

VS-2020-034

Beat2Phone ECG Cloud Service User Manual

Professional user



Beat2Phone ECG

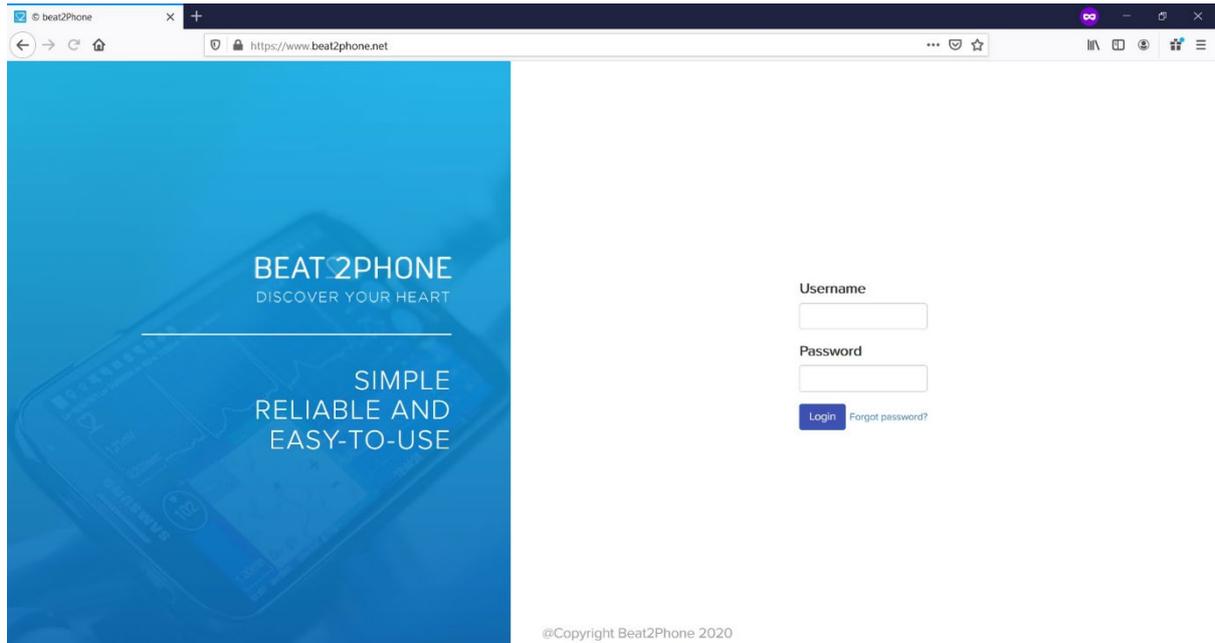
Powered by VitalSignum



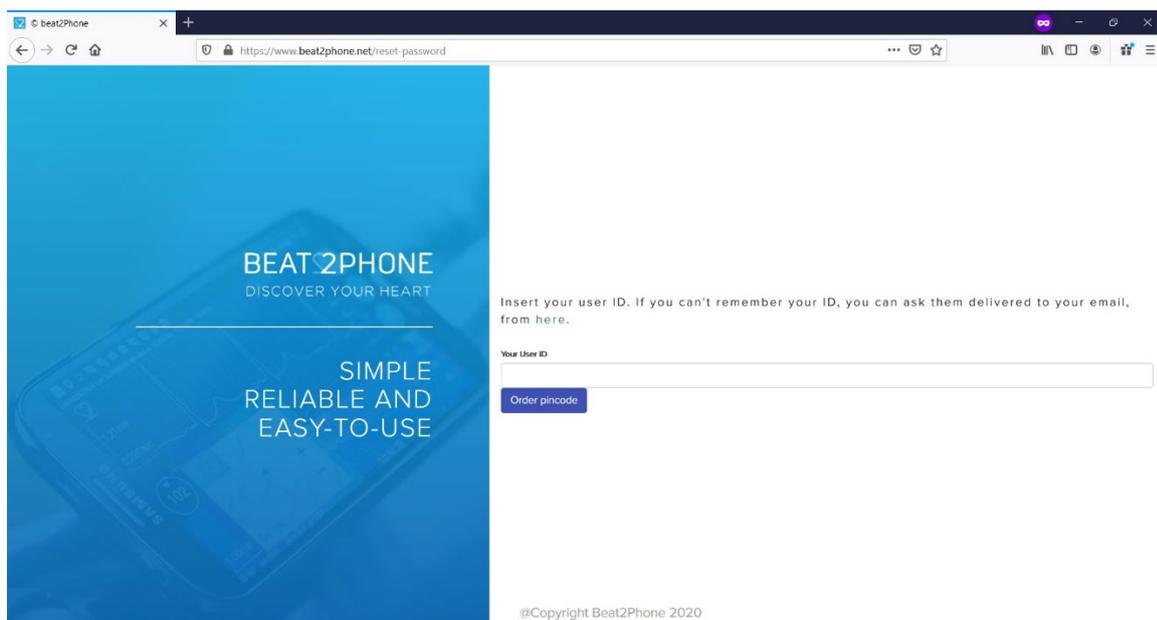
Logging in and account settings

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, or that have been created for you by your organization admin.



If you have forgotten your password, 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 was 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

Patient and measurement list view

After logging in, you will see a list of patients belonging to your organization.

The screenshot shows the Beat2Phone web application interface. The header includes the logo 'BEAT2PHONE DISCOVER YOUR HEART' and navigation links for 'Account' and 'Logout'. The main content area is titled 'Patients for DrMatti3' and features a 'Select active organization' dropdown menu set to 'VitalSignum Oy'. Below this is a table of patients with columns for 'Patient', 'Organization', and 'Latest'. The table lists several patients, with the most recent measurement at the top.

Patient	Organization	Latest
Petsu123	vitalsignum	9.7.2020 10:57
mmmm	vitalsignum	30.6.2020 12:50
motorolav1	vitalsignum	24.6.2020 10:47
AvaruusSeta	vitalsignum	16.6.2020 13:32
honor20v1	vitalsignum	16.6.2020 12:36
motorolav2	vitalsignum	10.6.2020 10:24
PotilasXiaomiV2	vitalsignum	9.6.2020 13:36
honor2012hv2	vitalsignum	9.6.2020 9:33

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You will see a list of patients. The uppermost patient is the patient with the most recent measurement. To open the ECG view of the most recent measurement of a patient, click on the button with the date and time of the measurement.

9.7.2020 10:57

To add new patients to your organization, scroll down the patient list and select “Add patient”.

Add patient

A form to input the patient ID opens.



To choose a patient that you wish to examine more closely, click on the name of the patient.

Petsu123	vitalsignum	9.7.2020 10:57
mmmm	vitalsignum	30.6.2020 12:50
motorolav1	vitalsignum	24.6.2020 10:47

A list of measurements for the selected patient opens. 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 patient or by a professional and gives detailed information when hovered over. If your organization has 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 patient, 'alg', meaning algorithm, or the user ID of a professional 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.



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 annotations

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.

Patient 1118 | vitalsignum

REPORT	Date (dd.mm.yyyy)	Duration	Findings (Attention)	Sensor
<input type="checkbox"/>	28.10.2020 11:28	1h 18m 46s	6 ECG	872f
<input type="checkbox"/>	28.10.2020 11:17	6m 38s	5 ECG	872f
<input type="checkbox"/>	28.10.2020 11:00	6m 12s	5 ECG	872f

Details about the measurement open to the right.



Findings			
Time: 28.10.2020 11:28, Sensor: 872f		ECG	REPORT
@	Source	Type	Description
1	Algorithm	N	Normal beat
1	Algorithm	(N	Normal sinus rhythm
22	Algorithm	(SBR	Sinus bradycardia
23	Algorithm	N	Normal beat
262	Algorithm	(SBR	Sinus bradycardia

In this list, each annotation made by the patient, a professional, 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.

The ECG graph view can also be opened from the Show ECG button. REPORT button is only available when analysis and reporting service is purchased.

Show ECG

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.



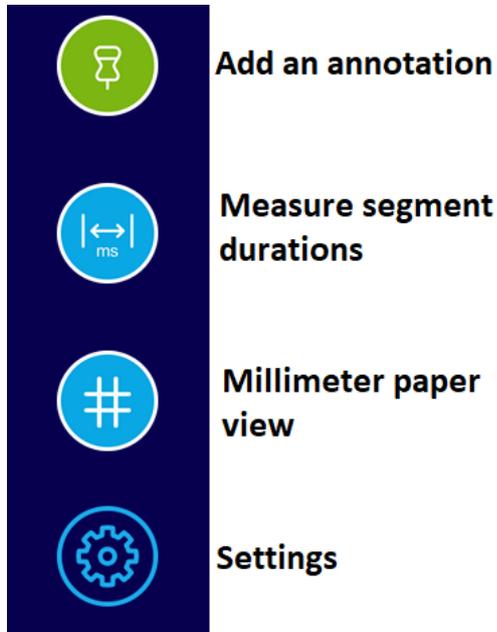
On the left of the screen, you can see the scale of the measurement view. Two squares vertically are 1.00 millivolts, and two squares horizontally are 0.200 seconds. The horizontal scale can be zoomed in and out with the mouse scroll wheel. You can reset the scale by clicking the Beat2Phone logo on the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

Annotation source	Annotation type	Move between annotations	Choose ECG/HR	Play backwards or forwards	Playback speed control	Return to registrations
All	Type	← →	ECG HR	← →	1/4X 1/2X 1X 2X 4X	← Go back



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 millimeter paper view of the ECG. The last button opens settings.



Segment duration measurement tool

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'



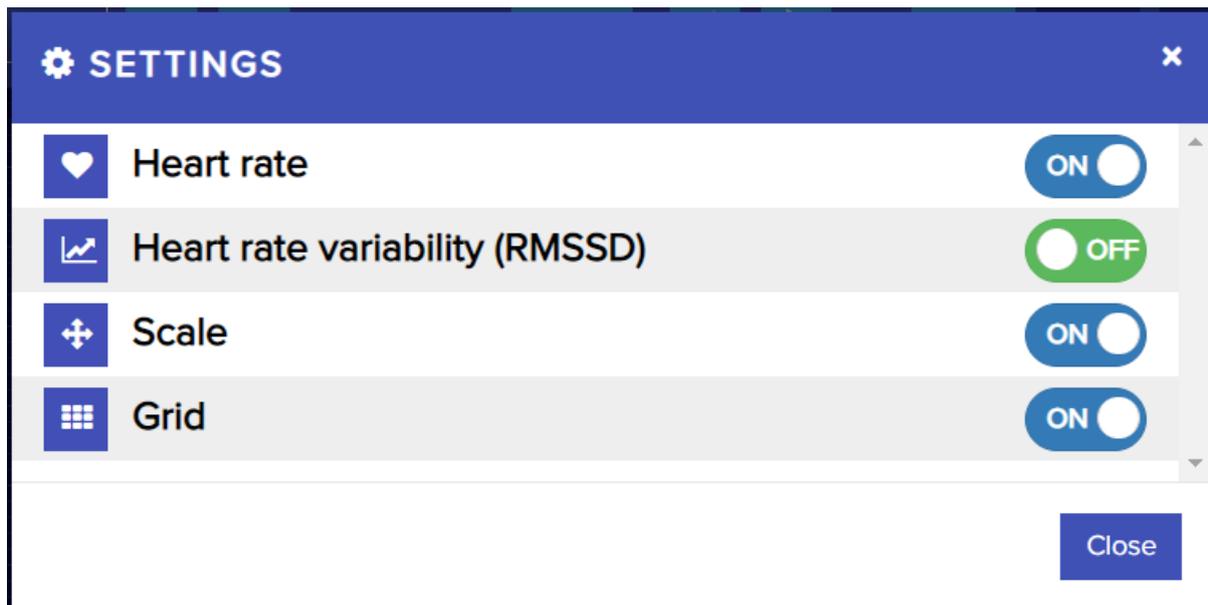
Drag the dotted line to the end of the P wave and choose 'end P'



The tool displays the duration of the P wave in milliseconds

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.



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. Annotation source is shown in distinct colors explained at top left on the mm-paper. Annotation short form notations are visible see [Used annotation markings](#). Algorithm (Cardiolyse) analysis annotations are visible on the mm-paper view provided that the organization has purchased the analysis service.



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



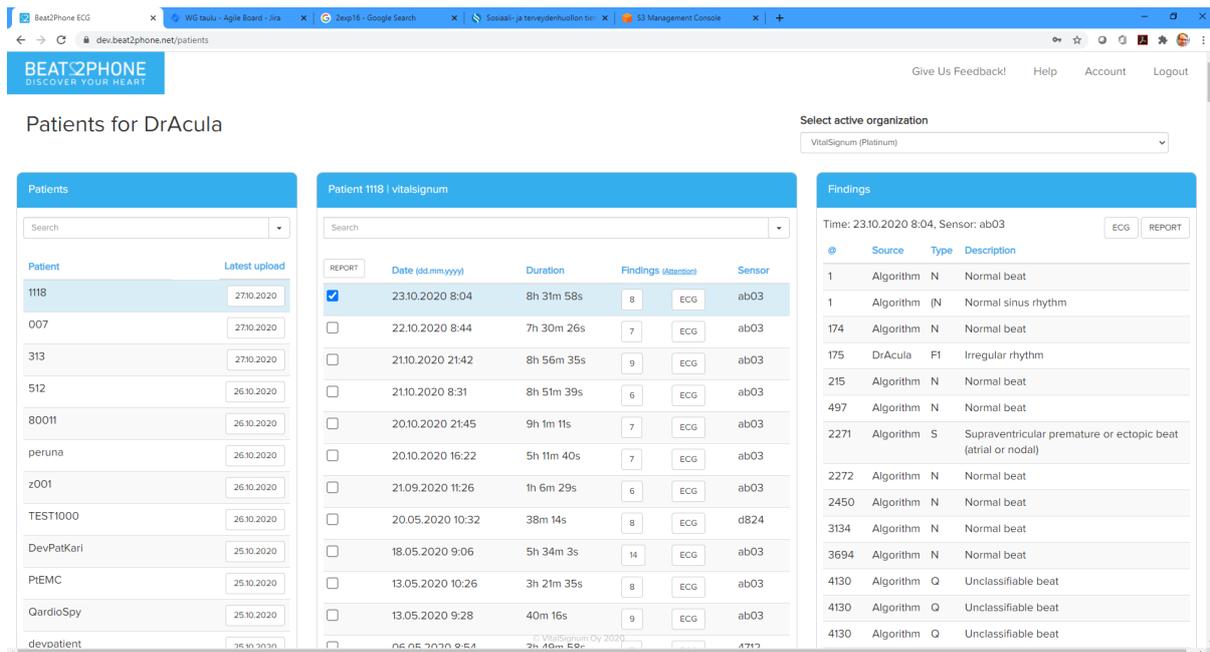
file name PatientID-RecordingID.png is suggested – for example **1118-20201028T111715+0200_872f.png** where 1118 is the Patient ID, 20201028T111715+0200 the recording start time, and 872f is the used sensor ID (MAC-address last four hex numbers).

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.

ECG Analysis

Professional organization may purchase ECG analysis by Cardiolyse (CE₀₁₉₇) algorithm. In this case the ECG recording is passed to the algorithm and the analysis results are displayed at the browser GUI measurement list, findings list, and the ECG graph view.



ECG Analysis Report

Each recording is provided with an ECG Analysis report provided that the reporting service is purchased. The report can be opened from the patient recordings list by selecting recording and clicking the REPORT -button. The report can also be opened from the recording findings view by clicking the REPORT -button in this rightmost view.

The opening report -pdf can be saved. The default name of the file is PatientID-recordingID.pdf – for example 1118-20201028T110054+0200__872f-report.pdf

ECG Period Analysis Report

A combination report can be generated provided that this service is purchased. The combination report is generated by selecting more than one recording from the patient recording view and clicking the CREATE -button. When the report is available the REPORT -button is shown for the selection. It takes some time to generate the report during which the WAIT -button is shown.

The opening report -pdf can be saved. The default name of the file is PatientID-reportID.pdf – for example 1118-1603872252169_0-report. The report provides a list of recordings included.

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'

Change history

Date	Revision	Changes	Valid from
29.9.2020	1.0	Approved	29.9.2020
15.10.2020	2.0	Added ATTENTION on algorithm markings, removed trash bin form ECG graph view, added settings view.	15.10.2020



29.10.2020	3.0	Updated mm-paper view. Added Used annotation markings list. Added ECG analysis chapter including reports. Updated recordings and findings list views.	
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