

To: Fuzhou Rockchip Electronics Co., Ltd

FrizzMonitor User Manuel (V1.00)

8th. June. 2016

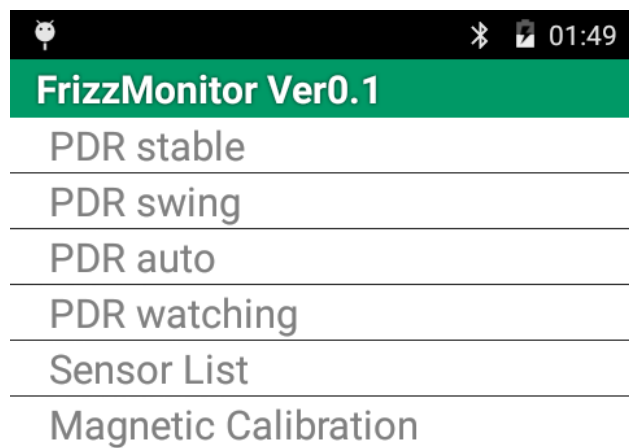
MegaChips Corporation

LSC-L-2015D033

■ The APK of Android side overview

- This procedure manual describes the method for using sample application.
- The FrizzMonitor includes some sample application, user can evaluate this functions and operations of Android development board(evaluation board).

■ FrizzMonitor(main menu)

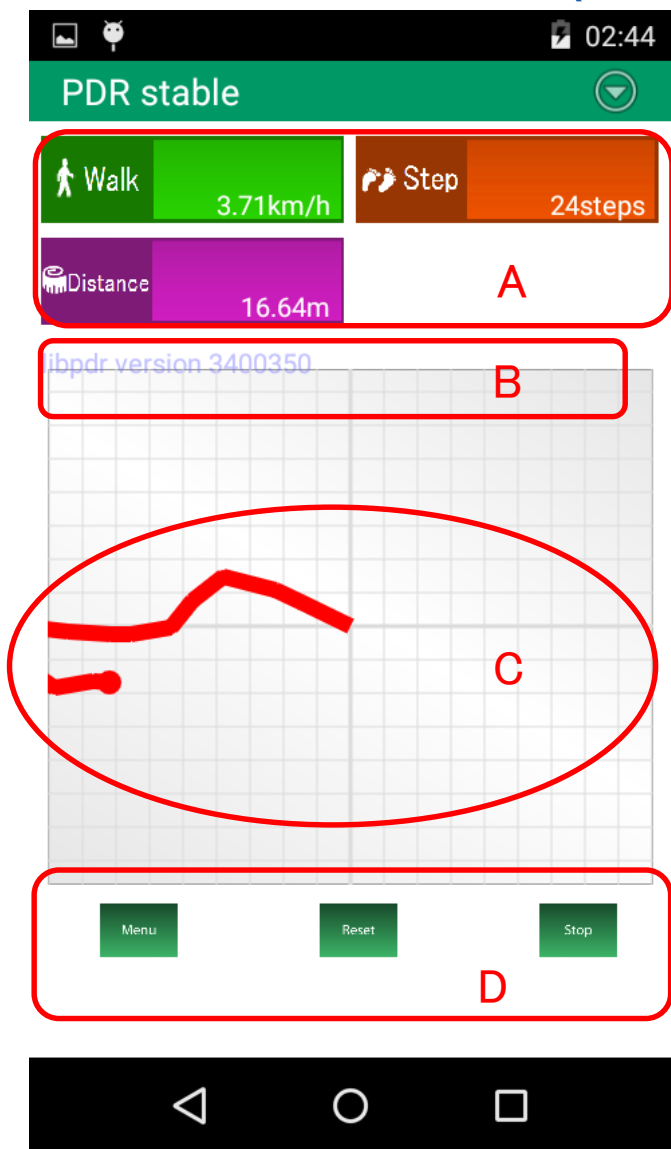


1. There is Menu Item on list.

Mode Name	Description
PDR Stable	Mode that is used when the device is worn at a stable position.(waist, pocket, etc.).
PDR swing	Mode that is used when the device is worn around the wrist and is always swinging while walking.
PDR Auto	Mode that can automatically switch between PDR stable and PDR swing.
PDR watching	Mode that is used when the device is worn as you see mobile phone.
Sensor List	User confirms sensor value.
Magnetic Calibration	User executes magnetic calibration and confirms magnetic calibration parameter.



■ FrizzMonitor(PDR function)



1. Item A : Value of speed, step, distance is displayed.
2. Item B : frizz PDR algorithm version.
3. Item C : PDR track is displayed.
4. Item D : Start: PDR track is displayed.
Reset: PDR track is deleted.
Menu: Back main menu.

*Note: PDR stable/swing/auto/watching, about display item is the same.
PDR is calculated through gyro and accelerometer data, so please make sure gyro calibration have completed.

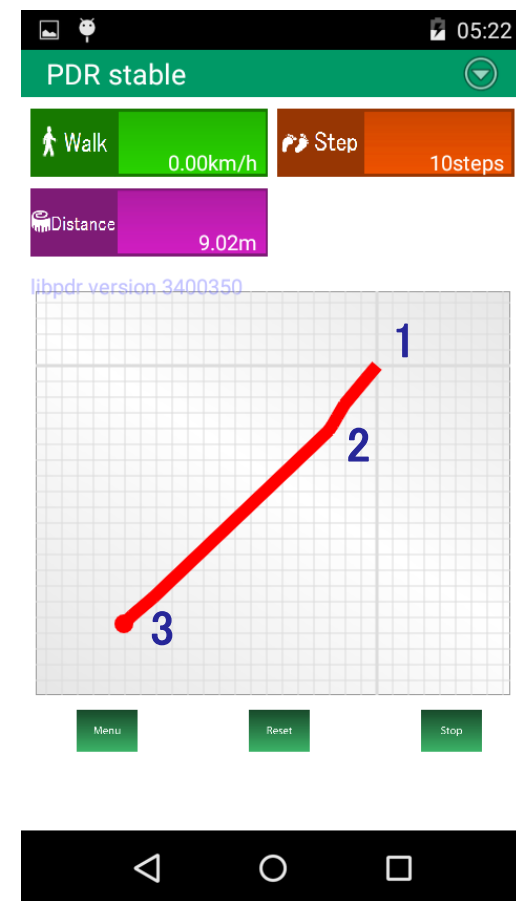
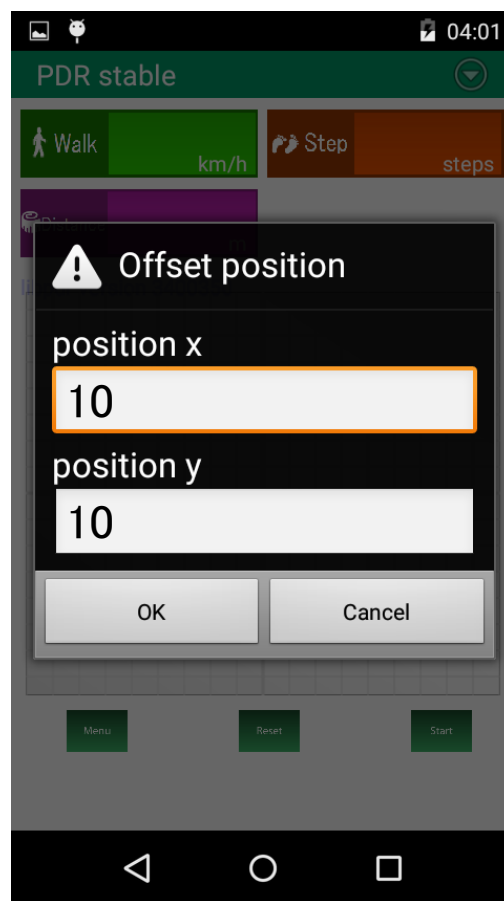
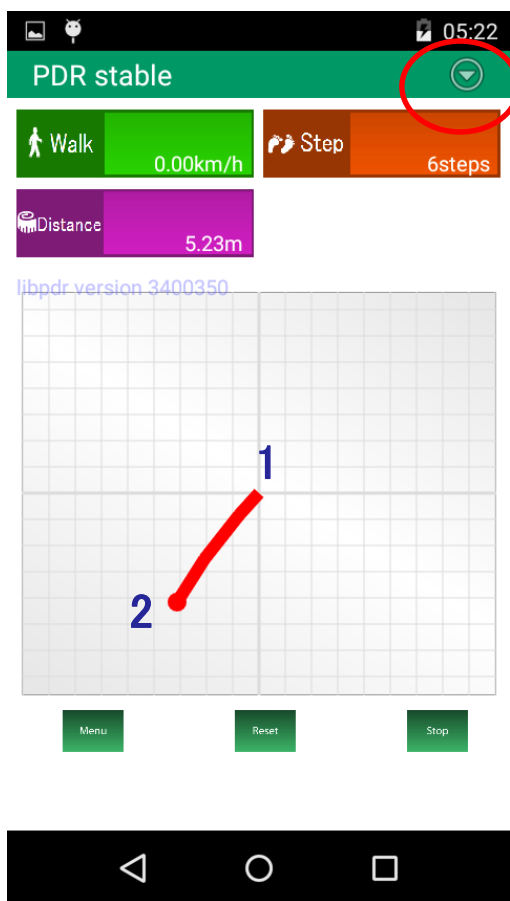
■ FrizzMonitor(PDR offset position)

PDR have provided offset position for user. Position X/Y unit: meter.

Figure1: 1 → start point, 2 → track stop point.

Figure2: User can to set position x/y.

Figure3: After inputs offset position, the pdr track will change to point 3.



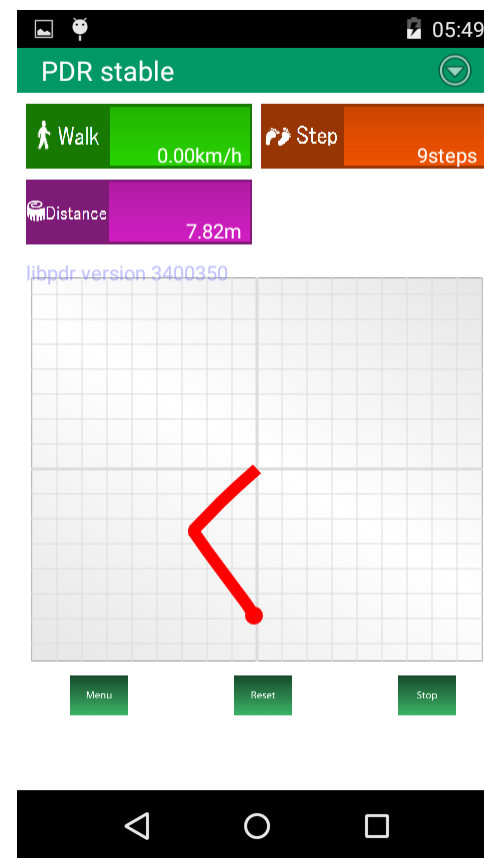
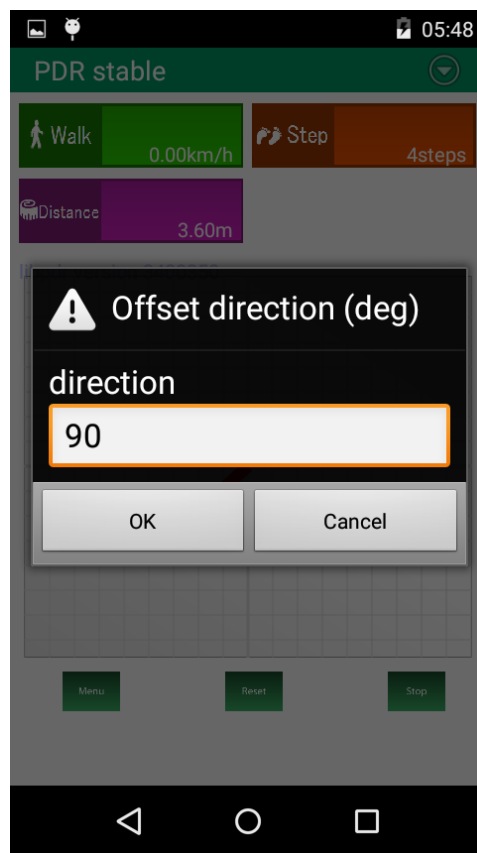
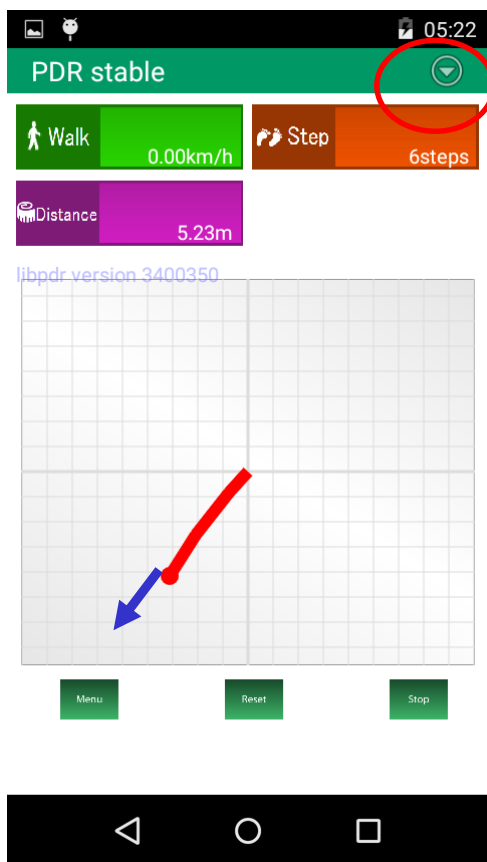
■ FrizzMonitor(PDR direction)

PDR have provided offset direction for user. direction unit: deg.

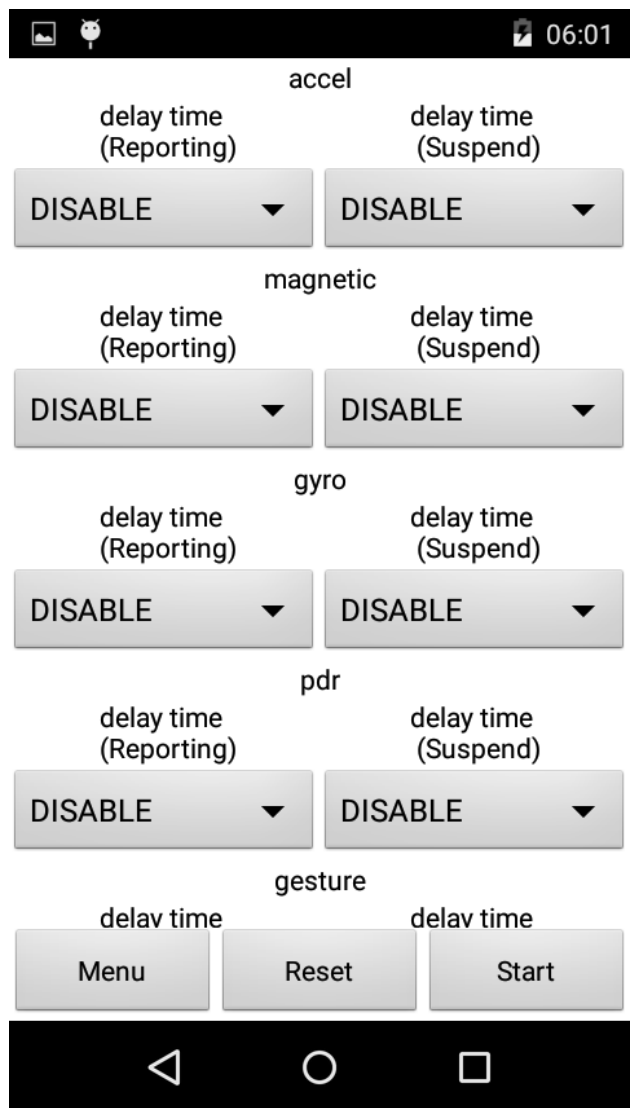
Figure1: PDR track direction.

Figure2: User can to set direction.

Figure3: After inputs offset direction, the pdr track will change 90 deg.



■ FrizzMonitor(Sensor List)



Sensor Lister: User can to confirm value of each sensor.

- accel: accelerometer raw data
- magnetic: magnetic raw data
- gyro: gyro raw data
- pdr: pdr data
- gesture: gesture data
- pedometer: pedometer data
- Fall Det: fall down data
- HR & BP: heart rate and blood pressure data
- HR & BP Learn : heart rate and blood pressure learning
- Stair Det: up/down of the stairs
- ActivityDet: activity detection data
- Motion Sensing: Motion detection data
- Calorie: Calorie data
- Bike Detector: Bike detection data

Note: About frizzMonitor APK application will have a corresponding frizz firmware. Please connect with MageChips.

■ FrizzMonitor(Sensor List- 9 axis)

- timestamp: Each data output will have time stamp. Unit: msec.
- x/y/z: These are the output of each axial. That is a float.

02:45

accel

timestamp 10033730000000

x=0.27441406 y=0.04296875 z=0.9482422

02:45

magnetic

timestamp 10064690000000

x=-27.6 y=12.3 z=-40.2

02:45

gyro

timestamp 10104280000000

x=0.03355583 y=-0.03568636 z=-0.014913702

Menu

Reset

Stop



Menu

Reset

RStart



Menu

Reset

Stop



■ FrizzMonitor(Sensor List- pdr)



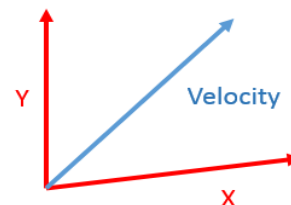
pdr

timestamp 10656190000000

px=7.503904 py=-3.8937013 step=14

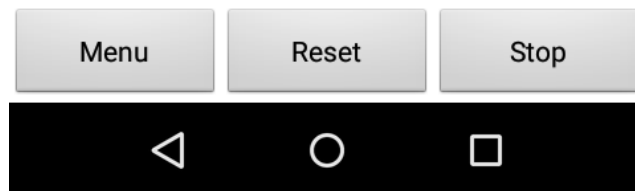
vx=2.0154984 vy=-0.55367154dist= 8.502909

- PDR Data Format Description
 - timestamp : tick = 1 msec
 - px/py (m)
The relative position of each point with the first point. So user can use the X,Y position from frizz provided.
 - step:walk step count
 - vx/vy: about frizz PDR speed data musts to be transfer through the vector quation.



$$Velocity = \sqrt{X^2 + Y^2}$$

- dist: accumulation distance[m]



■ FrizzMonitor(Sensor List- gesture)



gesture

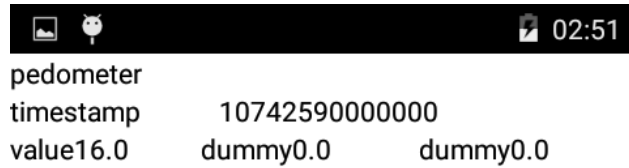
timestamp 48533940000000

value2.0 dummy0.0 dummy0.0

- Gesture Data Format Description
 - timestamp : tick = 1 msec
 - value: gesture type
 - 2:raise hand and look at watch
 - For turn on display
 - 3:let hand down
 - For turn off display



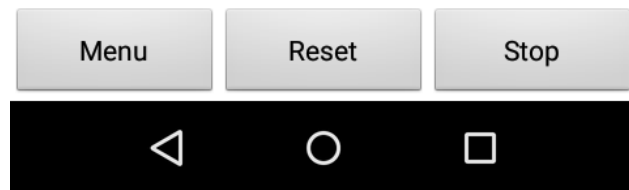
■ FrizzMonitor(Sensor List- pedometer)



The image shows a simulated Android interface. At the top is a black status bar with a camera icon, an Android robot icon, and a battery icon followed by the time 02:51. Below the status bar, the text 'pedometer' is displayed. Underneath, the word 'timestamp' is followed by the value '10742590000000'. At the bottom of this section, the text 'value16.0' is followed by two 'dummy0.0' values.

pedometer
timestamp 10742590000000
value16.0 dummy0.0 dummy0.0

- Pedometer Data Format Description
 - timestamp : tick = 1 msec
 - value: walk step count.



■ FrizzMonitor(Sensor List- Fall Down)



Fall Det

timestamp 1265748000000

value1.0 dummy0.0 dummy0.0

- Fall down Data Format Description
 - timestamp : tick = 1 msec
 - value: Fall down data count

Menu

Reset

Stop



■ FrizzMonitor(Sensor List-HR&BP and Learn)



HR & BP

timestamp 6299830000000

HRF:89.0 BP_MAX:123.0 BP_MIN:72.0

HR & BP Learn

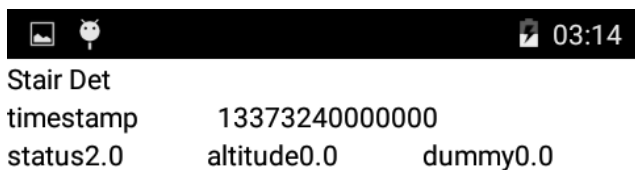
timestamp 6299830000000

Learn Point:24.0 dummy0.0 dummy0.0

- HR&BP Data Format
 - timestamp : tick = 1 msec
 - HRF: Heart Rate
 - BP_Max: Systolic blood pressure
 - BP_MIN: Diastolic blood pressure
- HR&BP Learn Data Format
 - Learn Point: 0~24, The value = 24, learning have completed.

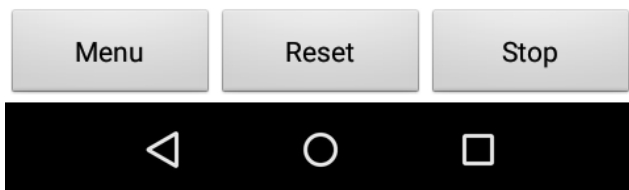


■ FrizzMonitor(Sensor List-Stair Detection)

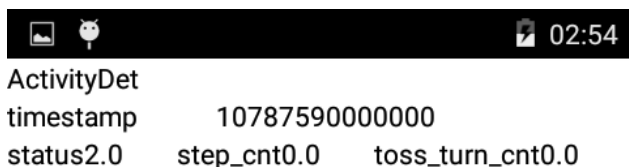


Stair Det
timestamp 13373240000000
status2.0 altitude0.0 dummy0.0

- Stair detection Data Format Description
It can distinguish three states, as well as the rise and fall of height (unit: m).
 - timestamp : tick = 1 msec
 - status: it supports three kinds of stair detection
 - 0: walk up stair
 - 2: walk flat place
 - 4: walk down stair
 - altitude: relative altitude from the floor of device startup

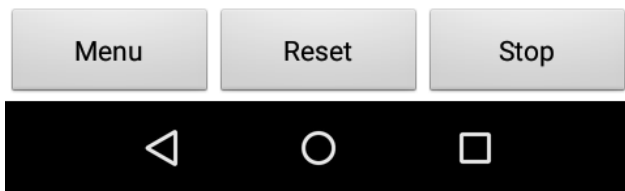


■ FrizzMonitor(Sensor List-Activity Detection)

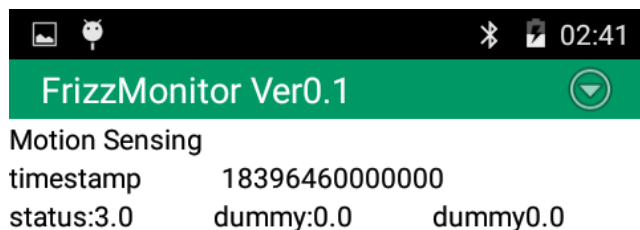


ActivityDet
timestamp 10787590000000
status2.0 step_cnt0.0 toss_turn_cnt0.0

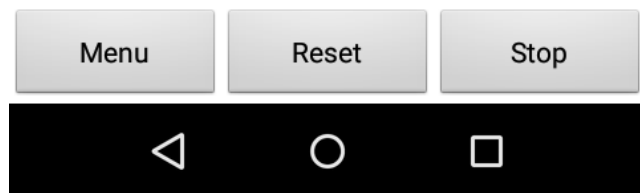
- Activity detection Data Format Description
 - timestamp : tick = 1 msec
 - status: It is a long record of activity, that is for record daily motion.
Notify : when activity state is changed.
 - There supports five kinds of activity detection.
 - 0 : ACTIVITY_DEEPSLEEP
 - 1 : ACTIVITY_SLEEP
 - 2 : ACTIVITY_REST
 - 3 : ACTIVITY_WALK
 - 4 : ACTIVITY_RUN
 - 5 : ACTIVITY_STOP
 - step_count: Step count during active status
 - toss_turn_cnt: Toss-and-turn count during sleep status



■ FrizzMonitor(Sensor List-Motion Sensing)



- Motion Sensing Data Format Description
 - timestamp : tick = 1 msec
 - status: It is a immediate recognition.
Notify: when motion state is changed.
 - There supports four kinds of motion detection.
 - 0 : Stop state (Put on table)
 - 1 : Rest state (Stop moving)
 - 2 : Walk state
 - 3 : Run state



■ FrizzMonitor(Sensor List-Calorie)

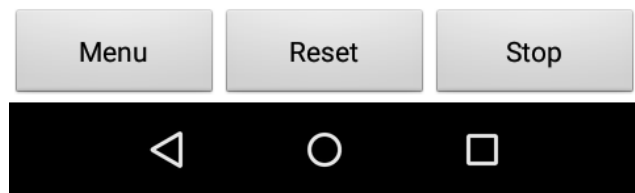


Calorie

timestamp 10322310000000

Calorie:1.837122dummy0.0 dummy0.0

- Calorie Data Format Description
 - timestamp : tick = 1 msec
 - Calorie: Calories data. It is a float type.



■ FrizzMonitor(Sensor List-Bike Detector)

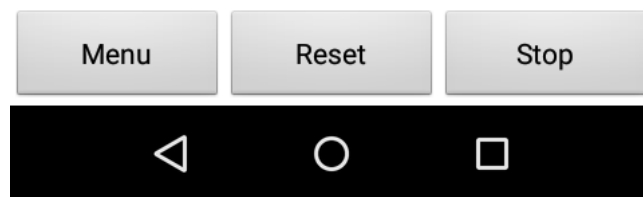


Bike Detector

timestamp 187803600000000

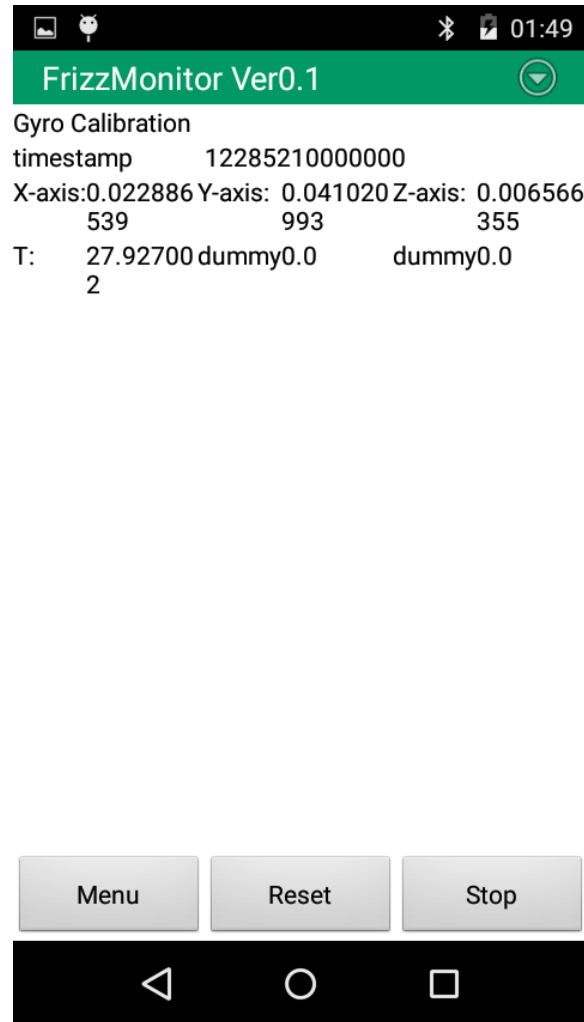
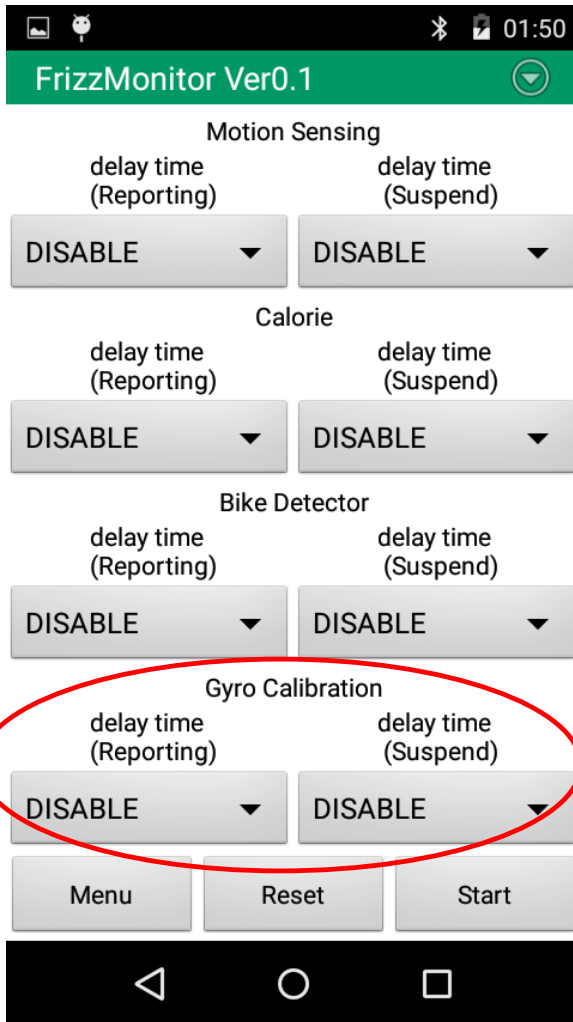
status:4.0 dummy0.0 dummy0.0

- Bike Detector Data Format Description
 - timestamp : tick = 1 msec
 - status: It is a immediate recognition.
Notify: when state is changed.
 - There supports six kinds of bike detection.
0:walk
1:run
2:bike
3:checking
4:rest
5:vehicle



■ FrizzMonitor(Calibration)

Click the “Gyro Calibration” and Set Enable and Start to calibrate gyro.



When you click Enable and Start, frizz will calibrate gyro. When calibration succeed, it will display calibration values.

*Note: Make sure that the device is stationary on calibration.

■ FrizzMonitor(Sensor List-Wearing Detector)

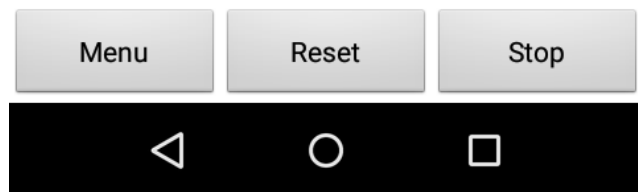


Wearing Detector

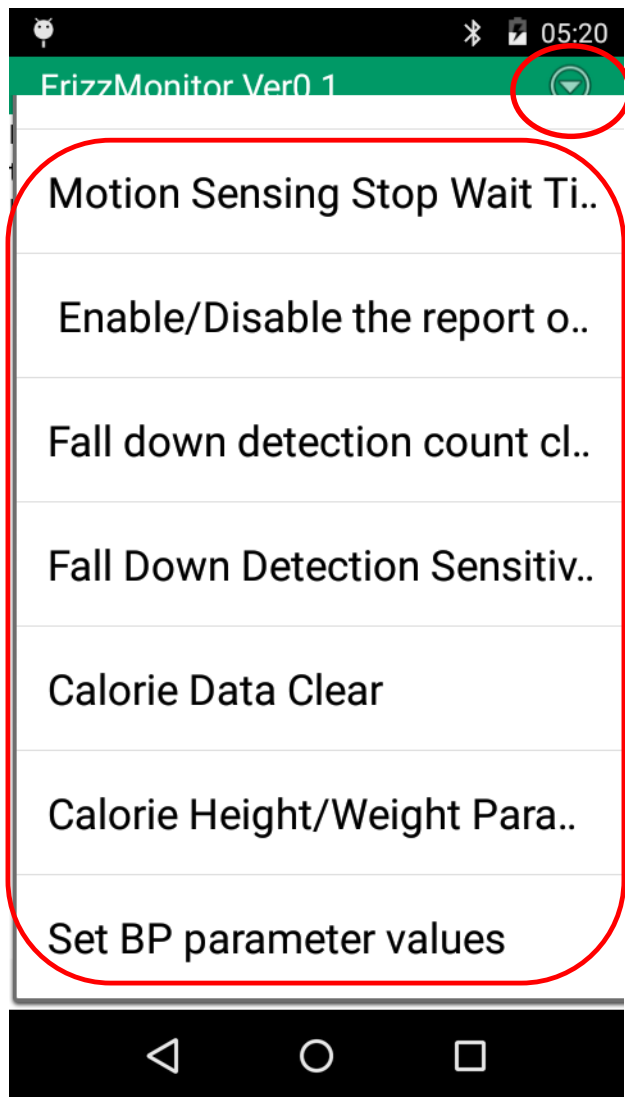
timestamp 23383230000000

status:0.0 dummy0.0 dummy0.0

- Wearing Detector Data Format Description
 - timestamp : tick = 1 msec
 - status:: when state is changed.
 - There supports two kinds of wearing detection.
0:Un-wearing
1:Wearing



■ FrizzMonitor(Sensor List-Command)



- frizz provided some command application for developer. Developer can depending on the application to adjust parameter through these command.

Note: About command format, please reference

“Application Note_frizz kernel driver and android HAL description_Chinese”.

■ FrizzMonitor(Magnetic Calibration)



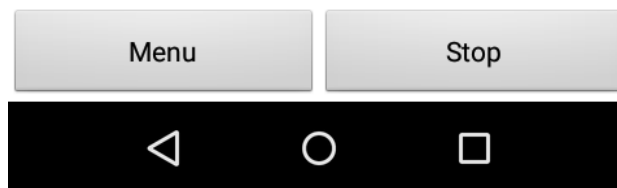
Quantity of magnetic calibration
(high quality) 3 > 2 > 1 > 0 (low quality)
3.0

Result of magnetic calibration
0:calibration failed
1:calibration success

Accel value

Magnetic value
x = -27.900002
y = 11.1
z = -36.0
angle = 0.0
magnetic flux density = 46.878780846057346

Calibration Parameter



If user wants to execute magnetic calibration, user pushes start button. user moves mobile phone like figure of eight.

- Quality of magnetic calibration
 - 0 : Magnetic can't calibrate in this area
 - 1 : Calibration OK but Accuracy is not good
 - 2 : Calibration OK. but Accuracy is not good
 - 3.
 - 3 : Calibration OK. Accuracy is good.

- Magnetic value
 - x/y/z: magnetic raw data
 - angle: angle by using magnetic value
 - 0 degree : north
 - 90 degree : east
 - 180 degree : south
 - 270 degree : west

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