*i*Jishin Ver. 2.1- Users Manual

1. Let's measure earthquake! Measurement/Logging

iJishin uses acceleration sensors of iPhone to measure vibration.

Please tap on "*i*" mark to confirm settings.

1-1 Measurement settings

1) Device code (required)

An arbitrary ascii string that should be unique among all device holders. Initial setting is 'guest'.

Please have a look the web site: http://www.geonavi.com/i-jishin/

You will see seismic information listed in the table.

If you don't like 'guest' as your device code, please change it as you like. However, if you want to use our ftp server to upload and to download data files, please do not change the default device code 'guest'. (See Chapter 4)

2) Nickname

An arbitrary string. Initial setting is 'guest'.

Nickname makes you easier find your data in the list at the above web site.

3) Leading time

When the acceleration increases greater than the threshold level set as the triggering level, iJishin stores data before the leading time[s].

This is set 15[s] initially so that the stored record begins 15[s] before a quake.

4) Following time

While iJishin is recording data, once the acceleration decreases smaller than the triggering level, iJishin terminates storing data after the following time.

This is set 15[s] initially so that the stored record ends 15[s] after a quake.

5) Triggering level

The level is the threshold value of acceleration for triggering iJishin to start/terminate the data storing process.

The initial setting is 50[gal] (50[cm/s2]).

If the triggering level is set too small, iJishin would store even small noisy signal other than a real quake. On the other hand, if the level is set too large,

jJishin would miss a real quake.

6) Evaluation time

This is the evaluation time of acceleration for iJishin to start/terminate the data storing process.

The process starts/terminates not immediately after the acceleration reaches the triggering level but after the duration in which the acceleration keeps the level larger/smaller than the triggering level.

The evaluation time is set 1[s] initially so that data storing process starts after the acceleration level lasts at least for 1 second larger than the triggering level, and vice versa.

1-2 Measurement procedure

Proc 1) Boot iJishin and tap on the upper 'Start' button after reading notes carefully.

Proc 2) Tap on the triangle button left side of "Stopped" sign to start measurement.

Proc 3) When "Preparing" changes to "Sensing", your iPhone (iPad, iPod touch) is working as a seismometer, showing a graph of now sensing vibrations. Previously derived 500 data are shown on the graph with 100 data updating each time.

Proc 4) "Recording" is displayed when the acceleration level increases larger than the triggering level. Then iJishin stores data to make a file.

Proc 5) "Post process" is displayed when the acceleration level decreases smaller than the triggering level. Then after the following time, iJishin terminates recording.

If iJishin receives vibration larger than triggering level during the post process, it resumes the recording process. The sign changes to "Recording".

Proc 6) iJishin stops recording after the post process (i.e. after the following time) and save all data in your iPhone (iPad, iPod touch).

Also iJishin posts seismic information to the server and uploads the data

file to the FTP server if the server settings (see the following chapter) are precisely done (initially it is done).

Please be careful: if you tap on the stop button (the square one) during the recording or the post process, the data file is not generated.

2. Data uploading and opening to the public

The seismic information can be optionally uploaded to the cloud server and displayed on the map at the open web site.

2-1 Server settings

1) Auto posting

It is initially 'ON' so that seismic information is automatically uploaded to open to the public.

You can see your uploaded information at the following web site:

http://www.geonavi.com/i-jishin/

The web site displays the last 500 data on a map as well as a table.

Please be sure that the web site url was changed for i-jishin Ver 2.1.

Please note that contents of this web site may be changed without prior notice.

Items of seismic information are as follows:

* Maximum acceleration
* SHINDO (Calculated Seismic Intensity)
* Nickname
* Start time
* End time
* Location (latitude[deg], longitude[deg] and altitude[m])
* Device Code
* Hardware Model

3. Analysis of vibration

iJishin provides you a data browser and analyzer.

3-1 Analysis procedure

Proc 1) Boot iJishin and tap on the lower 'Start' button.

Proc 2) 'Select Data' page is displayed. Select 'Acceleration' then a list of files is shown.
Tap on the file name to browse.

Proc 3) The viewer starts with 'Acceleration' function displaying the recorded raw data.
The starting function depends on what function was used previously.

Proc 4) Tap on the 'Function' button to select other functions such as Power Spectrum, Velocity/Displacement, etc.

3-2 Display functions

1) Acceleration

Graphs of all 3 components of the recorded data are shown in portrait mode. In landscape mode a graph of one component is shown which can be changed to other component by tapping on the 'Component' button.
Pinch in/out and horizontal scrolling is effective for adjusting or moving a view.

2) Power Spectrum

A power spectrum calculated by FFT for each sensor is shown at upper half of the display. The original data are shown at lower half. The graph of the other component can be selected by tapping on the 'Component' button.
The graphs of the power spectrum and the original wave are synchronized each other so that the spectrum graph changes its shape depending on the view of the wave which can be pinched in/out and/or scrolled.
Conditions of displaying power spectrum can be arranged by tapping on the '*i*' mark.

3) Velocity/Displacement

The velocity and the displacement of each component are derived by integrating

the corrected acceleration data.

Result of integration depends strongly on the filter settings that is applied on the original acceleration. We recommend that before integration you decide the cut-off frequencies deliberately by consulting with the power spectrum.

Tap on the '*i*' mark to adjust the cut-off frequencies.

4) Estimated Trajectory

Horizontal view of the device movement during a quake is made by the horizontal components (NS and EW) of the displacement.

The view of the 2D trajectory initially displayed from the start to the end of the quake can be adjusted by 'Offset' and/or 'Display length'.

5) "SHINDO"

The value is the seismic intensity calculated by the same method of the Japanese Meteorological Agency (JMA).

"SHINDO" is JMA Seismic Intensity Scale that is classified the seismic intensity according to the strength.

Please note that SHINDO here is calculated by the same method of JMA using the acceleration data measured with your iPhone (iPad, iPod touch), not with a formal seismometer of JMA. SHINDO here is not endorsed by JMA.

4. To save data into the FTP server

Measured data can be stored not only in your iPhone (iPad, iPod touch) but also a FTP server. You can share data with other iJishin users by uploading your data to the FTP server. The server is operated and maintained by iJishin developer.

Please make settings to use the FTP server.

4-1 FTP server settings

Select "Server settings/FTP uploading" to make settings.

1) Auto uploading

Set ON to automatically uploading your measurement data.

It is ON initially.

Attention: The device code should be 'guest' for automatical uploading.

5. Download a data file from the FTP server

You can download data files not only your own measurement but also other users stored at the FTP server to your iPhone (iPad, iPod touch) and can observe them by the wave analyzer of iJishin.

5-1 Download from the FTP server

Proc 1) Boot iJishin and tap on the lower 'Start' button.

Proc 2) Tap on the server's IP address. The account and the password are already set so that you can log in the server by tapping on 'OK'.

Proc 3) After connection is completed, tap on the directory name in the list to open. Your data files are stored in the directory 'guest'.

Proc 4) Tap on the file name to download. After downloading, the graph of the data is shown.

Please send us questions and feedbacks.

http://www.hakusan.co.jp/LABO/i-jishin/iJishin_en.shtml

iJishin application was originally developed by Hakusan Corporation and is now maintained and will be developed further by **collaborative effort of NIED and Hakusan.**

NIED : National Research Institute for Earth Science and Disaster Prevention

Hakusan : Hakusan Corporation.