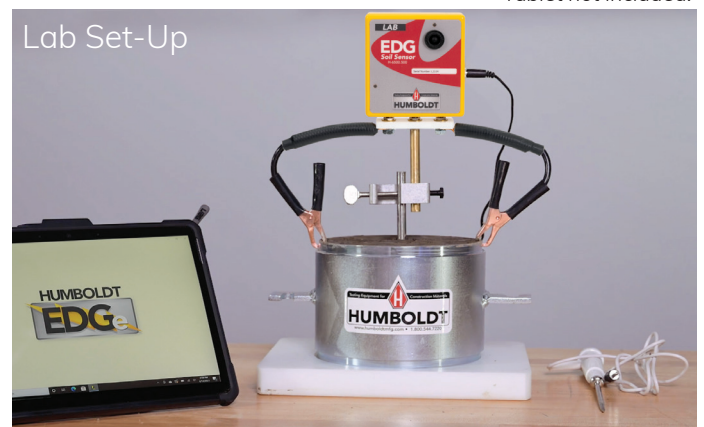
Humboldt's EDGe Starter Kit Includes:

- 1 unit for use in the lab determining Proctor values
- 1 unit for the field for on-site measurements

The 2 separate units work together with the use of a Microsoft app to ensure precise and accurate measurements. The EDGe provides a direct correlation between the Proctor test data of a representative aggregate/soil sample in the lab and readings of the same material in the field.

The Lab Unit provides you with the tools to take readings directly from Proctor molds while performing a six-inch diameter Proctor tests. The Field Unit is lightweight and comes in a carrying case for easy transport and storage. Both units are nuclear free, which eliminates the need for radiation safety compliance regimens and transportation restrictions. The EDGe is simple to use and allows any of your employees to be quickly trained.

Tablet not included.



The advantages of using the EDGe are:

- Complies with AASHTO T399
- Nuclear-free device
- Accurate and repeatable results that link directly to Proctor tests of your own material
- Does not require highly trained or licensed technicians
- Does not require special handling for shipping or regulatory compliance for hazardous materials
- Easy-to-learn and easy-to-use with its step-by-step menu
- Lightweight and easily transportable
- Eliminates costs and safety concerns associated with nuclear gauges

Electrical Density Gauge - EDGe



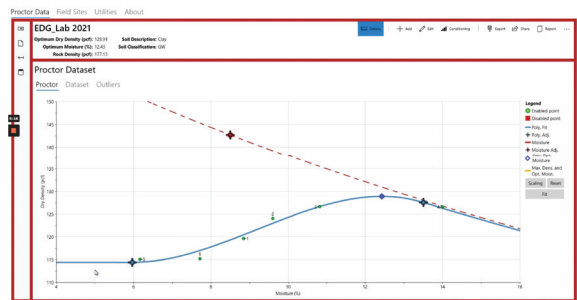
Tablet not included.

EDGe Lab Unit H-6500L.3F

The laboratory aggregate calibration procedure involves electrical testing of a representative sample of the construction aggregate or soil materials while performing either an ASTM D1557 Standard Test Method for Laboratory Compaction using a Modified Effort of 56,000 ft-lbf/cubic foot or the ASTM D698 Standard Test Method for Laboratory Compaction using a Standard Effort of 12,000 ft-lbf/cubic.

During the laboratory test, the EDGe lab-sensor and a Windows 10 laptop or tablet are used to collect and manage the physical and electrical data during the Proctor test. The software generates a Proctor curve that displays the maximum dry density at the calculated optimum moisture content and is saved and typically printed for client reports. The empirically-derived correlations relate the electrical and physical properties of the aggregate or soil that is scheduled for placement and compaction on construction project sites, such as road construction or other shallow foundation. The physical and electrical data from the Proctor test is saved on the laboratory laptop computer. This data can then be transferred to a ruggedized field Windows 10 tablet by USB

stick, a cloud service, or via wireless connection for use with the EDGe field equipment for quality assurance / quality control (QA/QC) testing and construction quality certification.



Proctor Curve

The screenshot shows the 'Proctor Dataset' window in the EDGe Lab 2021 software, displaying a table of Proctor attributes. The table has columns for Point Number, Target Moisture (%), Soil Moisture (%), Soil Density (pcf), Soil Moisture (pcf), Soil Density (pcf), Proctor Effort (ft-lbf/cu ft), Proctor Measurement, and Point Status. The data is as follows:

Point Number	Target Moisture (%)	Soil Moisture (%)	Soil Density (pcf)	Soil Moisture (pcf)	Soil Density (pcf)	Proctor Effort (ft-lbf/cu ft)	Proctor Measurement	Point Status
1	11.00	11.00	140.00	140.00	140.00	12000	Normal	ENABLED
2	13.00	13.00	145.00	145.00	145.00	12000	Normal	ENABLED
3	15.00	15.00	150.00	150.00	150.00	12000	Normal	ENABLED
4	17.00	17.00	155.00	155.00	155.00	12000	Normal	ENABLED
5	19.00	19.00	160.00	160.00	160.00	12000	Normal	ENABLED
6	21.00	21.00	165.00	165.00	165.00	12000	Normal	ENABLED

Proctor Attributes



EDGe Field Unit H-6500F.3F



The EDGe field unit is a portable, battery-powered instrument capable of being used anywhere without the concerns and regulations associated with nuclear devices. It uses a lightweight, case for easy transport and storage. Just grab the case and you're off to your testing site.

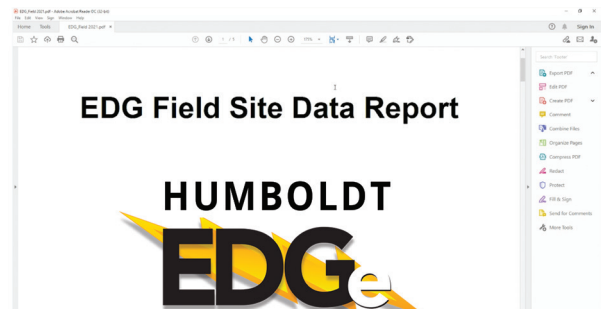
During the field quality assurance/quality control testing, the EDGe field-sensor and a ruggedized Windows 10 tablet or computer manages the project data. The EDGe field hardware is used along with the EDGe field sensor and a tablet to test the density and moisture of the construction materials. In the field, the EDGe measures the electrical properties of the aggregate and calculates physical properties by utilizing the established relationship of the electrical and physical characteristics from the Proctor calibration test of the same aggregate performed in the laboratory. Field tests take a few minutes to perform, and the material properties are displayed in real-time, as well as being saved for reports. The EDGe field reports provide the user and/or client with quality assurance/quality control data that includes the compacted material dry density, wet density, the percent moisture content, relative compaction, date, time, GPS coordinates and a location map. The client reports can include addi-

tional project information such as the project

name and number, the EDGe field sensor's unique identification number, the EDGe operator's name, the company name, and other information in the remarks section, such weather conditions, if needed.



Field Site Data



Field Site Data Report

Electrical Density Gauge - EDGe

EDGe App

The EDGe App is available free from the Microsoft App Store. This app allows you to operate both the Lab and Field units of the EDGe, as well as provides the field unit with the lab Proctor data. In the field, the app will record dry density, wet density, percent moisture content, relative compaction, date; time, GPS coordinates and generate a location map. This data is routinely used for construction QA/QC certification reporting. The app can generate the reports in a PDF format, which can be saved or shared with others.

EDGe Software Features:

- Download job data
- Save and share customized reports in PDF format
- Operate both the Lab and Field Unit
- Provide the Field Unit with Proctor Data
- Time/Date, GPS stamps for each test
- Generate a location map
- **Computer or tablet required, but not included**

Recommended Computers:

- **Laboratory Use:** Any Windows 10 Laptop or Tablet with Bluetooth® LE 4.0 or higher (e.g. MS Surface Pro or MS Surface Go 3)
- **Field Use:** MS Surface Go 3 Tablet with Ruggedized Shell with Bluetooth® LE 4.0 or higher (recommended: Urban Armor Gear Shell & Screen Shield for Surface Go 3)
- Microsoft compatible pen for laboratory and field use, optional mouse for laboratory use.
- A keyboard is recommended for laboratory use

EDGe Sensor Electrical Specifications:

Description	
Sensor RF Output Signal:	<1 Vpp or 354 mV RMS
Maximum Sensor RF Output Power:	<0.32 mW
Frequency Range:	10 kHz – 40 MHz
Internal Batteries:	3x AAA NiMH, Rechargeable
Charging Voltage:	7.5 V – 9 V DC
Charging Current:	500 mA
Maximum Charging Time:	2 hours
Charging Indicator:	Green LED
Battery Life:	Approx. 40 Tests



EDGe Starter Unit - H-6500.3F

Description	Qty	Part #
EDGe Field Unit	1	H-6500F.3F
EDGe Lab Unit	1	H-6500L.3F



EDGe Lab Unit - H-6500L.3F

Description	Item #	Qty
Soil Sensor, Lab Version	H-6500.500	1
Temperature Probe	H-6500.700	1
Temperature Probe Spike	H-4114.040	1
Proctor Center Dart, 4"	H-6500.6	1
Lab Dart Adapter	H-6500.550	1
Hammer	H-4890A	1
Dart Seating Tool	H-6500.8	1
HDPE Proctor Mold Base	H-6500.7	1
AC/DC Wall Mount Adapter (Charger)	H-6500.02	1

Shipping Weight: 11lbs (4.9Kg)
Shipping Dims: 16" x 16" x 6" (406 x 406 x 152 mm)



EDGe Field Unit - H-6500F.3F

Description	Item #	Qty
Soil Sensor, Field Version	H-6500.100	1
Temperature Probe	H-6500.700	1
Temperature Probe Spike	H-4114.040	1
Case	H-6500.800	1
Field Dart Template	H-6500.200	1
6" Field Darts	H-4114.6	4
Field Dart Adapter	H-6500.300	1
Hammer	H-4890A	1
AC/DC Wall Mount Adapter (Charger)	H-6500.02	1

Shipping Weight: 22lbs (9.9Kg)
Shipping Dims: 24" x 14" x 14" (609 x 355 x 355 mm)

Accessories:

4" Dart— H-4114.4

6" Dart— H-4114.6

8" Dart— H-4114.8

10" Dart— H-4114.10

12" Dart— H-4114.12

4" Proctor Center Dart - H-6500.6

Darts are designed in various lengths to correspond to different lift heights. They can be sold individually.



Humboldt Mfg. Co.
www.humboldtmfg.com
875 Tollgate Road
Elgin, Illinois 60123 U.S.A.

U.S.A. Toll Free: 1.800.544.7220
Voice: 1.708.456.6300
Fax: 1.708.456.0137
Email: hmc@humboldtmfg.com