

# Instruction Manual



**Handheld Family 5811A**

**Handheld  
Charge Amplifier and  
Insulation Tester**

**Type 5811A00...**

**Handheld  
Charge Amplifier and  
Transmitter Monitor**

**Type 5811A01...**

**Version 0.9.1**

# Foreword

This instruction manual applies to the Handheld Charge Amplifier & Insulation Tester Type 5811A00 and Handheld Charge Amplifier & Transmitter Monitor Type 5811A01.

Keep this instruction manual for future reference. It should be available at the point of use.

Information in this instruction manual is subject to change any time, without notice. Kistler reserves the right to improve and modify its products in the course of technical advancement, without any obligation to inform any persons or organizations of such changes.

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# 1. Introduction

Please take the time to thoroughly read this instruction manual. It will help you with the installation, maintenance, and use of this product.

To the extent permitted by law Kistler does not accept any liability if this instruction manual is not followed or products other than those listed under optional accessories in chapter 3.4 are used.

Kistler offers a wide range of products for use in measuring technology:

- Piezoelectric sensors for measuring force, torque, strain, pressure, acceleration, shock, vibration and acoustic emission
- Strain gage sensor systems for measuring force and torque
- Piezoresistive pressure sensors and transmitters
- Signal conditioners, indicators and calibrators
- Electronic control and monitoring systems as well as software for specific measurement applications
- Data transmission modules (telemetry)

Kistler also develops and produces measuring solutions for the application fields engines, vehicles, manufacturing, plastics and biomechanics sectors.

Our product and application brochures will provide you with an overview of our product range. Detailed data sheets are available for almost all products.

If you need additional help beyond what can be found either online or in this manual, please contact Kistler's extensive support organization.

## 2. Safety and Liability

As an environmentally aware company, Kistler does not send out operating instructions in paper form. For this reason, please refer to the following information regarding the installation and operation of Kistler products:

1. The safety and warning information set out below
2. The specifically applicable instruction manual for the purchased product

Instruction manuals for each product are available on the Kistler website and can be accessed via the type number at [www.kistler.com](http://www.kistler.com) or with the QR code.

Paper instruction manuals can also be requested from Kistler's customer service or the responsible Kistler sales department.



Instruction manuals are subject to change at any time without advance notification, in particular regarding equipment modifications (conversions, retrofits etc.). Instruction manuals must be accessed regularly on the internet for this reason.

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### 2.1 Safety and Warning Information

#### 2.1.1 General

At the time of purchase, each Kistler product is compliant with the necessary and applicable safety regulations and all other relevant requirements. Every product is in perfect condition with respect to safety requirements when it leaves Kistler's factory.

## 2.1.2 Setting up and using your Product

Only qualified individuals with the necessary technical know-how are allowed to install and operate Kistler products. These qualified individuals must adhere to all requirements contained in this safety and warning information and in the applicable instruction manual for the respective product. They must also comply with the applicable national safety provisions for installation and operation in each case.

If a product is not installed, used or maintained in the proper manner, this could result in serious injuries or fatal accidents and damage to the product and its surroundings.

Please check for any damage to the packaging before unpacking the product. Any damage found must be reported to the shipping company and the Kistler Sales Center or its distributor.

The delivery scope must be checked before starting to set up the product. If a part is missing, the responsible Kistler Sales Center or its distributor must be notified.

If the product has visible signs of damage, no longer works, is stored for lengthy periods in unfavorable conditions and/or was exposed to major stresses during shipping, safe operation is no longer guaranteed and the product must immediately be returned for repair to Kistler or the responsible distributor.

The product may not be disassembled, opened, repaired or otherwise modified because this may impair its operation and, in particular, can result in electric shocks. Any attempt to open or modify the product or to damage or remove labels will automatically result in the voiding of all warranty claims.

The product must not be used in potentially explosive environments unless it is specifically designated for such use.

## 2.1.3 Disposable and rechargeable Batteries

Please note the following points if the product contains disposable or rechargeable batteries:

Incorrect use of disposable or rechargeable batteries may result in injury, death, material damage or damage to the respective product due (for example) to battery fluid leaks, fire, overheating or explosion.

Leaking battery fluid is corrosive and can be toxic. It may result in burns on the skin and eyes and is damaging to health if swallowed. The following instructions must be followed to minimize the risk of injury:

- Remove disposable or rechargeable batteries from the device when they are empty, or if the device is not being used for a lengthy period.
- Old, weak or empty disposable and rechargeable batteries should be disposed of according to local or national regulations, or should be recycled directly.
- If a disposable or rechargeable battery leaks, it must be removed by following the steps in the installation procedure in reverse order. When doing so, please ensure that the leaking fluid does not come into contact with skin or clothes. If the fluid does come into contact with skin or clothes, immediately rinse the affected areas thoroughly with water. Clean the battery compartment with a dry cloth before inserting new disposable or rechargeable batteries. Please follow the recommendations of the disposable or rechargeable battery manufacturer.
- Disposable and rechargeable batteries must not be opened, perforated, damaged or heated.
- Disposable and rechargeable batteries must not be exposed to direct heat or fire.
- Disposable and rechargeable battery-driven equipment must not be exposed to direct sunlight for lengthy periods.
- Different types of new and old disposable or rechargeable batteries must not be mixed.
- The connections of rechargeable or disposable batteries must not be short-circuited.
- Disposable and rechargeable batteries must not be immersed in water or allowed to become wet.
- Disposable and rechargeable batteries must not be thrown, struck or exposed to other severe physical influences.
- Disposable and rechargeable batteries must not be disassembled or modified.
- Disposable and rechargeable batteries must not be charged close to fire or in hot environments.
- Do not recharge batteries if they are not specifically designed to be rechargeable.
- Rechargeable batteries are highly sensitive, and they may expand and explode if handled incorrectly.
- Rechargeable batteries must only be charged with accessories designed for this purpose.
- Rechargeable batteries must be protected against major temperature fluctuations, impacts, overheating and all other external influences that may have an effect on the function of the rechargeable battery or the device.



## 2.1.4 Transportation and Storage

All the following safety precautions must be taken if the product is to be shipped or stored for a lengthy period:

- All BNC connectors must be covered with the dust caps that are supplied.
- The plug connections must be kept dry and dust-free.
- It must be ensured that no dirt can penetrate the product.
- The storage environment must be dry, and must provide protection against vibrations.
- Compliance with the storage temperature is required according to the specifications on the relevant data sheet or in the relevant operating instructions.
- The product must be stored in the original packaging.

## 2.1.5 Product Use

During storage and operation, the specifications on ambient temperature stated in the technical data must also be observed. The product may be permanently damaged if the permissible ambient temperature is exceeded to a significant extent.

The product may only be used under the specified operating conditions; in particular, high relative air humidity and temperature fluctuations that might result in condensation should be avoided.

Do not perform tuning, maintenance or repair work on live, open devices.

## 2.1.6 Electromagnetic Compatibility

To ensure that electromagnetic compatibility (EMC) is maintained for the entire measuring chain, particular attention must be paid to connection of the inputs and outputs of the cable screen and to the cable installation:

- Cables must not be run parallel to wiring that causes interference.
- Only the supplied or optionally available cables must be used.
- Please ensure a reliable connection between shielding, connector boxes and device enclosures.
- Machinery and hardware must also comply with the EMC standards.

### 2.1.7 Software Upgrades and Updates

The software and firmware available on the Kistler website must always be used.

Kistler declines any liability whatsoever for any direct or consequential damage caused by products running on software and firmware, which has not been upgraded or updated with the latest software supplied.

### 2.1.8 Disposal Information for Electrical Equipment



The product must not be disposed of as domestic waste. It must be taken instead to a suitable collection point for the recycling of disposable or rechargeable batteries, electrical and electronic equipment. Sorting, collecting and recycling helps to preserve natural resources and prevents impairment of human health and the environment by hazardous substances that may be released through the incorrect disposal of disposable or rechargeable batteries, electrical and electronic equipment.

Please contact your Kistler Sales Center if you have any questions about disposal.

Contact addresses and further information can be found at [www.kistler.com](http://www.kistler.com)

### 3. Device Description

#### 3.1 Purpose of the handheld charge amplifier, insulation tester and transmitter monitor



Figure 1: Handheld in operation

The handheld devices Type 5811A00 and 5811A01 can be used wherever mechanical quantities are measured with piezoelectric sensors. The battery-powered devices are designed for environments and applications where the use of a line-powered charge amplifier in combination with a host computer for visualization and data acquisition of the measurement signal is not suitable.

The handheld device Type 5811A00 acts also as a service tool for testing the insulation of piezoelectric measuring chains (sensor and cable) as part of regular maintenance work to verify sensor and cable quality.

The variant Type 5811A01 can be used for monitoring transmitters, Kistler IO-Link devices or any device with  $\pm 10$  V analog output. The two M12 connectors of variant Type 5811A01 can be configured as transmitter input, analog input or SDCI, making this device suitable for multichannel measurements.

These instructions are intended to support the quick commissioning of the instrument in order to be able to start measurements quickly.

## 3.2 Handheld Device

The following brief description explains the basic components of the handheld device and refers to the corresponding chapters with more detailed descriptions.

### 3.2.1 Front Side

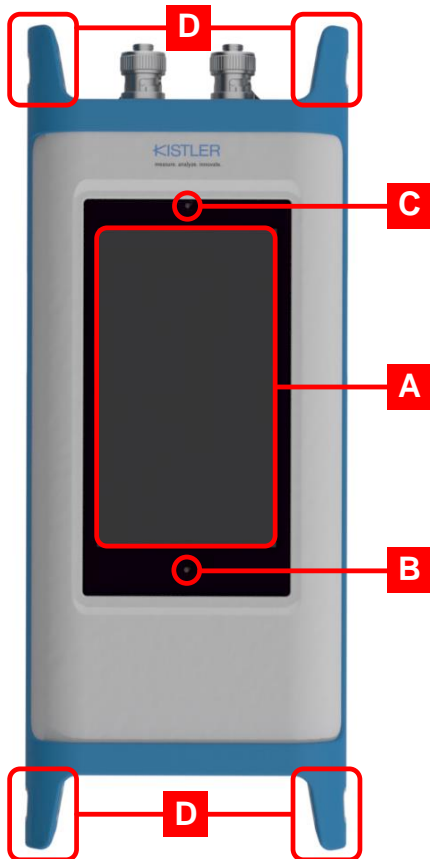


Figure 2: Front side of a 5811A00







#### A Touchscreen

The 4.3" touchscreen for configuration and operation of the handheld device.

*See chapter 4 for the configuration and operation.*

#### B Status LED

The LED indicates the operating statuses of the device and the charging statuses of the battery:

|                               | LED Status  |                | Operating & Charging Status |
|-------------------------------|---|----------------|-----------------------------|
| Device off, charger connected |    | Red            | Charging in progress        |
|                               |   | Off            | Charging completed          |
|                               |  | Red flashing   | Charging error              |
| Device on                     |  | Yellow         | Device is booting           |
|                               |  | Off            | Device is ready to use      |
|                               |  | Blue pulsating | Device in stand-by mode     |

#### C Ambient light sensor

Not used/supported

#### D Mounting lugs

The device has two mounting lugs each on the top and bottom to which the carrying strap can be attached.

*See chapter 3.4 for the carrying strap.*

### 3.2.2 Back Side



Figure 3: Back side of a 5811A00

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#### E Battery cover

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The battery cover can be removed by loosening the four M3x12 screws with the aid of the battery compartment key (see *chapter 3.4*) or a screwdriver (Philips PH1 or slot screwdriver 0.6x4 or 0.8x5.5).

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### 3.2.3 Top Side

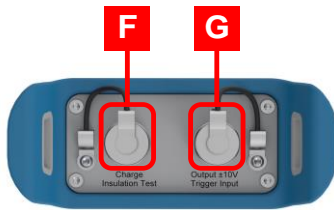


Figure 4: Top side of a 5811A00

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#### F Port A of device 5811A00: Charge input & Insulation test input (BNC neg.)

Port A is either used as charge input for the charge amplifier or as input for the insulation tester.

##### Charge input:

Piezoelectric sensors with charge output can be connected to the charge input using a high-insulating cable with a BNC pos. connector.

##### Insulation tester:

Piezoelectric sensors with charge output and/or high-insulating cables with a BNC pos. connector can be connected to the insulation test input to measure their insulation resistance.



Port A is protected with a cover cap to prevent dirt or dust from contaminating the connector. The cover cap must always be in place on the connector when it is not in use.

---

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**G Port B of device 5811A00: Analog output & Trigger input (BNC neg.)**

Port B is either used as analog output or as trigger input.

**Analog output:**

The signal of the sensor input (Port A) can be output directly through the analog output as voltage signal and can be transferred via a cable with a BNC pos. connector to a system for further processing.

The 2-point scaling that can be set for the analog output permits the sensor signal to be output within a range of  $\pm 10$  V in a voltage range suitable for further processing.

**Trigger input:**

The trigger input allows to switch the Measure/Reset of the charge amplifier and/or start/stop a measurement recording via a trigger voltage signal from an external system using a cable with a BNC pos. connector. The trigger configuration allows 5 V or 24 V logic with following input levels:

- 5 V logic (100 k $\Omega$  pullup to +5 V)
  - High (Reset, Stop trigger): >3.5 V or input open
  - Low (Measure, Start trigger): <1.5 V
- 24 V logic
  - High (Measure, Start trigger): >11 V
  - Low (Reset, Stop trigger): <5 V or input open



Port B is protected with a cover cap to prevent dirt or dust from contaminating the connector. The cover cap must always be in place on the connector when it is not in use.

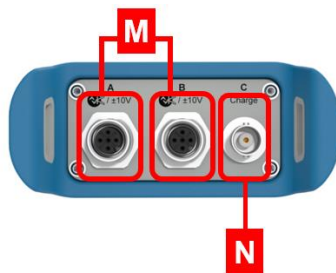


Figure 5: Top side of a 5811A01

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**M Port A & B of device 5811A01: analog input, transmitter input or SDCI (M12 connector)**

Port A & B can be configured as analog input, transmitter input or SDCI.

**Analog input:**

The analog output signal of any device in the range of  $\pm 10V$  can be measured, visualized, and recorded by configuring channel A and/or B as analog input on device 5811A01.

The user can select the input as differential input or single-ended input. Single-ended and differential refer to the reference for a voltage. Single-ended is referred to ground while differential is referred to some other voltage.

**Transmitter input:**

The transmitter input allows to measure the output signal of Kistler transmitters. The difference between the analog input and transmitter input is the +24V supply on pin 1 in transmitter input mode, which is not used in the analog input mode.

**SDCI mode:**

Both port A & B can be set in SDCI mode. In this mode, the handheld device works as a master. Kistler IO-link devices (5028A...and 9831D...) can be configured and parametrized using the handheld device 5811A01.



Port A & B are protected with a cover cap to prevent dirt or dust from contaminating the connector. The cover cap must always be in place on the connector when it is not in use.

---



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#### N Port C of device 5811A01: Charge input (BNC neg.)

Port C is used as charge input for the charge amplifier.

##### Charge input:

Piezoelectric sensors with charge output can be connected to the charge input using a high-insulating cable with a BNC pos. connector.



Port C is protected with a cover cap to prevent dirt or dust from contaminating the connector. The cover cap must always be in place on the connector when it is not in use.

### 3.2.4 Bottom Side



Figure 6: Bottom side of a 5811A00

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#### H USB 2.0 port

The USB port with a USB type C socket is for charging and accessing the web user interface of the handheld device as well as data exchange to a host PC.

*For charging instructions see chapter 3.3.1.*

*For instructions on accessing the web user interface see chapter 4.4.*

*For instructions on data exchange see chapter 4.5.*

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#### I Buzzer output

Not used/supported

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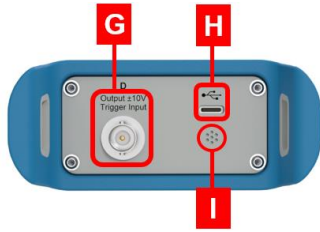


Figure 7: Bottom side of a 5811A01

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**G Port D of device 5811A01: Analog output & Trigger input (BNC neg.)**

Port D is either used as analog output or as trigger input. Functionality of this port is similar to the port B functionality of device Type 5811A00.



Port D is protected with a cover cap to prevent dirt or dust from contaminating the connector. The cover cap must always be in place on the connector when it is not in use.

### 3.2.5 Left Side & Right Side

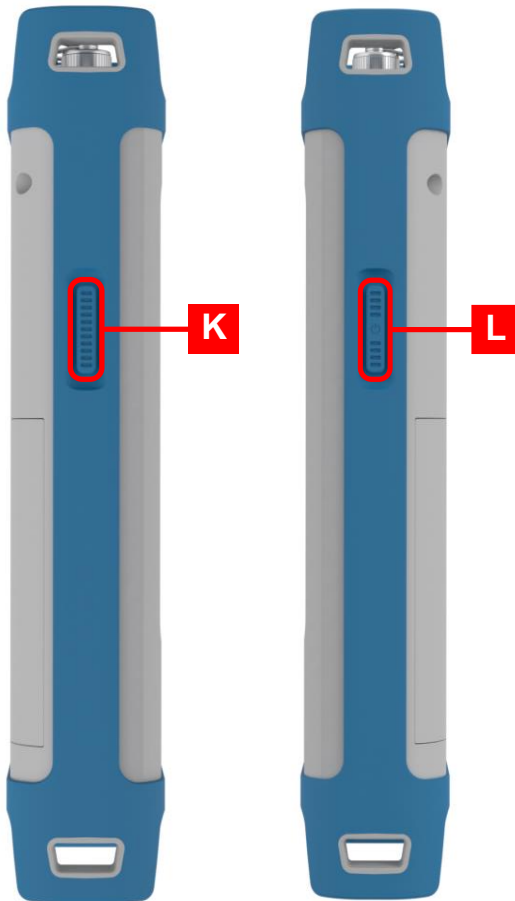


Figure 8: Left side & right side of a 5811A00

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**K Left side button**

The functionality of the left side button is depending on the active mode:

- **Measurement mode:**
  - Saving of single measurement value (if recorder inactive)
  - Start/Stop recording of measurement data (if recorder active)
- **Evaluation mode :**
  - Saving of result
- **Insulation test mode :**
  - Saving of result

*For instructions on the operation of the individual modes see chapter 4.*

---

## L Right side button

The functionality of the right side button is depending on duration of the button press and the active mode:

- **Long button press (>4 s):**
  - Switching device on/off  
(independent of active mode)
- **Short button press:**
  - Measurement mode:
    - Measure/Reset switching
  - Evaluation mode:
    - Start/Stop of evaluation
  - Insulation test mode:
    - Start/Cancel insulation measurement

*For instructions on the operation of the individual modes see chapter 4.*

## 3.3 Battery



Figure 9: Battery Type RRC2057  
(Source: RRC power solutions GmbH)

The battery Type RRC2057 with a capacity of 6.9 Ah is integrated in the handheld device and allows for up to 8 h operating time. Depending on the usage behavior (active vs. standby, backlight brightness, etc.) even longer runtimes are possible.

### 3.3.1 Charging

#### Battery shipping mode



When delivered, the battery inserted in the handheld device is in shipping mode. Before using the device for the first time, the battery must be activated by fully charging it.

Please follow the instructions in this chapter to charge the battery before using the device for the first time.

---

Only use the original accessories to charge the battery!



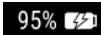

Specified charge times only apply when charging with original accessories.

Only charge the battery at an ambient temperature from 0 °C to 35 °C. Charging outside the specifications can seriously and irreversibly affect the performance and service life of the rechargeable battery!

---

### Charging battery inserted in handheld

The battery can be charged when inserted in the handheld device. Please follow the instructions below for charging the battery:

1. Plug the plug-in power supply Type 5791A1 (see chapter 3.4) using the country-specific mains adapter into a wall outlet (90...264 VAC / 47...63 Hz)
2. Connect the USB type C connector of the plug-in power supply Type 5791A1 to the USB type C socket (H) at the bottom side of the handheld device (see chapter 3.2.4).
3. Depending on the device status (on/off) the charging is indicated as follows and takes a maximum of 4.5 hours (device off):
  - Device off:  
The status LED (B) at the front side of the device turns red while charging and switches off when the battery is fully charged (see chapter 3.2.1)
  - Device on:  
The charging status is indicated via icon in the status bar:
    - Battery charging:  95%
    - Battery fully charged:  100%
4. The USB type C cable of the plug-in power supply Type 5791A1 can be disconnected from the handheld device as soon as the battery is fully charged

### Charging battery externally

Optionally the battery can be charged externally with the battery charger Type 5811AZ221.

This option makes it possible to pre-charge spare batteries and thus extend the operating time of the handheld by replacing the battery.

Please follow the instructions below for charging the battery using the battery charger Type 5811AZ221:

1. Make sure the handheld device is turned off and disconnected from any power source
2. Remove the battery cover at the back side of the handheld device by loosening the four M3x12 screws (see chapter 3.2.2)
3. Remove the battery from the battery compartment
4. Connect the battery charger to the power supply unit and plug the power supply unit into a wall outlet (100...240 VAC / 50...60 Hz) using the country-specific mains cable
5. Insert the battery into the battery charger
6. A complete charging process takes a maximum of 2.5 hours and the charging status is indicated via LED on the battery charger as follows:
  - One time Red/Orange/Green:  
Selftest: Charger is ready for use
  - Red/Green blinking:  
Battery recognition and initialization
  - Orange light:  
The inserted battery is of the correct type and is currently being charged
  - Green light:  
The battery is charged and can be removed for use
  - Red blinking:  
The battery is too hot or too cold to be charged without damage. If the battery is too cold it will be charged as soon as it has warmed up sufficiently. If the battery is too hot it should be removed to cool down
  - Red light:  
The battery is damaged or it is a conventional battery which cannot be recharged

### 3.3.2 Storage

#### Storage temperature

The maximum storage temperature range is from -20 °C to 40 °C.

To avoid deterioration of battery performance and life, storage at -20 °C to 25 °C in a dry, clean and well-ventilated place without direct sunlight is recommended.



Storage outside these temperatures can lead to higher self-discharge, lower performance and swelling of the battery cells.

---

#### **State of charge during storage**

Before storing the battery for a longer period of time (>2 weeks), the battery should be charged to 40 ... 60 % of its capacity.

---



Deep discharge can have a serious and irreversible effect on the performance and life of the battery! If the battery level is low after storage, the battery must be charged as soon as possible to avoid the voltage of one or more cells falling below a level where the cell may be damaged.

---

For storage of more than 3 months proceed as follows:

- Regularly check the battery level at least every 3 months
- If necessary: Charge the battery up to 40 ... 60 % of its capacity

### **3.3.3 Replacement**

To replace the battery, please follow the instructions below:

1. Make sure the handheld device is turned off and disconnected from any power source
2. Remove the battery cover at the back side of the handheld device by loosening the four M3x12 screws (see chapter 3.2.2)
3. Remove the battery from the battery compartment
4. Insert the new battery into the battery compartment
5. Attach the battery cover and fasten it with the four M3x12 screws
6. Fully charge the battery (see chapter 3.3.1)

### **3.3.4 Safety Instructions**



#### **Warning:**

- Do not attempt to open the battery
  - Do not expose to heat or flames
  - Do not short circuit
  - Do not drop or hit forcefully
  - Charge only with the original power supply or charger
-

### 3.3.5 Transport of Handheld

#### Legal framework



Due to the installed lithium-ion battery, the handheld must be shipped as dangerous good. UN number **UN 3481** applies.

International and national transport regulations for air, sea, road and rail transport (ICAO/IATA, IMDG, ADR, RID...) are legally binding. Personnel preparing the handheld for transport must comply with all relevant requirements, including but not limited to special provisions, packaging requirements, labelling and training.

#### Overview

Personnel preparing the handheld for transport must carefully prescribe the applicable measures and instructions. Further information can be found in the relevant official documentation:

<http://www.unece.org/trans/danger/danger.html>

Among other things, the following must be considered:

- The mode of transport: air (IATA), sea (IMDG), road (ADR) or rail (RID)
- The country of origin and destination
- The applicable UN code UN 3481 and the associated labelling "Lithium-ion battery packed in equipment"
- The UN test certification status of the battery: UN38.3

#### Air shipping



For the individual handheld, **PI 967, UN 3481, Class 9, Part 1** applies

### 3.4 Optional Accessories

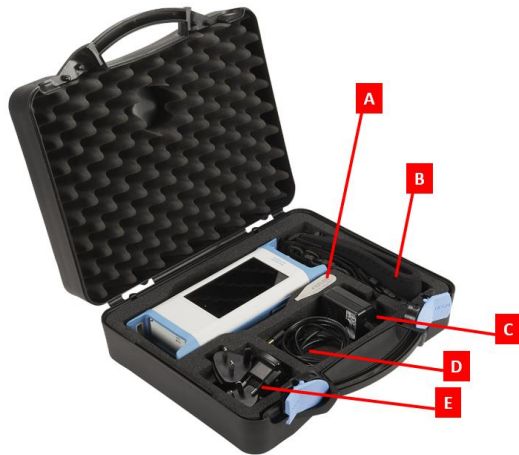


Figure 10: Handheld kit including the device and accessories

Handheld device can be purchased either as a stand-alone device or as a kit with a carrying case. The carrying case includes not only the handheld device but also some accessories that are shown in Figure 10.

In case a device is purchased without a kit, accessories should be purchased separately.

Please note that product approval, certifications and warranty apply only to the device in combination with explicit Kistler approved accessories.

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#### A Battery compartment key

This key can be used to open the battery compartment. The battery compartment might be opened to exchange the battery or to charge the battery with an external charging station.

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#### B Carrying strap

Carrying strap with a shoulder pad can be attached to the mounting lugs on top or bottom of the device.

---

#### C Plug-in power supply

The plug-in power supply with 5 V output voltage/ 3A output current is provided with a USB-C plug. Please note that using different power supplies other than the one provided by Kistler might introduce changes in the noise level if measurement is done while charging. Moreover, the charging duration might differ from what is mentioned in the datasheet. Please keep in mind that supplies providing less than 0.5 A might be damaged by the device.

---

#### D USB cable type A to type C

The USB cable type A to type C with 1 m length is provided for data exchange to/ from a PC.

Alternatively, a USB cable type C to type C with 1 m length can be purchased.

Please note not every USB cable allows data transfer.

---

#### E Country-specific plug

The plug-in power-supply is provided together with country specific plugs.



## 4. Device Configuration and Operation

### 4.1 Home Screen

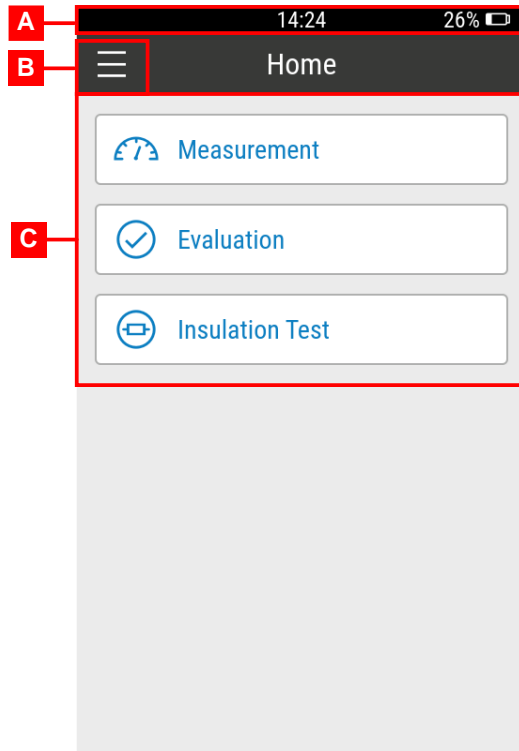


Figure 11: Home screen

After startup of the device the home screen is displayed.

#### A Status bar

The status bar indicates the current time, battery/charging status and screen lock:

|       |                                    |
|-------|------------------------------------|
| 14:24 | Current time                       |
| 26%   | Battery status                     |
|       | Battery is charging / not charging |
|       | Screen locked                      |

#### B Main menu

The main menu allows access to recorded measurement data and stored results, device settings, display language, screen lock and power options.

*See chapter 4.2 for details of the main menu.*

#### C Modes

This section provides access to the different modes. Availability depends on the device type and the licenses purchased:



“Measurement” mode:

- Display of measurement values in different formats (numeric display, bar graph, y/t graph) depending on available licenses
- Storage of single measurement values and/or recording of measurement data depending on available licenses

Available on device Type 5811A00 (license required) and 5811A01.

*See chapter 4.3 for details of “Measurement” mode.*



#### Evaluation

“Evaluation” mode:

- Testing of process signal according to user defined limits
- Display of measurement value in numeric format and customizable gauge graph
- Storage of evaluation result

Available on device Type 5811A00 (license required) and 5811A01.

*See chapter 4.3.2 for details of “Evaluation” mode.*



#### Insulation Test

“Insulation Test” mode:

- Testing insulation of piezoelectric measuring chain (sensor and/or cable)
- Display of measurement value in numeric format and customizable gauge graph
- Storage of insulation test result

Available on device Type 5811A00 (license required) only.

*See chapter 4.3.3 for details of “Insulation Test” mode.*

## 4.2 Main Menu

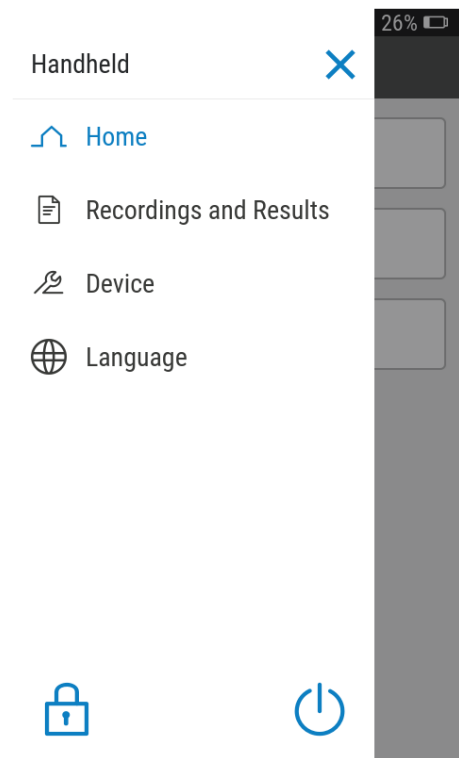












Figure 12: Main menu

The main menu is accessible from the home screen and any mode, allowing navigation through main functions and settings.

|  |   |
|--|---|
| Handheld   | User defined name of the device.<br>.   |
|  Home                   | Navigates to the home screen.<br><i>See chapter 4.1.</i>  |
|  Recordings and Results | Navigates to the measurement results and recordings, evaluation results and insulation test results.  |
|  Device                 | Navigates to the device information and settings menu where e.g. firmware updates, factory reset and license activations can be performed.  |
|  Language               | Navigates to the language setting screen.   |
|                       | Activates the screen lock. The screen can be unlocked by pressing the button at the bottom of the screen for a few seconds.<br><div>Press to unlock!</div>  |
|                       | Access to the power options "Standby" and "Shutdown":<br>Operating States <br><div> Standby</div> <div> Shutdown</div> |
|                       | Closes the main menu.   |

## 4.3 Modes

### 4.3.1 Measurement Mode

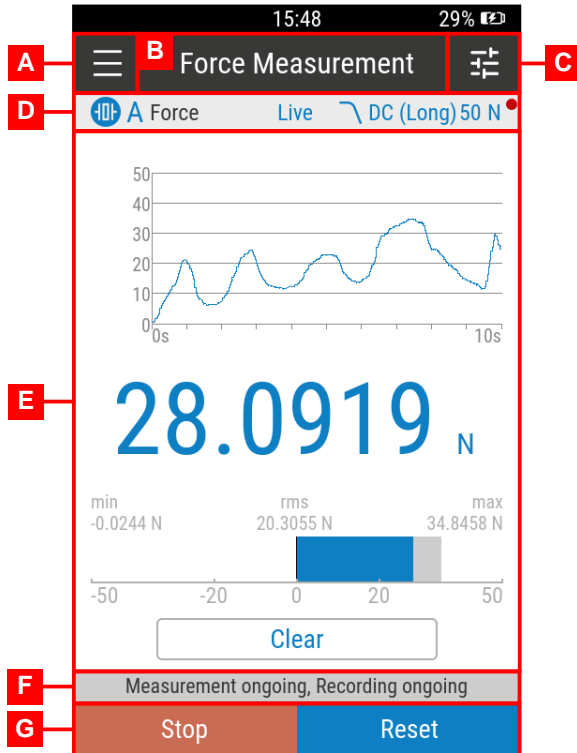


Figure 13: Measurement mode

The measurement mode allows to visualize the measurement signal in different formats (numeric, bar graph, y/t graph), configure and control the measurement and control the single value storage and data recording.

#### A Main menu

Navigates to the main menu.

*See chapter 4.2 for details.*

#### B Preset name

Name of the currently active measurement preset.

#### C Measurement settings

Navigates to the measurement settings menu to configure the settings of the currently active measurement preset.





#### D Channel status bar

The channel status bar shows the most important status information and settings of the specific channel.

##### a) Channel type, port and channel name

 A Force

Following channel types are available:

|   |                           |
|---|---------------------------|
|  | Charge channel            |
|  | SDCI channel              |
|  | Analog input channel      |
|  | Transmitter input channel |

In Measure mode the channel symbol is blue. In Reset mode it is blinking blue and grey.

In case of an overload the channel symbol is red and a message appears.

 A Force  
Input Over Range

b) Signal Mode

Live



Following signal modes are available:

|      |      |
|------|------|
| Live | Live |
| Min  | Min  |
| Max  | Max  |
| Rms  | Rms  |

c) Active filters



Following filters are available:

|   |                  |
|---|------------------|
|  | Low-pass filter  |
|  | High-pass filter |

d) Time constant

DC (Long)

Following time constants are available:

|                    |   |
|--------------------|---|
| DC (Long)          | Time constant "Long" for quasi-static measurements  |
| Short( $\tau=10$ ) | Time constant "Short" for pure dynamic measurements |



e) Measurement range and physical unit

50 N

f) Recorder status

(only visible if data acquisition mode "Recorder" is selected and the recorder is armed)

Following status are possible:

|   |  |
|---|--|
|  | Recorder is armed, waiting for start trigger |
|  | Recorder active                              |

---

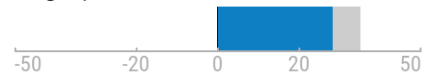
## E Measurement screen

The measurement screen allows the user to display the measurement signal in any combination of the following formats:

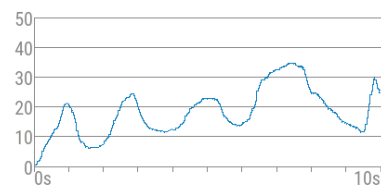
- Numeric display

28.0919 N

- Bar graph



- Y/t graph (license required)



In addition, the minimum, maximum and rms values are displayed in a separate section:

min                      rms                      max  
-0.0244 N                      20.3055 N                      34.8458 N

The clear button clears the bar graph and y/t graph as well as the minimum and maximum values:

Clear

---

## F Measurement status bar

The measurement status bar indicates the current status of the measurement and recorder.

Following measurement status are possible:

|                       |   |
|-----------------------|---|
| Ready for Measurement | Charge amplifier is in "Re-set" and waiting to be switched to "Measure" |
| Measurement ongoing   | Charge amplifier is in "Measure"  |

Following recorder status are possible:



|                     |  |
|---------------------|--|
| Ready for Recording | Recorder is armed, waiting for start trigger |
| Recording ongoing   | Recorder is recording                        |

## G Control section




The control section allows to control the main functionalities of the measurement mode like start/stop measurement, start/stop recording and save result.

Following button status are possible.

### Right-side button:

|  |  |
|--|--|
|  | Clicking the button switches the charge amplifier to "Measure" |
|  | Clicking the button switches the charge amplifier to "Reset"   |

### Left-side button:

|  |  |
|--|--|
|    | Clicking the button stores the current measurement value. Button is visible for data acquisition mode "Single Value" only.             |
|   | Clicking the button starts a recording. Button is visible for data acquisition mode "Recorder" only, if the recorder is armed.         |
|  | Clicking the button stops the active recording. Button is visible for data acquisition mode "Recorder" only, if a recording is active. |

### 4.3.2 Evaluation Mode

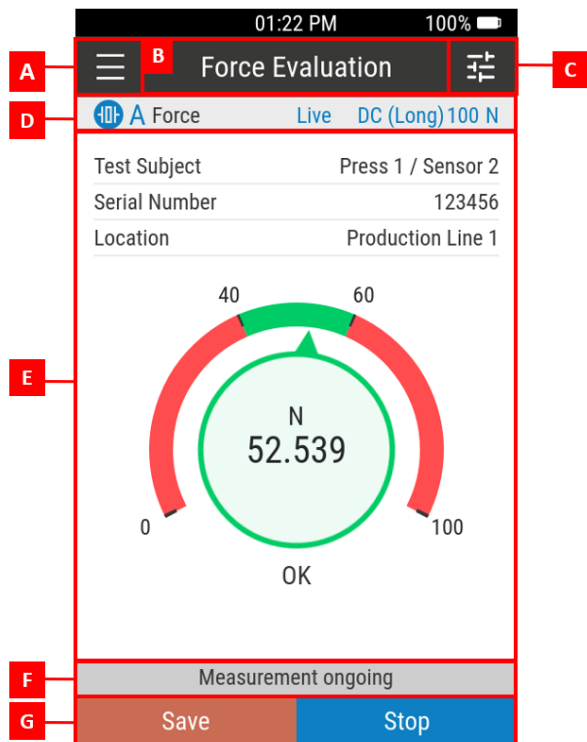


Figure 14: Evaluation mode

The evaluation mode allows periodic testing of a process according to predefined limits and visualization of the measurement in a customizable bar graph with colors and texts. The result can be stored on the handheld device for documentation purposes, with the possibility of exporting the results to a PC.

#### A Main menu

Navigates to the main menu.

*See chapter 4.2 for details.*

#### B Preset name

Name of the currently active evaluation preset.

#### C Evaluation settings

Navigates to the evaluation settings menu to configure the settings of the currently active evaluation preset.





#### D Channel status bar

The channel status bar shows the most important status information and settings of the specific channel.

- a) Channel type, port and channel name

 A Force

Following channel types are available:

|   |                           |
|---|---------------------------|
|  | Charge channel            |
|  | SDCI channel              |
|  | Analog input channel      |
|  | Transmitter input channel |

In Measure mode the channel symbol is blue. In Reset mode it is blinking blue and grey.

In case of an overload the channel symbol is red and a message appears.

 A Force  
Input Over Range



b) Signal Mode

Live

Following signal modes are available:

|      |      |
|------|------|
| Live | Live |
| Min  | Min  |
| Max  | Max  |
| Rms  | Rms  |

c) Active filters

Following filters are available:

|  |                  |
|--|------------------|
|  | Low-pass filter  |
|  | High-pass filter |

d) Time constant

DC (Long)

Following time constants are available:

|                    |   |
|--------------------|---|
| DC (Long)          | Time constant "Long" for quasi-static measurements  |
| Short( $\tau=10$ ) | Time constant "Short" for pure dynamic measurements |

e) Measurement range and physical unit

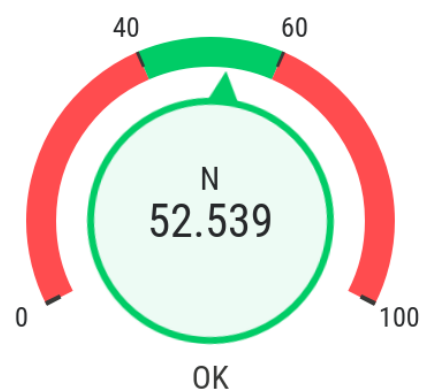
100 N

## E Measurement screen

The main measurement screen in evaluation mode shows metadata of evaluation mode which includes test subject name, serial number, and location.

|               |                    |
|---------------|--------------------|
| Test Subject  | Press 1 / Sensor 2 |
| Serial Number | 123456             |
| Location      | Production Line 1  |

The radial bar chart seen in the middle of the screen can be customized by the user. The user can define the process limits, corresponding colors, and texts.



---

## F Measurement status bar

The measurement status bar indicates the current status of the evaluation.

Following status are possible:

|                       |  |
|-----------------------|--|
| Ready for Measurement | The device is ready for a new measurement/evaluation |
| Measurement ongoing   | A measurement/evaluation is ongoing                  |

---

## G Control section

The control section allows to control the main functionalities of the evaluation mode like start/stop evaluation and save result.

Following button status are possible.

Right-side button:

|       |   |
|-------|---|
| Start | Clicking the button starts an evaluation        |
| Stop  | Clicking the button stops an ongoing evaluation |

Left-side button:

|      |  |
|------|--|
| Save | Clicking the button stores the current evaluation result |
|------|--|

### 4.3.3 Insulation Test Mode

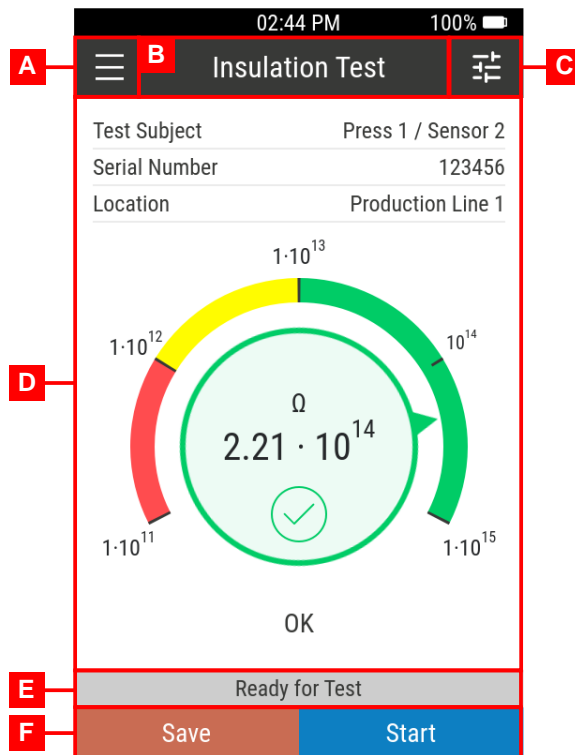


Figure 15: Insulation test mode

The insulation tester allows to check the condition of the sensor and cable on site, thus ensuring a functioning measuring chain. The results can be stored on the handheld device for documentation purposes, with the possibility of export them to a PC.



During the insulation test, the sensor and the cable must not be touched or moved and the sensor must be load-free, otherwise the test result may be influenced.

#### A Main menu

Navigates to the main menu.

See chapter 4.2 for details.

#### B Preset name

Name of the currently active insulation test preset.

#### C Insulation test settings

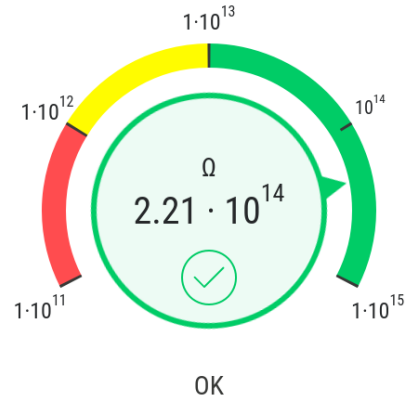
Navigates to the insulation test settings menu to configure the settings of the currently active insulation test preset.

#### D Measurement screen

The main measurement screen in insulation test mode shows metadata of the insulation test which includes test subject name, serial number and location.

|               |                    |
|---------------|--------------------|
| Test Subject  | Press 1 / Sensor 2 |
| Serial Number | 123456             |
| Location      | Production Line 1  |

The gauge graph in the middle of the screen indicates the measured insulation value in Ohm and can be customized by the user. The user can define 3 insulation ranges, corresponding colors and texts.



## E Measurement status bar

The measurement status bar indicates the current status of the insulation test.

Following status are possible:

|                 |  |
|-----------------|--|
| Ready for Test  | Previous insulation test has been completed and device is ready to start a new insulation test |
| Test ongoing... | An insulation test is currently in progress  |

## F Control section

The control section allows to control the main functionalities of the insulation test mode like start/cancel test and save result.

Following button status are possible.

Right-side button:

|        |  |
|--------|--|
| Start  | Clicking the button starts an insulation test          |
| Cancel | Clicking the button cancels an ongoing insulation test |

Left-side button:

|      |  |
|------|--|
| Save | Clicking the button stores the insulation test result  |
| Save | Button is inactive while an insulation test is ongoing |

## 4.4 Access to Web UI

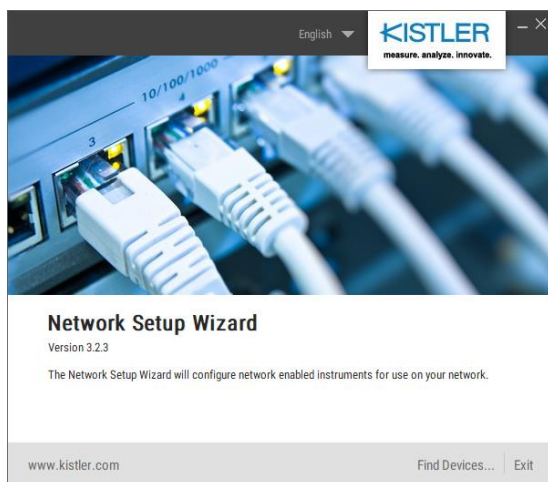


Figure 16: Strat screen of Network Setup Wizard

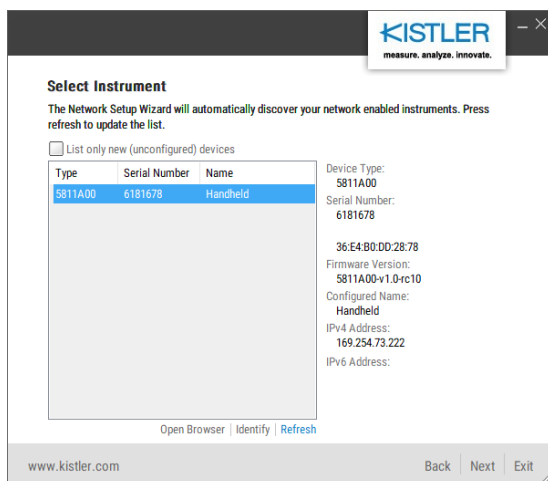


Figure 17: List of found devices in Network Setup Wizard

To access the web UI of the handheld device, the device has to be connected to a PC using a USB-C cable. The user can use the «Network Setup Wizard», which can be downloaded from Kistler website [www.kistler.com](http://www.kistler.com).

Start the «Network Setup Wizard» tool that finds all Kistler network devices. Then, click on «Find Devices...» and wait until Kistler network devices are displayed. It may take up to 2 minutes until the devices are displayed.

To see all devices, including the already configured ones, deselect the «List only new (unconfigured) devices» checkbox.

Bottom right of the list field you see different options:

- Open Browser:**  
Opens the web interface of the selected device in your web browser.
- Identify:**  
Permits an identification of the selected device. Not implemented for the handheld devices Type 5811A00... and 5811A01....
- Refresh:**  
Repeats the search and refreshes the list of devices found in the network.

Once the device is found and appeared in the list, the web UI can be accessed by clicking on «Open Browser» or entering the IP address in the web browser directly.

Alternatively, the IP address can be found in device information section on the handheld device that can be reached from «Device» in the main menu. The IP address shown in the «Device Information» can be entered in the web browser.

### 4.4.1 Navigation pane in web UI

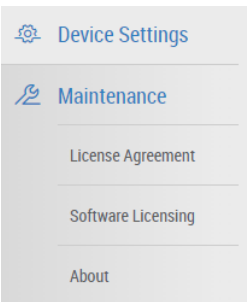


Figure 18: Expanded navigation pane

|                    |  |
|--------------------|--|
| Device Settings    | Device name, description and language can be seen and changed in device settings.                          |
| Maintenance        | Navigates to the maintenance page where firm-ware update, factory reset, device reboot can be performed.   |
| License Agreement  | Navigates to the page with software license agreement.   |
| Software Licensing | Navigates to the page where new featured licens-es can be activated after purchasing a respective license. |
| About              | Navigates to an overview page with copyright, licensing and contact information.                           |

### 4.4.2 Web UI for firmware update

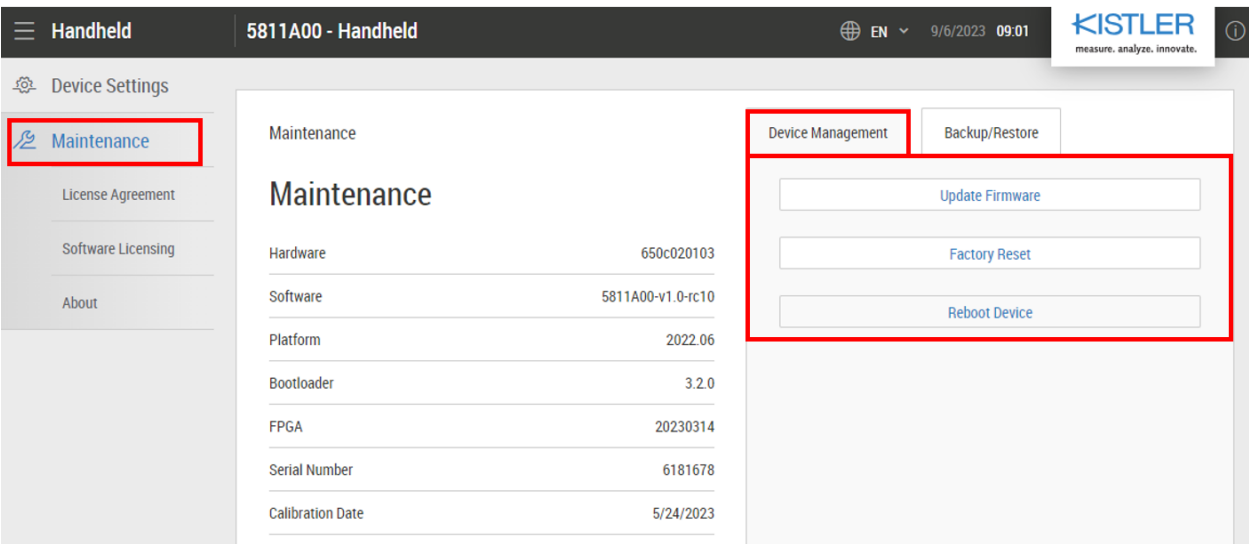


Figure 19: Maintenance menu in web UI

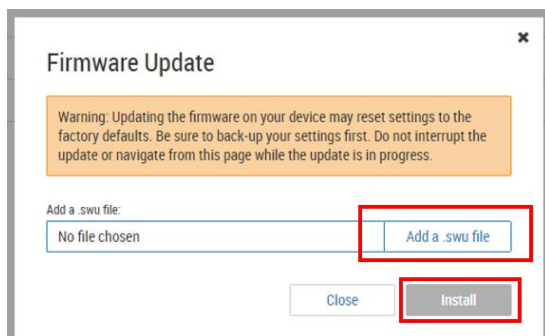


Figure 20: Firmware upload window

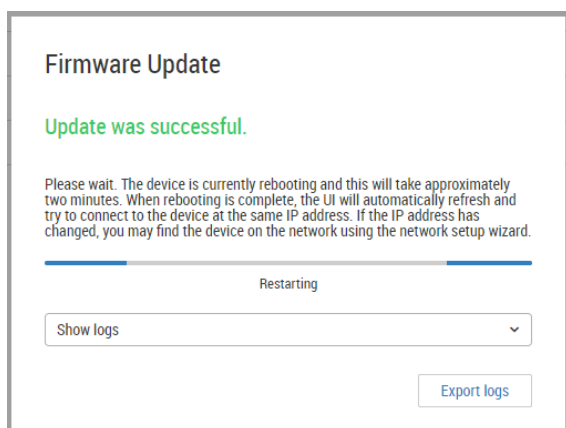


Figure 21: Firmware update successful message

#### 4.4.3 Web UI for license activation



Figure 22: Software licensing in navigation pane

Firmware of the handheld device can be updated whenever needed through the web user interface. The latest available firmware can be downloaded using a PC from [www.kistler.com](http://www.kistler.com).

From the navigation pane in the web UI, if maintenance is selected, firmware update option appears on the right sidebar. Clicking on the “Update Firmware” button, leads to the “Firmware Update” dialog, where the new firmware file can be uploaded. Once “Add a .swu file” is clicked, the newly downloaded file can be chosen and installed by clicking on “Install”.

Wait until all the steps are completed and the “Update was successful.” message appears. Then the device will be restarted, and the firmware will be updated.

In the device management section, there is a possibility to do a factory reset or reboot the device. The factory reset option is available on the device and can be performed without a PC as well. Factory reset can be done from the “Device” menu.

Similar to the firmware update, license activation or deactivation has to be performed through the web UI.

In the maintenance menu of the navigation pane, software licensing redirects the user to the screen, where the licenses can be managed.

## Software Licensing

**Manage Licenses**

| Name                 | License Status | Expiration    |
|----------------------|----------------|---------------|
| Charge Amplifier     | Activated      | Never Expires |
| Graphs and Recording | Activated      | Never Expires |
| Insulation Tester    | No license     | -             |
| Wireless             | Activated      | Never Expires |

Figure 23: Software licensing showing license status

In the software licensing section, the user can see the list of existing licenses and their corresponding status.

By clicking on the “Manage Licenses” button, the user can add a new license, update the licenses, or deactivate an existing license. The ticket ID for new licenses is provided by Kistler. Thus, for the purpose of upgrading your device with some additional features, please contact your local Kistler sales representative to purchase the required license.

## 4.5 Data exchange to a host PC

### Devices and drives (2)

☒ 5811A00

Figure 24: Access to handheld device SD-card

Upon connection of the handheld device to a PC, the device can be found in the list of devices and drives. By clicking on the device, the SD card of the device can be accessed, where presets, results and recordings are saved.

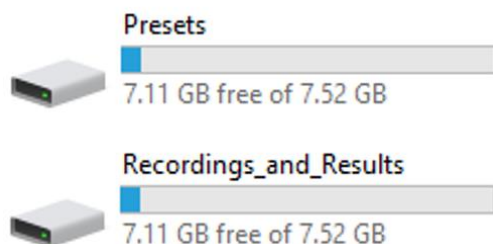


Figure 25: Presets, Recordings and Results folders

The handheld device can store presets of user generated measurement configurations. This enables quick changes between repeatedly executed tasks. It also ensures that these tasks are executed with identical settings, resulting in consistent data. Presets can easily be copied and pasted from one device to the other.

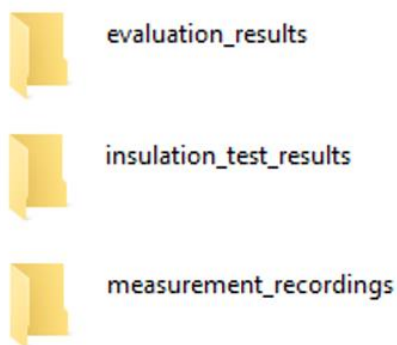


Figure 26: Recordings and Results of different modes

Recording and results folder contains all the saved results and recordings of different available modes. The format of the recordings and results can be selected for each measurement individually. Please note if any of the licenses is not active on a device, there will be no folder visible for that mode. All the recordings and results can be copied to a PC for documentation and further analysis.



## 5. Service and Maintenance

### 5.1 Cleaning and Storage

Keep the handheld device clean and protect the measuring chain against excessive dirt and moisture.



Contact with hydrocarbons (such as petrol, brake fluid) should be avoided if possible.

In the event that the device is not being used, we recommend storing it in a dry, clean and well-ventilated place.

*See chapter 3.3.2 for instructions on storing the battery.*

In case the device housing has become dirty, clean it. Use only a clean, soft, lint-free cloth for cleaning. If necessary, moisten the cloth with water. Do not use other liquids as they may attack the housing.

For cleaning of the connectors use the Kistler cleaning spray Type 1003.

### 5.2 Recalibration

The handheld device can be recalibrated or tested with the same procedure as was used prior to the initial delivery. All records are kept and are available to our customers so that the calibrations and repairs of our products can be tracked in their entirety.

Please contact the responsible Kistler representative in case of a recalibration.

Quality management systems, e.g. ISO 9001, require documentation of and compliance with periodic recalibrations of the measuring devices.

### 5.3 Inspection for visible Damage

Please observe the following instructions for the servicing of your handheld device:

- Check the handheld device for visible damage before each use. Do not put a damaged device into operation!
- Leave all repairs to the manufacturer's plant. Instructions for proceeding in such cases can be found in chapter 5.4

## 5.4 Repair

If your handheld device is defective, please observe the following instructions:

Contact the responsible Kistler representative and give notice that the defective device is to be sent in for repair. Send the defective handheld in the original packaging to the Kistler representative.

Enclose a detailed description of the defect and the accompanying circumstances with the handheld.

Describe the measurement process during which the defect occurred.

If a major repair is necessary, you will receive a cost estimate.

Kistler will endeavor to repair your handheld in a short time and at minimal cost and send it to you in as-new condition.

## 6. Technical Data

This chapter only contains safety-relevant technical data. For all other technical data, please refer to the data sheet on our website [www.kistler.com](http://www.kistler.com).

### 6.1 General

|                                 |          |                            |
|---------------------------------|----------|----------------------------|
| Environment                     |          | Indoor & Outdoor           |
| Altitude                        | m        | <2000                      |
| Temperature range               |          |                            |
| Operating from battery          | °C<br>°F | -20 ... +50<br>-4 ... +122 |
| Operating & charging            | °C<br>°F | 0 ... +35<br>+32 ... +95   |
| Charging (device off)           | °C<br>°F | 0 ... +40<br>+32 ... +104  |
| Storage (device off)            | °C<br>°F | -20 ... +40<br>-4 ... +104 |
| Rel. humidity, not condensing   | %        | ≤90                        |
| Degree of protection (EN 60529) |          | IP54                       |

### 6.2 Power Supply

|  |     |             |
|--|-----|-------------|
| Battery Type RRC2057 (rechargeable and exchangeable by end-user) |     |             |
| Type   |     | Lithium-Ion |
| Nominal voltage  | VDC | 7.2         |
| Capacity   | Ah  | 6.9         |
| External power supply Type 5791A1                                |     |             |
| Input voltage range  | VAC | 90 ... 264  |
| Output voltage   | VDC | 5           |
| Output current   | A   | 3           |
| Output power   | W   | 15          |

### 6.3 USB C socket

|                     |     |    |
|---------------------|-----|----|
| Input voltage range | VDC | 5  |
| Output current      | A   | 3  |
| Output power        | W   | 15 |

## 6.4 WLAN and Bluetooth interface

|                             |      |                              |
|-----------------------------|------|------------------------------|
| WLAN                        |      |                              |
| Supported countries/areas   |      | EU/EFTA/UK<br>USA/Canada     |
| WLAN standards              |      | IEEE 802.11 b/g/n            |
| Frequency band              | MHz  | 2400 ... 2480                |
| Power                       | mW   | <100                         |
| Channel bandwidth           | MHz  | 20                           |
| Supported WLAN channels     |      | 1 to 11                      |
| Modes                       |      | Micro-AP<br>(max. 8 clients) |
| Bluetooth                   |      |                              |
| Supported countries/areas   |      | EU/EFTA/UK<br>USA/Canada     |
| Supported radio modes       |      | BR / EDR / BLE               |
| Supported BR/EDR data rates | Mbps | 1 / 2 / 3                    |
| Supported BLE data rates    | Mbps | 1 / 2                        |
| Version                     |      | 5.2                          |
| Frequency band              | MHz  | 2400 ... 2480                |
| Power                       | mW   | <10                          |
| Channel bandwidth           | MHz  | 1                            |

## 7. Certification Information

### 7.1 CE (Europe)

Hereby, Kistler Instrumente AG declares that the radio equipment Type 5811A00... and 5811A01... are in compliance with Directive 2014/53/EU.

### 7.2 UKCA (UK)

Hereby, Kistler Instrumente AG declares that the radio equipment Type 5811A00... and 5811A01... are in compliance with Directive UK SI 2017 No. 1206.

### 7.3 FCC (USA)

FCC-ID: 2AWIT-5811A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



Changes or modifications not expressly approved by Kistler Instrumente AG for compliance could void the user's authority to operate the equipment.

---

## 7.4 IC (Canada)

IC : 28487-5811A

Canada Compliance Statement: This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

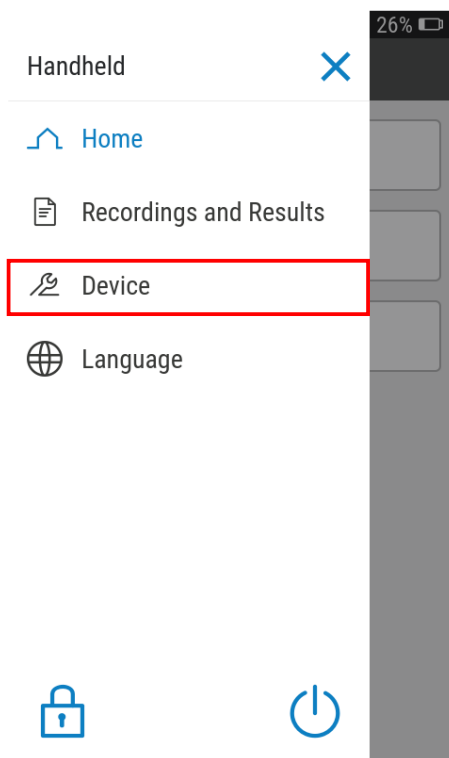
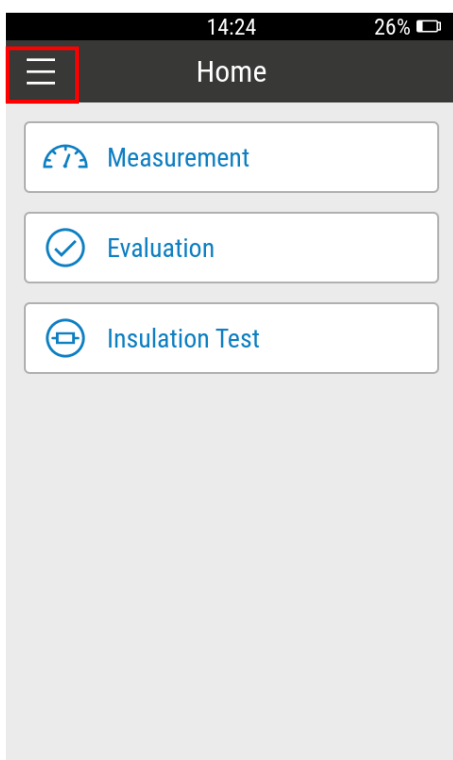
Canada Déclaration de Conformité: L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## 7.5 Others

The conformity for countries with other national regulations has to be approved prior to use and operation.

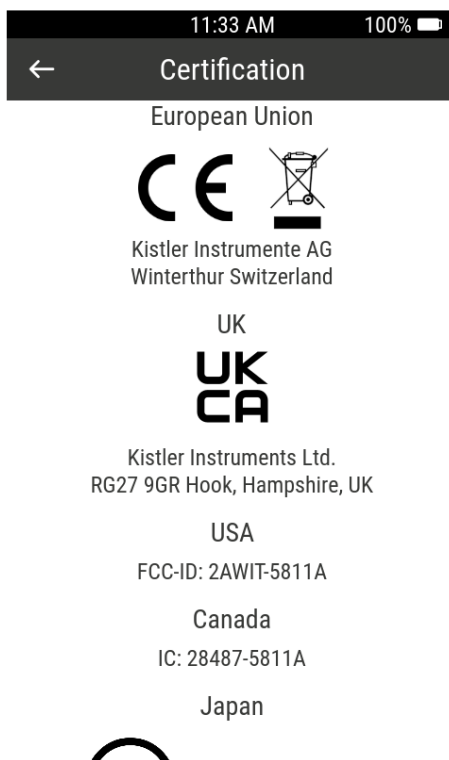
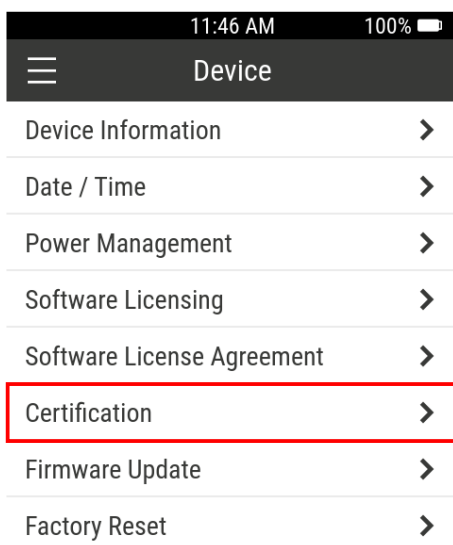
## 7.6 Access to E-Label





The handheld device contains an e-label with all certification information.

The e-label can be accessed as follows:

1. Access the main menu in the top left corner of the home screen
2. Select the menu entry "Device"
3. Select menu entry "Certification"
4. The certification information is displayed



# 8. Explanation of Symbols

| Symbol  | Description   |
|---|---|
|  | This symbol indicates information and instructions of special importance.     |
|  | This symbol indicates information and instructions that require special care. |