

VS-2020-032

# Beat2Phone ECG Cloud Service User Manual

Private user



**Beat2Phone ECG**  
Powered by VitalSignum

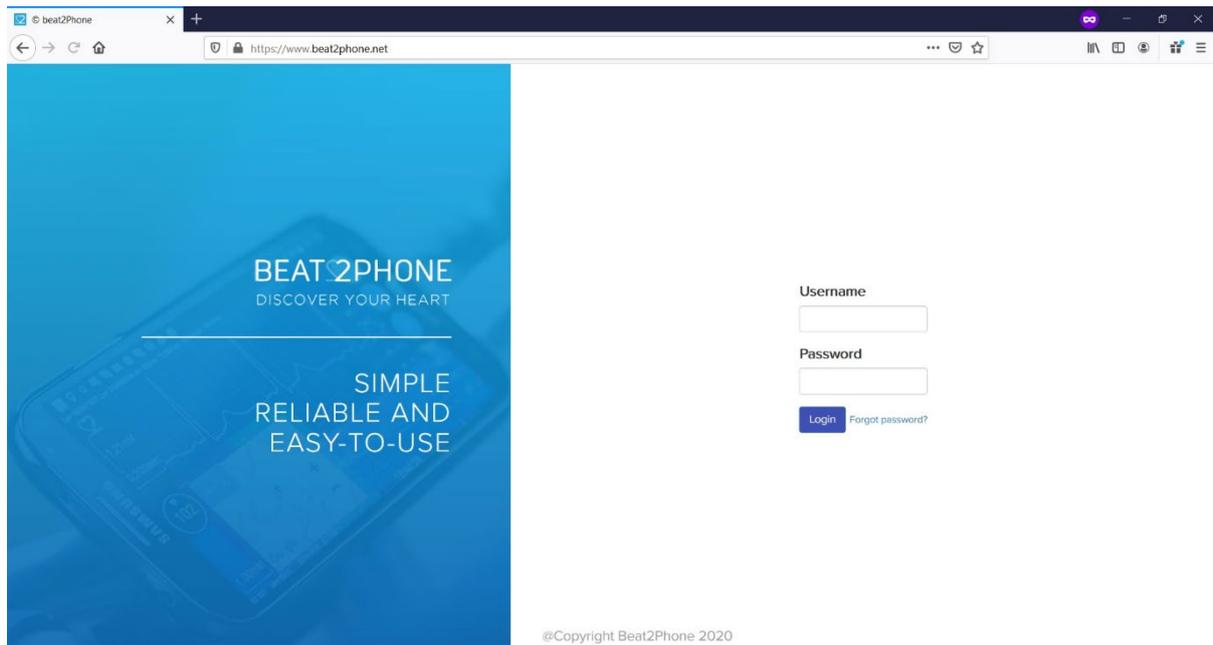
Version 5.0  
18.5.2021



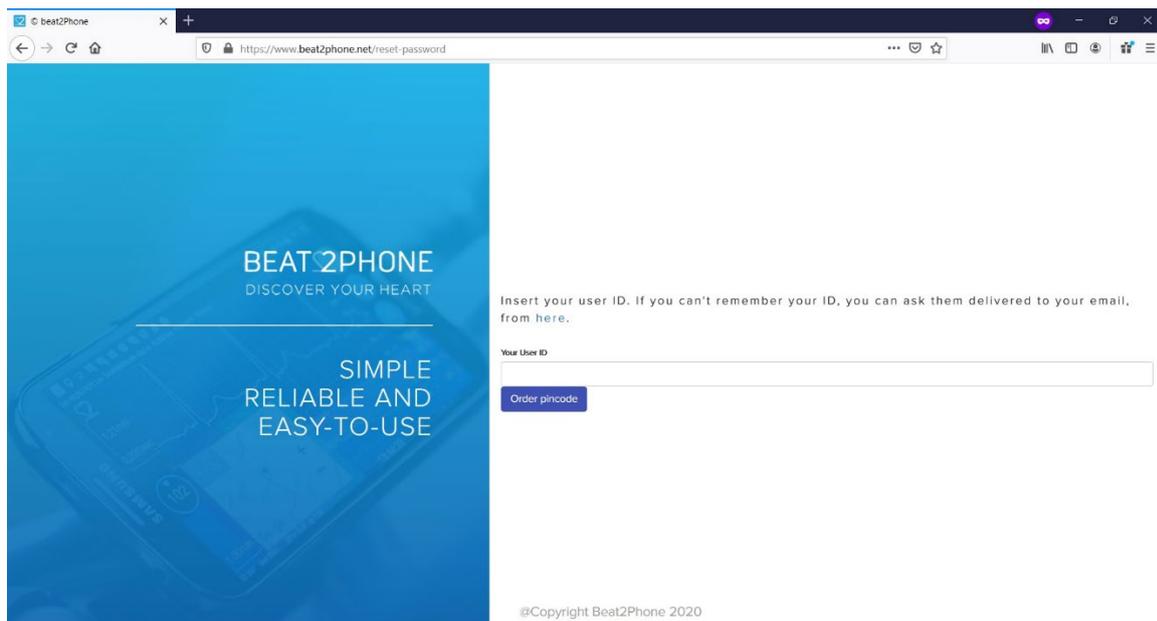
## Logging in and account settings

You can find the Beat2Phone ECG Cloud Service at <https://www.beat2phone.net>

To log in to the cloud service, use the username and password that you have created in the Beat2Phone ECG mobile application. If you try to log in with a wrong password too many times in a row, your user account will be locked for security reasons. You cannot log in to the cloud service or the mobile application with a locked account, you must unlock the account first. The account can be unlocked by following the instruction below, that are also used to restore a forgotten password.



If you have forgotten your password or if your account is locked, choose “Forgot password?” next to the login button. By inserting your user id, the system will send you a PIN code to reset your password. The PIN code will be sent to the email that you used to create your user profile.



If you cannot remember your user ID, you can order a list of your usernames to your email by clicking the link that says “here”.

Insert your user ID. If you can't remember your ID, you can ask them delivered to your email, from [here](#).

A form to input your email opens. By inputting the email that you used to create your profile, the system sends your username(s) to your email.

After successfully logging in, you can change your account settings from the “Account” button in the top right corner.

Account



## Activating the purchased license

You can optionally purchase a license for algorithm analysis for the ECG recordings.

NOTE: The license requires the new Beat2Phone ECG sensor- CE<sub>0598</sub>. It cannot be used with the old Beat2Phone sensor.

To activate your purchased license, log in to the Beat2Phone ECG web service with the profile you wish to use the analytics service<sup>1</sup> on. After logging in, open your account settings from the "Account" button as instructed earlier. Choose "Add license code" and enter your license key. The license should now be activated.

NOTE! You must also restore the profile in the mobile application before taking any new recordings after the license activation. Go to mobile application PROFILES select NEW PROFILE, select RESTORE and enter the profile username and password. Only after this the recording for the profile are stored to the cloud service.

When the license is active, the analytics service will analyze any new recordings that you upload to the cloud. After the license validity period ends, you can still access the cloud service and view your old recordings, but new recordings will not be uploaded or analyzed.

Account

Username: TuotantoMatti
Created: 10.12.2018
Modified: 10.12.2018

[Edit](#) [Buy a new license](#) [Add license code](#)

<sup>1</sup> Analytics service is provided by Cardiolyse CE<sub>0197</sub>-marked software algorithm



## Measurement list view

After logging in, you will see a list of your measurements.

Date	Duration	Findings (Attention)	Show ECG
21.09.2020 10:54	15m 2s	1	Show ECG
13.08.2020 16:00	10m 55s	0	Show ECG
09.07.2020 8:48	8h 52m 4s	2	Show ECG
25.06.2020 22:29	7h 18m 15s	0	Show ECG
25.06.2020 16:49	1h 19m 54s	0	Show ECG
25.06.2020 16:28	18m 45s	0	Show ECG
21.05.2020 12:07	3m 32s	0	Show ECG
19.05.2020 19:37	1h 43m 38s	4	Show ECG

You will see a list of ECG measurements. The measurements have been named after the measurement date and measurement time. The uppermost measurement is the most recent one. The duration of the measurement is shown in the duration field. The findings field displays the number of different annotations made by the user and gives detailed information when hovered over. If you have bought the Beat2Phone ECG analytics service, the findings field will also display those annotations. Hovering over the findings button opens a list of unique annotations. The list includes the source and type of an annotation, and the number of those annotations in the recording. The source of an annotation can be '-', meaning the user, 'alg', meaning algorithm, or the user ID of the user.

**ATTENTION:** Algorithm (alg) annotations are not intended to be the sole means of diagnosis for any abnormal ECG. They are offered to physicians on an advisory basis only, in conjunction with the physician's knowledge of ECG.

**NOTE!** The algorithm (alg) adds N marking of normal beat for first normal beat detected at the beginning of the recording and after each abnormal beat. Algorithm also adds (N marking of normal sinus rhythm detected at the beginning of the recording and after each abnormal rhythm.



Source	Type	#
–	Comment annotation	1
–	Irregular rhythm	1
DrAcula	Atrial flutter	1
DrAcula	Diastole	1
DrAcula	Change in signal quality	1
alg	Normal sinus rhythm	1
kkivinie	Palpitation	1
kkivinie	Nodal (junctional) premature beat	1
kkivinie	Left bundle branch block beat	2
kkivinie	Supraventricular premature or ectopic beat (atrial or nodal)	1

The Show ECG button opens the ECG chart view.

Show ECG

The measurement list also includes search functions that can be used to filter the list of measurements with several different criteria, for example measurement duration and types of annotations.

Patient mmmm

▼

**Sources**

Select...
▼

**Select annotations**

Select...
▼

**Date**

**Duration Min**

Hours

▲▼

Minutes

▲▼

**Duration Max**

Hours

▲▼

Minutes

▲▼

Search

Clear

Choose a recording you wish to examine by clicking the name of the recording.

04.11.2019 16:19	2m 5s	0	Show ECG
16.10.2019 11:01	1h 38m 16s	4	Show ECG
16.10.2019 10:30	15m	0	Show ECG

Details about the measurement open to the right.



Test 20191016T110159+0300\_\_a2e1

Time: 16.10.192019 11:01 Show ECG

@	Type	Description
396	N	Normal beat
746	A	Atrial premature beat
3176	V	Premature ventricular contraction
4337	e	Atrial escape beat

In this list, each annotation made by the user or the Beat2Phone ECG analytics service algorithm is displayed. By choosing an annotation from the list, the ECG graph view opens, and the ECG graph will be centered around the chosen annotation.

**ATTENTION:** Algorithm (alg) annotations are not intended to be the sole means of diagnosis for any abnormal ECG. They are offered to physicians on an advisory basis only, in conjunction with the physician's knowledge of ECG.

**NOTE!** The algorithm (alg) adds N marking of normal beat for first normal beat detected at the beginning of the recording and after each abnormal beat. Algorithm also adds (N marking of normal sinus rhythm detected at the beginning of the recording and after each abnormal rhythm.

The ECG graph view can also be opened from the Show ECG button.

Show ECG

#### WARNING

Do not attempt self-diagnostics based on the device recordings or the algorithm markings, always consult a competent medical professional for the needed actions. Recordings and markings can only be offered on advisory basis to qualified physicians for interpretation.

If you have heart symptoms contact a medical professional even if the recordings and markings appear to be normal.

## ECG graph view

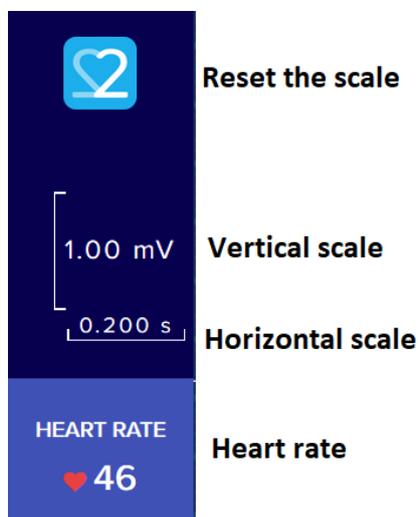
The ECG graph view opens from the start of the measurement by default. If you opened it by choosing an annotation from the list view, the graph will be centered around the chosen annotation.

The white graph in the middle is the ECG graph, and the yellow graph below is the RRI graph that displays the changes in the heart rate.

**ATTENTION:** Sometimes annotations made by the algorithm (alg) might be slightly off, e.g. off by one R peak on the ECG.



On the left of the screen, you can see the scale of the measurement view. Two squares vertically are 1.00 millivolts, and two squares horizontally are 0.200 seconds. The horizontal scale can be zoomed in and out with the mouse scroll wheel. You can reset the scale by clicking the Beat2Phone logo on the left. In addition, the heart rate is displayed on the left.

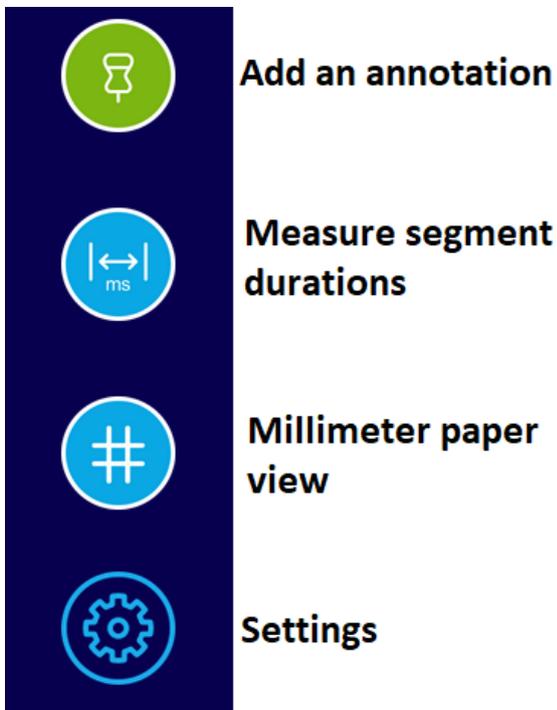




On the top of the screen, there are controls for moving between annotations and automatically playing the ECG graph. From 'Annotations', you can filter the annotations by type and source and use the arrows to move between annotations. From 'Play/Pause' you can choose whether to play the ECG graph or the HR graph. After that, the arrow keys are used to control whether the playback is forwards or backwards. From 'Speed Control' you can adjust the playback speed.



On the right, there are various buttons. From the first button, annotations can be added to the registration. From the next button, you can open a tool for measuring the duration of different segments in the ECG. From the middle button, you can open a millimetre paper view of the ECG. The last button opens settings.



#### Warning

**WARNING:** Do not attempt to do any self-diagnosis based on the ECG recordings or the algorithm markings. They can only be offered on advisory basis to qualified physicians for interpretation.



## Measure segment durations

The segment duration measurement tool can be used to estimate the duration of different waves and segments. You use the tool by first dragging the vertical dotted line to the correct spot, for example to the onset of the P wave, and then clicking the corresponding button from the top. By repeating this step for all points, the tool calculates the durations.



Drag the dotted line to the onset of the P wave and choose 'Onset P'



Drag the dotted line to the end of the P wave and choose 'end P'



The tool displays the duration of the P wave in milliseconds

### Warning

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## Millimeter paper view

The millimeter paper view shows 30 seconds of ECG from the selected spot on the ECG view, 15 seconds backwards and 15 seconds forwards from the spot. A black dot is visible on the millimeter paper to indicate the selected spot. The HR graph from the whole recording is displayed on the bottom of the millimeter paper. The HR graph also includes the black dot that indicates the selected spot. Annotations are also available on the millimeter paper.



The millimeter paper can be saved as an image by selecting the save button (floppy disk).



The millimeter paper can be printed or saved as pdf by right clicking the millimeter paper and selecting Print... or by using the shortcut ctrl+P.

To exit the millimeter paper view, use the back button of the browser to return to the ECG graph view or click the Beat2Phone ECG logo to return to the patient list.

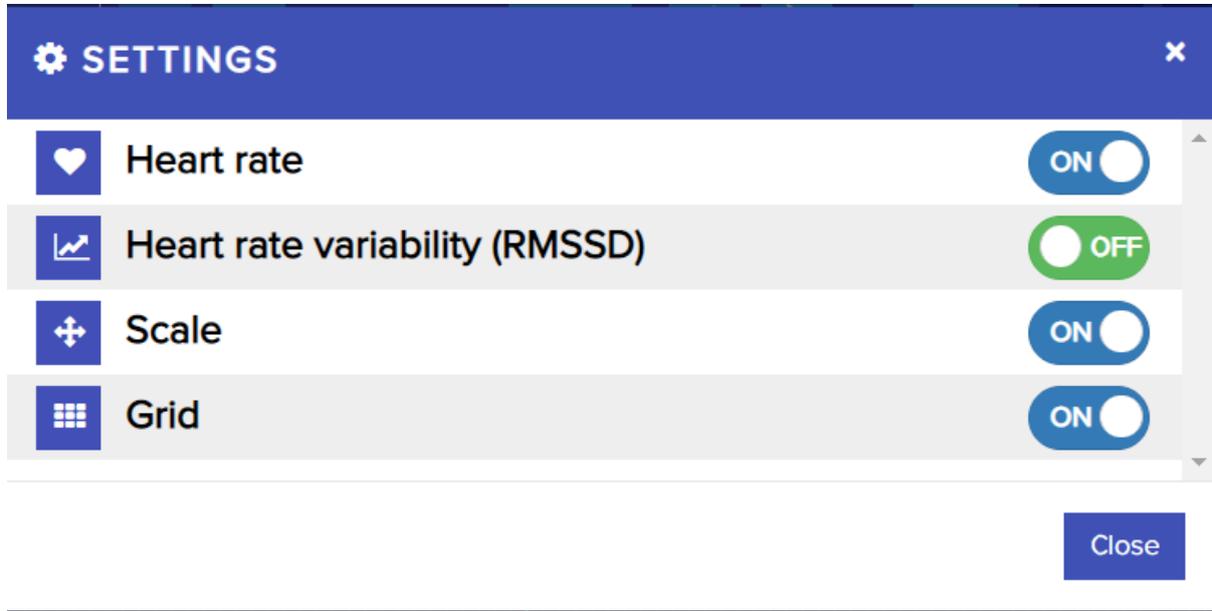
### Warning

**WARNING:** Do not attempt to do any self-diagnosis based on the ECG recordings or the algorithm markings. They can only be offered on advisory basis to qualified physicians for interpretation.



## Settings

From settings, you can choose whether to display the HR graph and the HRV graph. You can also choose whether to display the scale and the grid.





## Used annotation abbreviations

The Beat2Phone ECG analytics service uses abbreviations for annotations in the millimeter paper view and in some lists. The full list of annotation abbreviations is as follows:

- 'F1': 'Irregular rhythm',
- 'F2': 'Extra beat',
- 'F3': 'Palpitation',
- 'F4': 'Chest pain',
- 'N': 'Normal beat',
- 'L': 'Left bundle branch block beat',
- 'R': 'Right bundle branch block beat',
- 'B': 'Bundle branch block beat (unspecified)',
- 'A': 'Atrial premature beat',
- 'a': 'Aberrated atrial premature beat',
- 'J': 'Nodal (junctional) premature beat',
- 'S': 'Supraventricular premature or ectopic beat (atrial or nodal)',
- 'V': 'Premature ventricular contraction',
- 'r': 'R-on-T premature ventricular contraction',
- 'F': 'Fusion of ventricular and normal beat',
- 'e': 'Atrial escape beat',
- 'j': 'Nodal (junctional) escape beat',
- 'n': 'Supraventricular escape beat (atrial or nodal)',
- 'E': 'Ventricular escape beat',
- '/' : 'Paced beat',
- 'f': 'Fusion of paced and normal beat',
- 'Q': 'Unclassifiable beat',
- '?': 'Beat not classified during learning',
- '(AB)': 'Atrial bigeminy',
- '(AFIB)': 'Atrial fibrillation',
- '(AFL)': 'Atrial flutter',
- '(B)': 'Ventricular bigeminy',
- '(BII)': '2° heart block',



'(IVR': 'Idioventricular rhythm',  
'(N': 'Normal sinus rhythm',  
'(NOD': 'Nodal (A-V junctional) rhythm',  
'(P': 'Paced rhythm',  
'(PREX': 'Pre-excitation (WPW)',  
'(SBR': 'Sinus bradycardia',  
'(STH': 'Sinus tachycardia',  
'(SVTA': 'Supraventricular tachyarrhythmia',  
'(T': 'Ventricular trigeminy',  
'(VFL': 'Ventricular flutter',  
'(VT': 'Ventricular tachycardia',  
'[': 'Start of ventricular flutter/fibrillation',  
'!': 'Ventricular flutter wave',  
']': 'End of ventricular flutter/fibrillation',  
'x': 'Non-conducted P-wave (blocked APC)',  
'(: 'Waveform onset',  
)': 'Waveform end',  
'p': 'Peak of P-wave',  
't': 'Peak of T-wave',  
'u': 'Peak of U-wave',  
'^': 'PQ junction',  
'\": 'J-point',  
'^': '(Non-captured) pacemaker artifact',  
'|': 'Isolated QRS-like artifact',  
'~': 'Change in signal quality',  
'+' : 'Rhythm change',  
's': 'ST segment change',  
'T': 'T-wave change',  
'\*' : 'Systole',  
'D': 'Diastole',  
'=' : 'Measurement annotation',



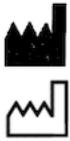
'DEV': 'Deviation from normal',

[COMMENT\_ANNOTATION]: 'Comment annotation'



## Cardiolyse information

### Software for ECG signal analysis Cardiolyse, v 1.0



Cardiolyse Oy  
Fabianinkatu 29 B  
00100 Helsinki

03.2019



Cardiolyse CE<sub>0197</sub> Standalone software for ECG signal analysis – HD 60145512 0001

Cardiolyse instructions for use:

<https://docs.google.com/document/d/1SwFXwcrBjzvh3EIFcNKHz3f5OzTWID-x4qCy3qnM7dw>

### CONTACT INFORMATION

CARDIOLYSE OY,

GE Health Innovation Village, 2 Kuortaneenkatu, Helsinki, 00510.

<https://cardiolyse.com>

Contact: [info@cardiolyse.com](mailto:info@cardiolyse.com)

### INTENDED USE

The Cardiolyse is intended to record, store, analyze, display and transfer up to twelve (12) leads electrocardiogram (ECG).

The Cardiolyse software performs QRS, Ventricular Ectopic Beats, Supraventricular ectopic beats detection, QRS feature extraction, interval measurement, heart rate measurement, rhythm analysis and abnormal ST-T changes for up to 12 leads ECG.

Cardiolyse software also performs automatic ECG interpretation of common abnormalities, including ventricular hypertrophy and myocardial infarction for 12 leads ECG.

The Cardiolyse interpretation results are not intended to be the sole means of diagnosis for any abnormal ECG. They are offered to physicians on an advisory basis only in conjunction with the physician's knowledge of ECG.

The device has not been tested and it is not intended for pediatric use.

### CONTRAINDICATIONS

People below 18 years old

### SAFETY AND PERFORMANCE



Cardiolyse.me software as a medical device safety and performance was validated based on device's equivalence and clinical evaluation data.

ECG algorithms were validated on widely acceptable databases MIT-BIH, NST, CU, ESC as well as CSE.

Algorithm's sensitivity and specificity is highly dependent on signal quality provided by device.



## VitalSignum Information

### Beat2Phone ECG Service

VitalSignum Oy  
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00510 Helsinki, Finland.  
Tel. +358 20 741 2500  
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[info@vitalsignum.com](mailto:info@vitalsignum.com)

## Change history

Date	Revision	Changes	Valid from
15.10.2020	1.0	Approved	15.10.2020
29.10.2020	2.0	List of annotations added, mm-paper figure updated.	30.10.2020
28.12.2020	3.0	Activating license modified with NOTE and explanation.	28.12.2020
26.2.2021	4.0	Added revision 3.0 missing changes, added version info, added Cardiolyse information, added VitalSignum contact info.	26.2.2021
12.3.2021	5.0	Added information about account lock and how to unlock a locked account Added explanation for analysis algorithm use for normal beat and normal sinus rhythm. Added warning for self-diagnosis to multiple chapters. Added warning to contact medical professional.	18.5.2021