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Titel : Operation manual, kronback tracers P12		27/08/2019

# Operation manual



## Kronback tracers P12

This manual is also available from the kronback tracers website:

**WWW.KRONBACK.COM**

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## 1. Declaration of Conformity



### Declaration of Conformity

Manufacturer: Kronback ApS  
Address: Filmtovet 70, Jonstrup, DK-3500 Værløse, Denmark  
Product description: 2 channel RF signal generator 3-1220 MHz  
Product name/Type no: P12  
Batch or Serial No.: Hardware rev G

We declare under our sole responsibility that the products, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EU Member States relating to the following:

#### Directives

Radio Equipment Directive 2014/53/EU

RoHS Directive 2011/65/EU

and

#### Standards

RED-Direktiv 2014/53/EU:

EN 300 328 V2.1.1 (concerning RED article 3.2)

EN 301 489-1 V1.9.2 og EN 301 489-17 V2.2.1 (concerning RED article 3.1 b)

EN 60950-1:2006 with A1:2010, A2:2013, A11:2009, A12:2011 and EN 62479:2010 (concerning RED article 3.1 a)

RoHS Directive 2011/65/EU:

EN 50581:2012: Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date: February 1<sup>st</sup> 2019

Location: Værløse, Copenhagen, Denmark

Name : Bo Kronback

Function: Managing Director

Signature

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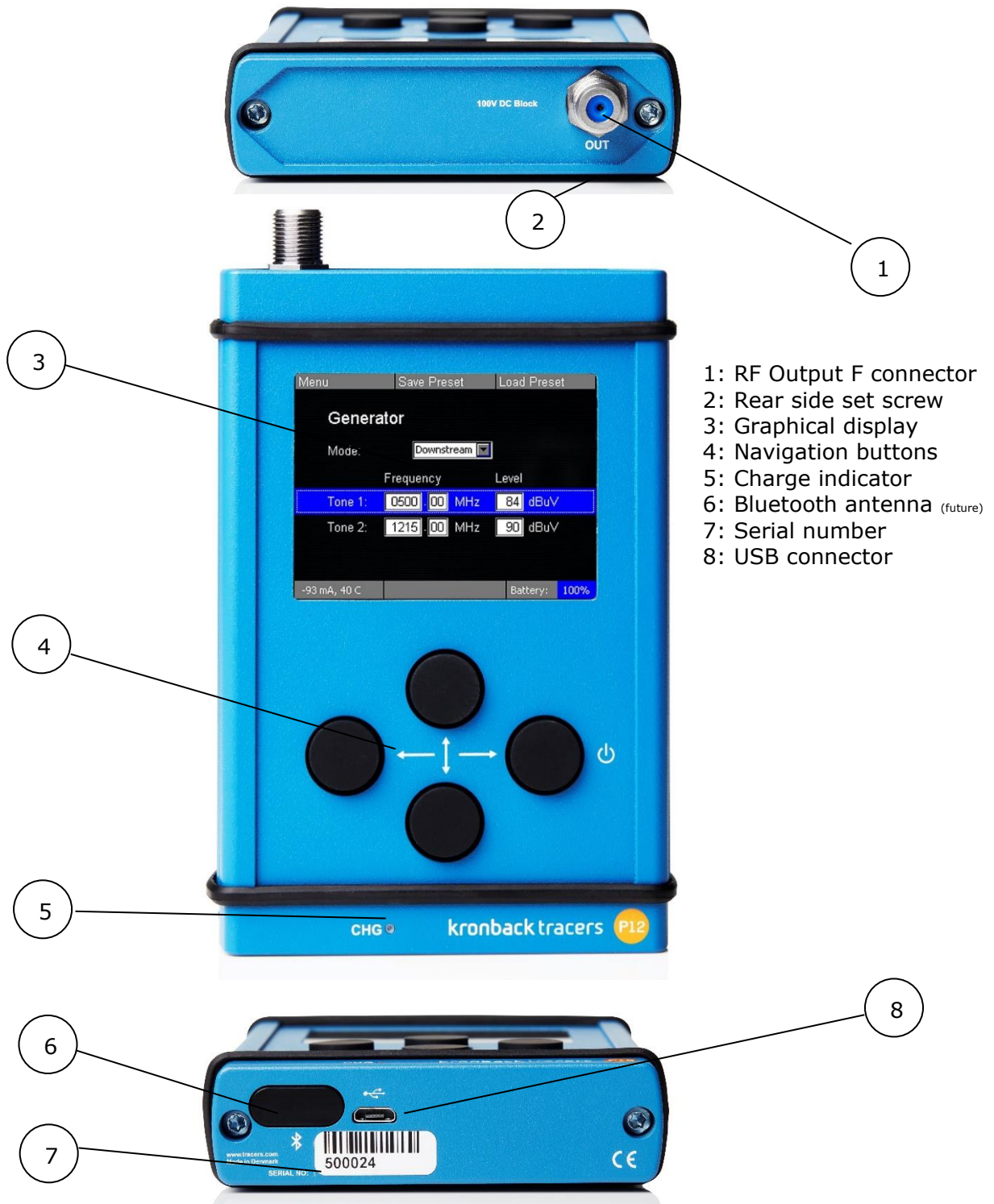
## 2. Release notes

Release date	Software Version	Change-log
August 27 <sup>th</sup> 2019	0.2.23	Added sweep feature Added software update section Added release-note section
May 17 <sup>th</sup> 2019	0.2.22	Battery performance feature added
December 20 2017	0.2.20	First commercial release

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### 3. Physical layout and connections



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### 3.1. RF output F-Type connector



The RF output F-type connector can be replaced in case of damage. Spare connectors can be requested by contacting a local reseller.

The output is internally DC blocked up to 100V.

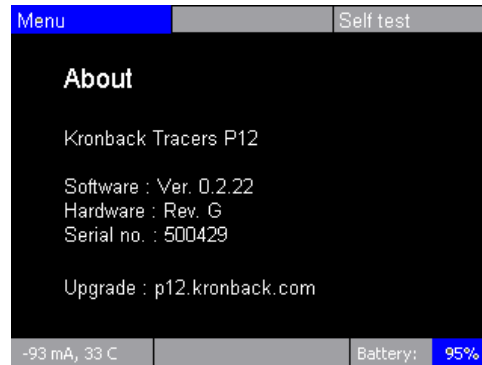
### 3.2. Rear side set-screw

A rear M3 set screw is ensuring that the F-connector is fixed during operation. Use a 1,5mm HEX key for the set screw.

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### 3.3. Graphical display



A QVGA 320x240 pixel colour graphical display is used for displaying data and user interaction.

The Text display is organized with drop down menus.

On top of each page the menu headline is displayed: Generator, Config Tones, Config Device, Muted mode, About and Power Off

Please refer to the software section of this manual for a description of each menu.

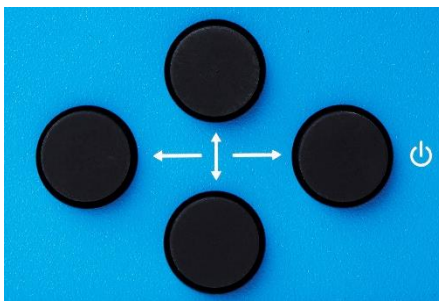
For improved battery performance, backlight is dimmed 20 seconds after each key press

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### 3.4. Navigation buttons



4 navigation buttons are used for control.

The up down buttons are used to change values or to browse between menus.

When the correct value is set, then use the right button to commit the value, or use the left button to cancel.

At any time, pressing the right button for more than 6 seconds forces a power-down. When the P12 is powered down, use the right button for at least 1 sec to wake-up the unit.

When the P12 is powered down all current settings are stored in the internal default register, Preset 0, to ensure that these settings are re-initiated after wake-up.

### 3.5. Charge indicator



The charge indicator lights during charging of the battery. The battery is charged from the USB connector.

Charge time is 6 hours.

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### 3.6. USB connector



The USB connector is used for remote-control the P12 as well as for firmware upgrades.

The P12 uses a HID (Human Interface Device) USB profile. No PC-USB driver is necessary. Contact Kronback Tracers support for protocol and interface description.

The USB power is used to charge the P12. This can be done from a standard PC or from the power adapter shipped with the unit.

### 3.7. Bluetooth antenna



The Bluetooth antenna is not active and is reserved for future use.

### 3.8. Serial number



A 6 digit serial number label is placed on bottom of the P12 chassis. The serial number is also available from the ABOUT menu.

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## 4. Specifications

### 4.1. RF out

- Connector: F-type 75 ohm, AC coupled. 100V DC isolation
- Frequency response: 3-1218 MHz
- Return loss return path: >18dB
- Return loss downstream: >18dB@40 MHz, - 1.5 dB/oct

### 4.2. Pilot

- Frequency range: 3-1220 MHz
- Frequency steps: 10kHz
- Frequency error: <5kHz
- Level range upstream (3MHz – 215MHz) : 50 dBuV – 104 dBuV
- Level range upstream (60MHz – 1220MHz) : 50 dBuV – 100 dBuV
- Level steps: 1 dB
- Level error: <0.5 dB

### 4.3. Connector

- F-type 75 ohm, AC coupled
- USB connector: USB type micro-B

### 4.4. Indicators

- Charging status

### 4.5. LCD display

- Backlight colour: White
- Display mode: TFT, QVGA dimension 55mm x 41 mm
- Viewing angle
  - horizontal: >70 deg
  - vertical: >65 deg

### 4.6. Physical specifications

- Height: 140 mm
- Width: 83 mm
- Depth: 23 mm
- Weight: 404 g

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#### 4.7. **Management**

- Remote
  - USB
  - Bluetooth (future)
- Local control
  - Pushbuttons

#### 4.8. **Electrical**

- Max. power consumption: 6 watt
- USB power: 5V
- Max USB current draw: 1500mA
- Fuse: Internal autofuse

#### 4.9. **Environmental**

- Operating temperature: 5°C ~ 45°C
- Storage temperature: -20°C ~ 55°C
- Operating humidity: 10% ~ 90%, non-condensing

#### 4.10. **Battery**

- Type: Li-ion, rechargeable
- Nominal voltage: 3.7 V
- Minimum capacity: 3.4 AH @ C/5 Rate @ 23 ° C
- Cycle life: > 500 cycles
- Memory: No memory effect
- Operating temp: -20 ° C to 60 ° C
- Safety: Meets UL1642 standard
- Transportation: Excepted from regulations

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## 5. User interface

### 5.1. Navigation tree



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## 5.2. Menu bottom bar:

At the bottom of the P12 screen the temperature, battery status and battery current consumption is displayed.

If the P12 is running on battery the current readout is negative. If the battery is being charged the readout is positive. The current consumption is displayed in mA.

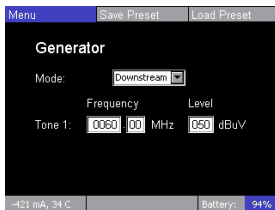
The internal temperature of the P12 is displayed in degrees Celsius

The battery level is presented as a percentage of the full capacity. If the P12 is charging, the text **Charge** is shown. If the unit is running on battery this text is changed to **Battery**. The percentage is however always presenting the fuel level of the battery.

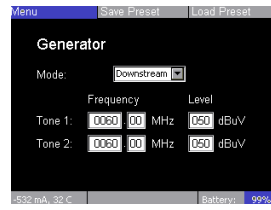
## 5.3. Generator Menu

The generator menu is used for configuring the frequency and level of the tone or tones that P12 generates.

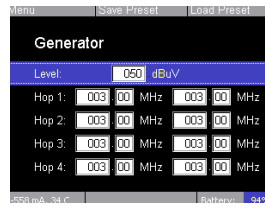
This menu can be either showing 1 tone, 2 tones (hop) or sweep.



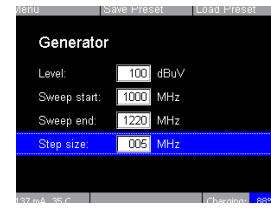
1 Tone



2 Tones



Hop



Sweep

For the tone1 and tone 2 screen a choice between upstream and downstream must be decided.

For the HOP screen only *upstream* frequencies can be selected.

For the SWEEP screen only *downstream* frequencies can be selected.

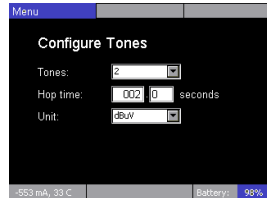
Mode:	upstream	downstream
Max level per tone [dBuV]	104	100
Max level per tone [dBmV]	44	40
Frequency range [MHz]	3-215	60-1220

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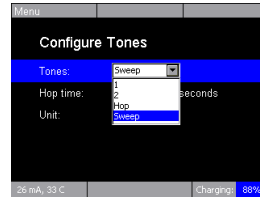
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### 5.1. Configure Tones Menu

To change between the 3 screens: 1 tone, 2 tones 8 tones (hop) or sweep, go to the **Configure Tones** menu:



Configure Tones

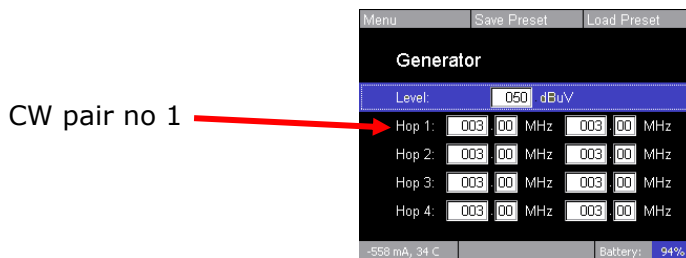


Tone options

**Tones:** Can be set to 1, 2 or HOP or sweep. If the HOP or Sweep setting is selected then the time between each tone shift can be set using the hop time field.

**hop time:** Select from 0,1 to 999,9 seconds. Fastest actual hop-time or sweep-time is 250 ms. This setting is not committed before navigating back to the Generator screen.

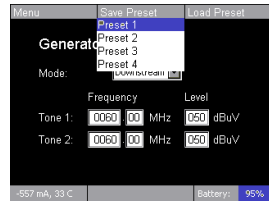
Hopping is done in pairs, 2 tones will simultaneously be active:



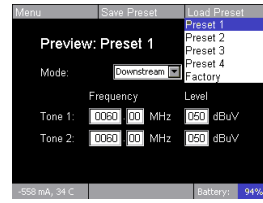
**Unit:** Select between dBuV or dBmV. This impacts all menus in the P12 GUI.

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### 5.1. Presets menus



Save preset



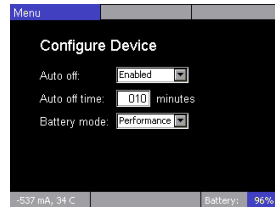
Browse and load preset

Up to 4 presets can be stored and recalled for fast access during operation of the P12. The SAVE PRESET will always store the current setup of the P12. This preset can then be recalled later in the LOAD PRESET menu.



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## 5.2. Setup menu



### 5.2.1. Auto off

To ensure optimal battery performance, the P12 can be set ENABLE to power down automatically after a period of inactivity. This period can be set from 1 to 999 minutes. It can also be set to DISABLED for continuous operation.

If USB power is provided to the USB connector, the Auto off value is overridden, and the unit will remain powered on. Please refer to next section, **Battery mode**, if P12 is always connected to a charger and used for longtime operation.

### 5.2.2. Battery mode

Performance:

The P12 will continue to charge until it has reached 100% battery capacity, ensuring the longest possible operation time.

Max Life:

The P12 will stop charging when the battery capacity has reached 80%. The charging will resume when the capacity reaches 70%. This mode should be used when the P12 is permanently connected to a charger for longtime battery operation.

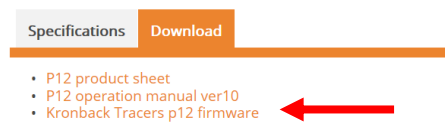
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## 6. Software upgrade procedure

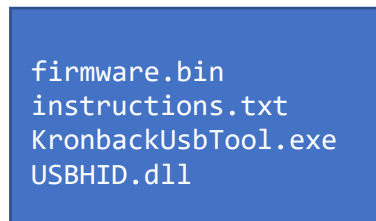
The latest P12 firmware release can be downloaded from [www.kronback.com](http://www.kronback.com)

1: Download the **zip** file in the P12 section of the website.



2: Unzip all 4 files to a local folder.

The folder must contain:



3: Shut down the P12

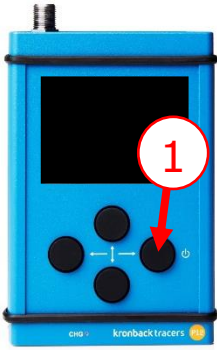
4: Connect the P12 to the PC's USB port

5: Run the KronbackUsbTool.exe file

.....continues next page.....

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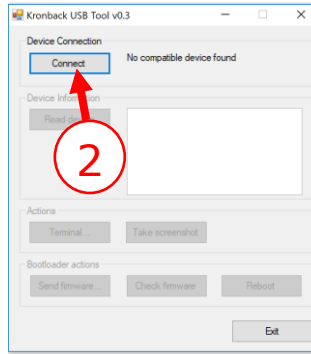
## 6: Upgrade procedure



**1:** Press the Power button and wait **2 sec**

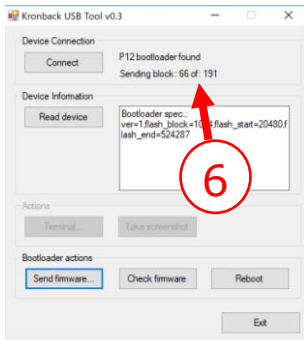
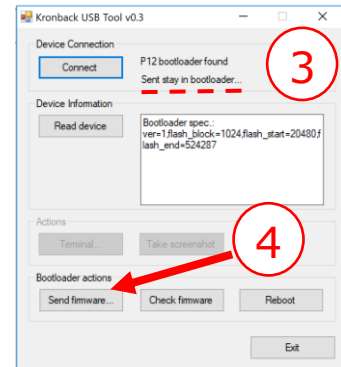
*→Note: no active display*

**2:** Press connect



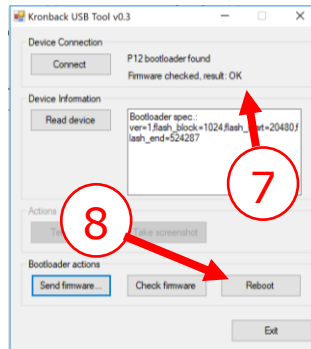
**3:** GUI responds **P12 bootloader found**  
*Sent stay in bootloader ...*

**4:** Press **Send Firmware**



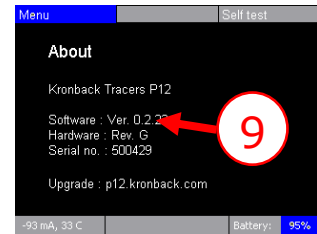
**5:** Select the firmware.bin file and press **OK**

**6:** Wait for the counter to finish



**7:** The program reports **result:OK**

**8:** Press **Reboot**



**9:** Verify the Software version in the **About** menu

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