µCore Electronics

UCE-LCR-1 LCR METER

USER MANUAL

UCORE ELECTRONICS
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1. Introduction

UCE-LCR-1 is designed to work with UCE-CT321L. It is a complementary add-on device for UCE-CT321L, which can perform detailed measurement of passive components such as inductance, capacitance and resistance. It can work with Lite, Pro and Expert Editions.

Please note that UCE-LCR-1 is not a stand-alone product. It is developed for UCE-CT321L and can only work with this device.

Specifications:

- Measurement Frequency: 100Hz, 1kHz, 10KHz
- Open Voltage: 0.4Vpp (±0.2V)
- Resistance range: 0.001Ω — 20MΩ
- Capacitance range: 0.1pF — 20mF
- Inductance range: 0.1uH — 20H
- Equivalent Circuit Mode: Serial
- Accuracy: ±(0.25% + 8 digit)
- DCR: No
- Measurement Connections: 4 Kelvin wires on the test terminals
- Socket structure compatible with four-terminal Kelvin test probe

Package List:

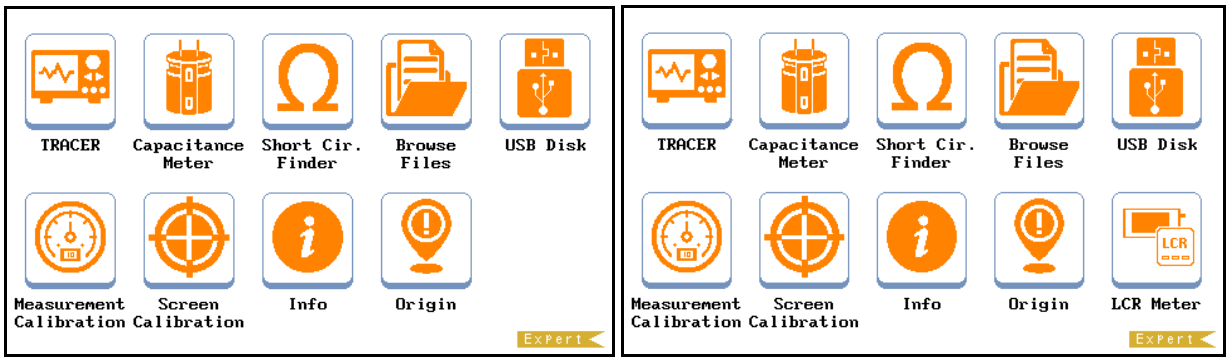
- UCE-LCR-1 LCR Meter device
- USB cable
- Zero impedance board

2. Getting Started

1. FREQ Button: It changes the measurement frequency when pressed for a short time (~1 sec). When pressed for 2 seconds or longer, the short circuit zeroing process starts.
2. L/C/R Button: It changes the measurement parameter when pressed for a short time (~1 sec). When pressed for 2 seconds or longer, the open circuit zeroing process starts.
3. GND connection point for Kelvin Probe.
4. Component measurement terminals.
5. Status LED.
6. USB port.

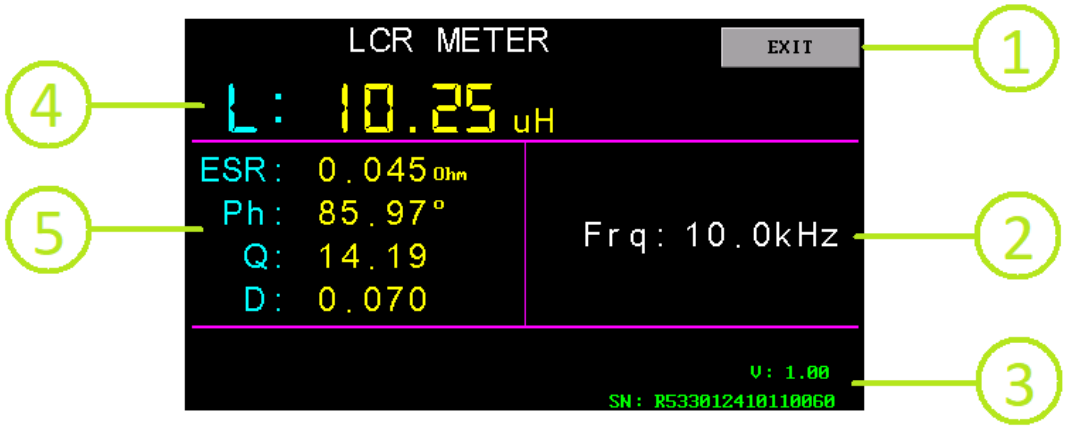
3. Power ON / OFF

The device works with plug and play logic. It is used by connecting the USB cable of the device to the mouse USB port of UCE-CT321L. When the connection is established with the device, the LCR Meter icon is activated in the main menu.



When the **LCR Meter** icon is touched, the measurement menu is accessed.

4. Display Overview



1. EXIT Button: Returns to the main menu.
2. Measurement frequency.
3. Device information; firmware version and device serial number.
4. Primary parameter; basic parameter of the measured component (L, C, R).
5. Secondary parameter; detailed parameters of the measured component.

   ESR: Equivalent Series Resistance

   Ph: Phase Angle

   Q: Quality Factor

   D: Dissipation Factor

5. Measurements

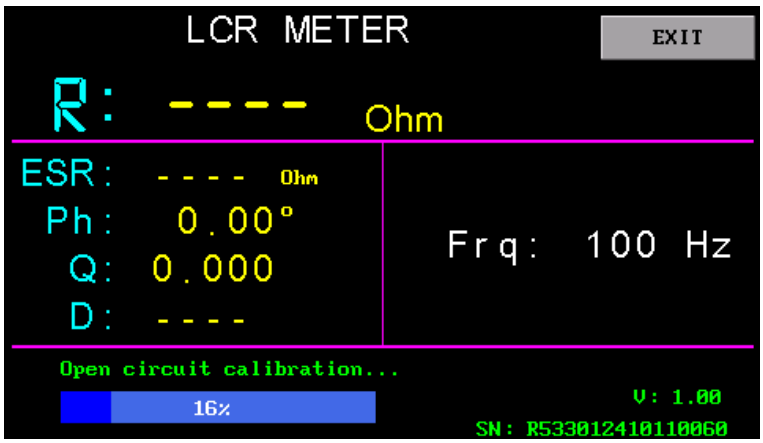
Press the L/C/R button to select the desired primary parameter. Then, insert the component on the measurement terminal. The measurement results will be displayed on the screen. In measurement mode, the status LED blinks at 1 Hz.

6. Zeroing Process

6.1. Open circuit zeroing

The open circuit zeroing eliminates parasitic parameters in parallel with the test terminals and helps to improve measurement accuracy for high-impedance components.

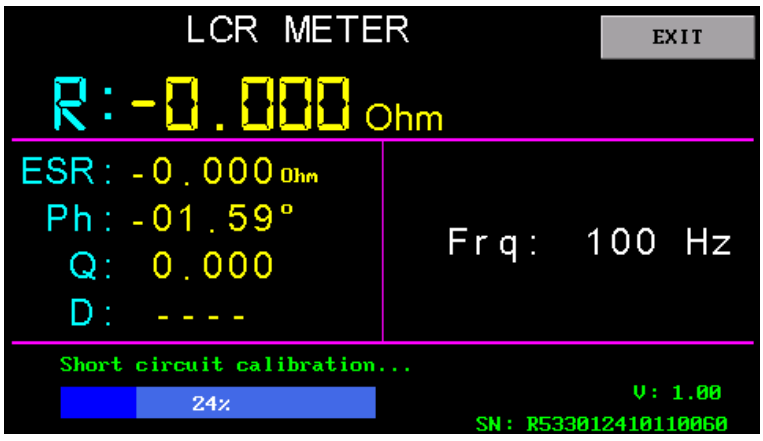
Before performing open circuit zeroing, make sure no component is connected to the measurement terminal. Press and hold the **L/C/R** button for 2 seconds or longer to start the process, and process information will be displayed on the screen. In zeroing mode, the status LED blinks at 5 Hz.



6.2. Short circuit zeroing

The short circuit zeroing eliminates parasitic parameters in series with the test terminals and helps to improve measurement accuracy for low-impedance components.

Insert the zero-impedance board provided with the device to the measurement terminal. Press and hold the **FREQ** button for 2 seconds or longer to start the process, and process information will be displayed on the screen. In zeroing mode, the status LED blinks at 5 Hz.



7. Firmware Update

7.1. System requirements

To upgrade your device, you will need the DfuSe demo program and a Windows computer that can run this software. You can download it from our website or from the STMicroelectronics website.

7.2. Hardware setup

After installing the program, you need to run the device in firmware update mode. To do this, hold down one of the (**FREQ** or **L/C/R**) buttons on the device while connecting it to the computer's USB port with a USB cable. When update mode is active, the status LED on the device will flash rapidly at regular intervals.

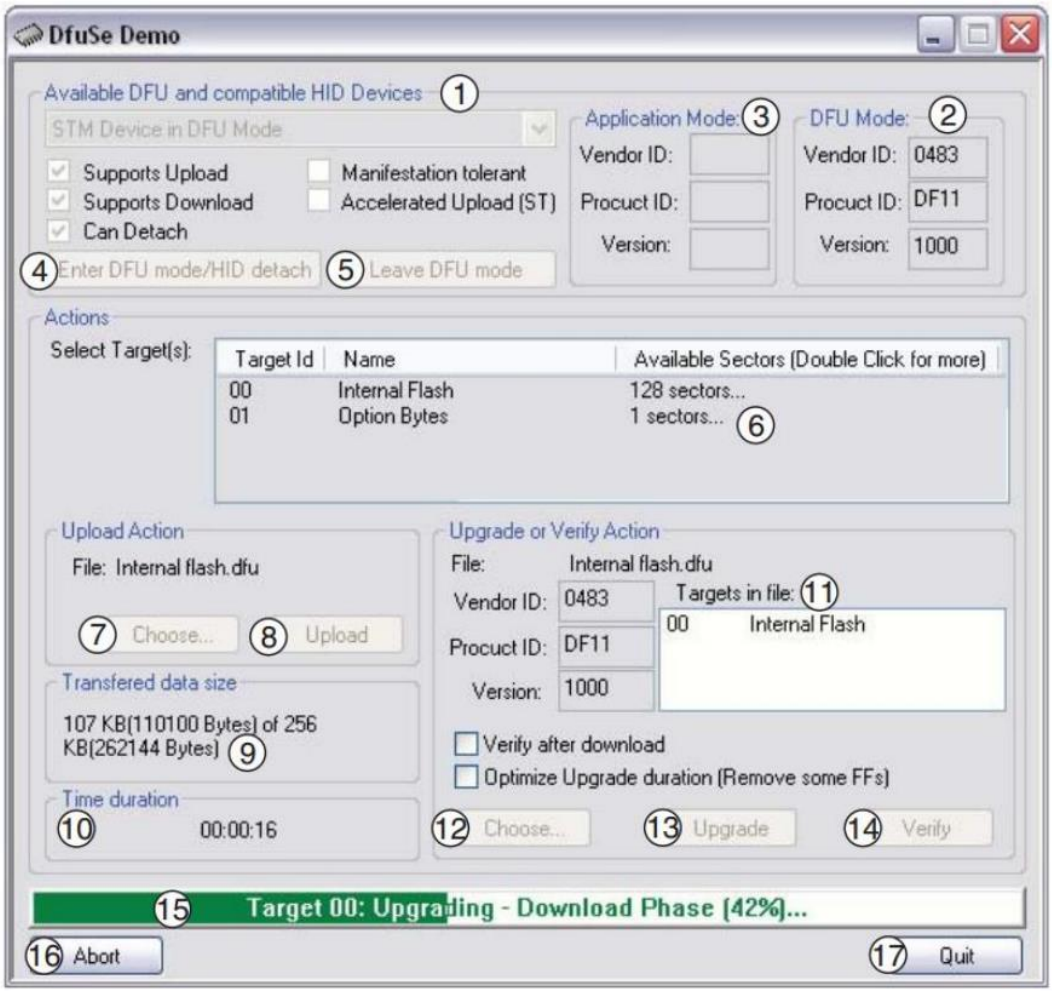
7.3. Update Procedure

After switching the device to firmware update mode, the DfuSe Demo program is run on the computer. In field 1, the device is shown as “STM Device in DFU Mode”. Now the firmware of the device can be upgraded by following the steps below.

- Download the latest firmware from the product's website and save it to a convenient location, such as your desktop. Unzip the file if necessary.

  Note: The correct firmware file should have the '.dfu' extension.

- Click “**Choose**” button (Item 12) to select a DFU file.
- Select the "**internal flash**" in the memory mapping list (Item 6).
- Check the “**Verify after download**” checkbox if you want to launch the verification process after uploading data (recommended).
- Click “**Upgrade**” button (Item 13) to start uploading memory content to the selected DFU file. After clicking it, a window will be shown about verification of firmware file. Click “Yes” button to continue.
- Once the upload process is complete, you can run the device with the UCE-CT321L and check the firmware version information from the **LCR Meter** menu.


DfuSe Demo
Available DFU and compatible HID Devices
1
STM Device in DFU Mode
Supports Upload
Supports Download
Can Detach
Manifestation tolerant
Accelerated Upload (ST)
4 Enter DFU mode/HID detach
5 Leave DFU mode
Application Mode:
3
Vendor ID:
Procuct ID:
Version:
DFU Mode:
2
Vendor ID: 0483
Procuct ID: DF11
Version: 1000
Actions
Select Target(s):
Target Id
Name
Available Sectors (Double Click for more)
00 Internal Flash 128 sectors...
01 Option Bytes 1 sectors...
6
Upload Action
File: Internal flash.dfu
7 Choose...
8 Upload
Transfered data size
107 KB(110100 Bytes) of 256 KB(262144 Bytes)
9
Time duration
10
00:00:16
Upgrade or Verify Action
File: Internal flash.dfu
Vendor ID: 0483
Procuct ID: DF11
Version: 1000
Targets in file:
11
00 Internal Flash
Verify after download
Optimize Upgrade duration (Remove some FFs)
12 Choose...
13 Upgrade
14 Verify
15 Target 00: Upgrading - Download Phase (42%)...
16 Abort
17 Quit