

TO BE GREAT

spovan

BRAVO II

user manual

1.0 Introduction

Thank you for purchasing of this watch. Your watch features electronic sensors which measure and shows the outdoor conditions: temperature, pressure, altitude and compass directions. Your Watch provides the essential information at the time during you are performing hiking, wild camping and other outdoor activities especially for a prolonged period.

Your Watch also includes current time, daily alarm, chronograph, timer, pacer and dual time function.

Your Watch is carefully designed and produced for outdoor activities which need to stay for a period, in order to utilize these features of your watch, it is advisable to read the following instructions:

- Read the instruction before using the Watch.
- Avoid exposing your Watch to extreme conditions for an unreasonable time.
- Avoid rough usages or severe impacts to your Watch.
- Do not open the Watch's case unless a certified service agency because your Weather Master contains precise electronic sensors and components.
- Clean your Watch with a soft cloth occasionally that working for a longer use life of your watch.
- Keep your Watch away from magnets or the appliances mobile phones, speakers and motors.
- Store your Watch in a dry place when it is not in use.

2.0 Buttons And Its Functions



A key: back light: to turn on the EL back light for 3seconds.

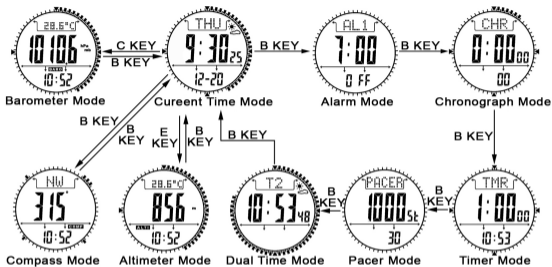
B key: setting mode: To select among the current time, daily alarm, stop watch, time, pacer, and dual time mode. Press and hold B key to switch to the setting mode.

C key: barometer/decrease: press C key to enter barometer mode.

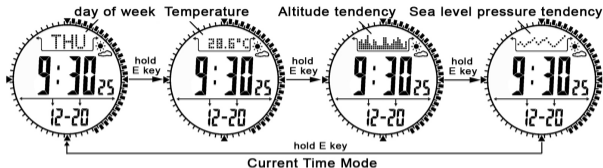
D key: compass: press D key to enter compass mode.

E key: altimeter/increase: press E key to enter altimeter mode.

3.0 Major Function Modes



4.0 Current Time Mode—Functional Display



Functional Display:

The current mode includes 4 kinds of functional display:

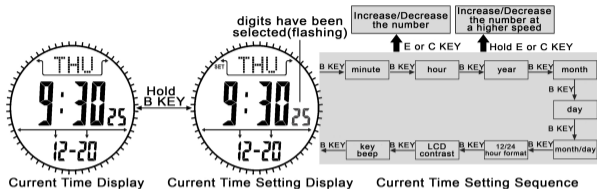
- Day of week display
- Temperature display
- Altitude tendency display, and
- Sea level pressure tendency display

To select among different functional display, press and hold E button following the adjacent diagram.

Automatic Display Switching

1. To activate the automatic switching feature, press and hold the E button.
2. One of the 4 functional display will be appeared one by one.

4.1 Current Time Mode-Setting the current time

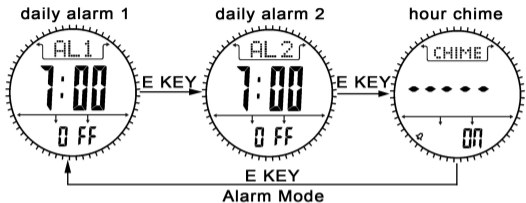


How to Set the Current Time

1. Press and hold B button for about 2 seconds in current time mode. In setting display, the flashing “SET” icon will appear.
2. In setting display, Press the B button to change the selection following the adjacent current time setting sequence.
3. When the second digits are flashing(selected), press the E or C button to reset the digits to “00”.
4. When the digits are flashing(selected), press the E or C button to increase/decrease the number. (Hold down the button change the number at a higher speed).

5. When month-day order setting is selected, press the E or C button to select between month-day and day-month format. When 12/24 hour format setting is being selected, press the E or C button to select between 12 and 24 hour format.
6. When LCD contrast is selected, press the E or C button to increase/decrease the contrast level(1-10). When key beep setting is selected, press the E or C button to select between ON and OFF the beep.
7. When the setting is completed, press and hold the B button to exit the setting display.
8. It will exit the setting mode if without keystroke operation for 1 minute.

5.0 Daily Alarm Mode-Daily Alarm and Chime Display




Daily Alarm mode


1. The watch includes two daily alarms: Daily Alarm 1 and Daily Alarm 2, the Daily Alarm 1 and Daily Alarm 2 are working independently.
2. Press the E button to switch among the Daily Alarm 1 and Daily Alarm 2 and Chime Display following the adjacent diagram.

How to turn ON/OFF the Daily Alarm

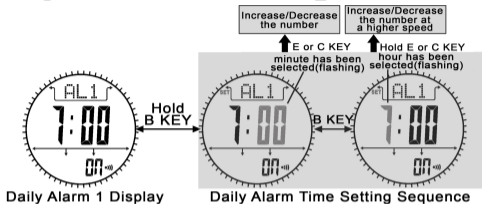
1. To turn ON/OFF the Daily Alarm 1(2),press the C button in Daily Alarm 1(2) Display.

2. When the Daily Alarm 1(2) is ON, the alarm indicator  will appear.
3. If the Alarm indicator is appeared, the watch will sound at the preset alarm time every day. When the alarm sounds, press any button to stop the beep.

How to Turn ON/OFF the Hourly Chime

1. To turn ON/OFF the Hourly Chime, press the C button in Chime Display.
2. When the chime is ON, the chime indicator  will appear. If the chime indicator is appeared, the watch will beep once at the hour every hour.

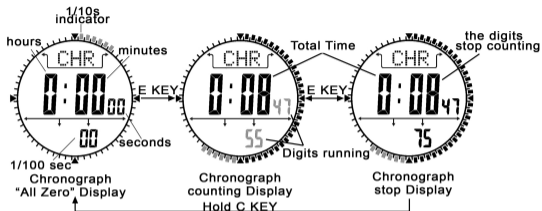
5.1 Daily Alarm Mode-Setting the Alarm



How to set the Alarm 1 and Alarm 2

1. To select the setting display, hold the B button for about 2 seconds in Alarm 1(2) Display, then the flashing "SET" icon will appear.
2. In setting display, press the B button to change the selection between minute and hour.
3. When the digits are flashing(selected), press the E or C button to increase/decrease the number. (Hold down the button to change the number at a higher speed).
4. When the set is completed, press and hold the B button to exit the setting display.

6.0 Chronograph Mode-Start/Stop the Chronograph



Chronograph Mode

- The watch includes a function to measure elapsed times, accumulative elapsed time and lap times - Chronograph Mode.
- The display shows the "All Zero" display when the chronograph is being selected the first time or the chronograph has been reset.

How to Start/Stop the Chronograph

1. When the chronograph is stopped(not counting), press the E

button once to start the chronograph(counting); press the E button once again to stop the chronograph(not counting).

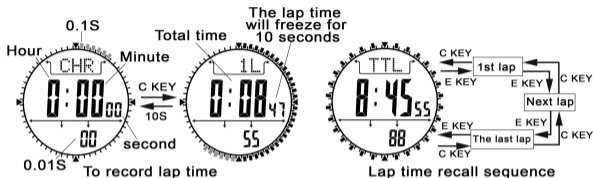
2. The elapsed time between the two keystrokes will appear on the display. Repeat the above mentioned steps to get the accumulative elapsed time of which the chronograph is running.

How to Reset the Chronograph

1. To record a new set of elapsed time, hold the C button for 2 seconds to reset the chronograph to “All Zero” display when the chronograph was stopped.

2. In “All Zeros”display, the chronograph is ready for a new counting.

6.1 Chronograph Mode-Recording and Recalling Lap Time



How to Record Lap Time

1. The chronograph can measure elapsed time without stopping the counting - lap time.
2. The chronograph mode allows recording lap time up to 100 laps.
3. When The Chronograph is counting, press the C button once to record a lap time (this key operation will not affect the counting).
4. The lap number and lap time will appear on the display for 10 seconds, and it returns to counting display automatically.
5. Repeat the steps mentioned above to get another lap time.

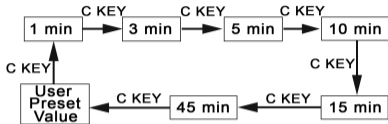
How to recall lap times

1. To recall lap times, press and hold the B button in the chronograph display.
2. When the total time display is appeared, press the E button or C button to check the next/previous lap time.
3. Press and hold the B button any time to back to the chronograph display.

How to reset lap times

To record a new set of lap times, hold the C button for 2 seconds in the chronograph stop display.

7.0 Timer Mode-Countdown Timer and the Quick-Set-Value



Timer Setting Sequence

Countdown Timer:

- The watch includes a countdown timer feature: the timer mode.
- The timer starts counting from the preset value to zero and stops at zero.

The Quick-Set-Value(QSV)

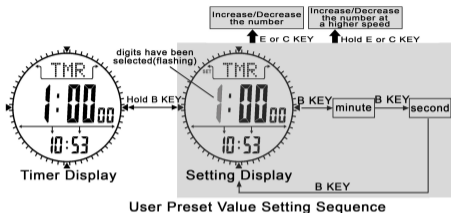
- The Quick-Set-Value is a set of default values which preset in the watch for using the timer more easily.
- There are 6 Quick-Set-Values: 1, 3, 5, 10, 15 and 45 minutes,

and these values can NOT be changed by the user.

The User Preset Value(UPV)

- The User Preset Value is a value which can be changed by the user.
- The setting range is up to 99 hours 59 minutes 99 seconds.
- Once the User Preset Value has been set, such as 30 minutes, that value is stored into the watch for the user to recall next time.
- To set the UPV, check the coming section “How To Set the User Preset Value” for more detail.

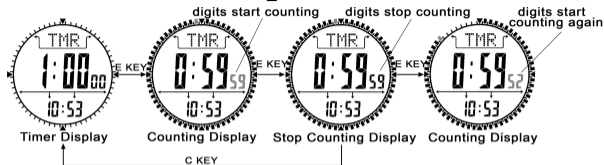
7.1 Timer Mode-Setting the User Preset Value



How to set the User Preset Value

1. To select setting display, press and hold the B button for 2 seconds, and the flashing “**SET**” icon will appear.
2. In setting display, press the B button to change the selection among hour, minute and second.
3. When the digits are flashing(selected), press the E or C button to increase/decrease the number. (Hold down the button change the number at a higher speed).
4. When the setting is completed, hold the B button to exit the setting display.

7.2 Timer Mode-Using the Timer



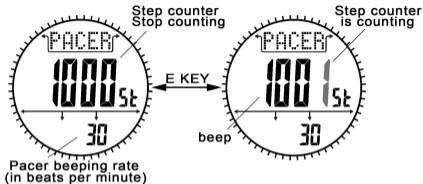
How to Use the Timer

1. When the Timer is set, press the E button to start the timer. Press the E button once again to stop the timer.
2. The timer to "Zero" will be shown on the display continuously.
3. In last 10 minutes, it will beep for every minute, it will beep for every 10 seconds in the last one minute and beep for every second in the last 5 minutes.
4. As countdown time is reached, a beep sound which will last for 30 seconds. Press any button in this period will terminate the beep sound prematurely.
5. The last counting value will be loaded automatically at the end of the beep sound.

How to reload the timer

1. To reload the timer(existing preset counting time) for a new counting, press the C button when the timer was stopped.
2. To start a new counting using a new preset counting timer, set the timer again.

8.0 Pacer Mode-Using the Pacer



Pacer Mode

- When the pacer is activated, it will generate beep rate pre - defined beeping rate.
- The beeping rate can be set from 30 to 180 beats per minute(BOM) in step of 5.

How to Use the Pacer Mode

Once the beeping rate has been set (for example 30 BPM), press the E button will start the beeping. When the watch is beeping, press the E button can stop the beeping.

Step Counter

1. In supplementary of Pacer Function, when the Pacer beeps once,

the step counter will advance one.

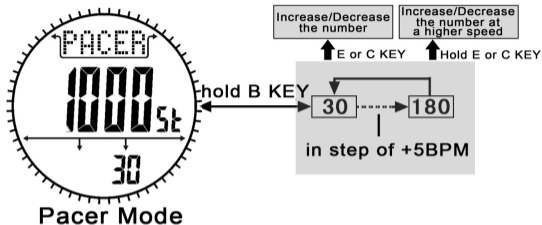
2. When the pacer is activated and the step counter starts counting, pressing the E button can stop the pacer and step counter at the same time.

3. The maximum counting range of the step counter is 99999 steps.

4. To reset the step count to 0, press and hold the C button when the pacer was stopped.

NOTE: When the pacer is running continuously for 8 hours, it will be stopped automatically for power saving.

8.1 Pacer Mode-Setting the Pacer value



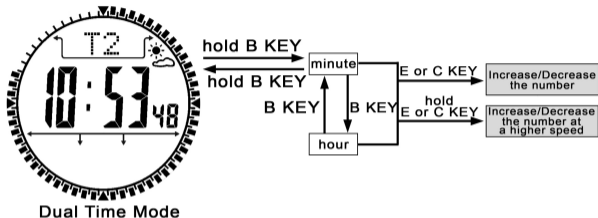
How to set the beeping rate

1. To select the setting display, press and hold the B button for 2 seconds in the pacer mode.
2. When the beeping rate digits start to flash, press the E or C button to increase/decrease the number. (Hold down the button to change the number at a higher speed).
3. When the setting is completed, press and hold the B button to exit the setting display.

How to use the pacer when it links with chronograph mode

1. When pacer mode is ON: press the B button to select chronograph mode.
2. Press the E button will start the counting and beeping at the same time.
3. When the chronograph is counting and the watch is beeping, pressing the E button can stop the beeping sound and the chronograph at the same time.

9.0 Dual Time Mode-Dual Time and Setting the Dual Time



Dual Time Mode

The watch includes a function to show the time for a second time zone- Dual Time Mode.

The second digit of the dual time synchronizes with the current time

How to set the Dual Time

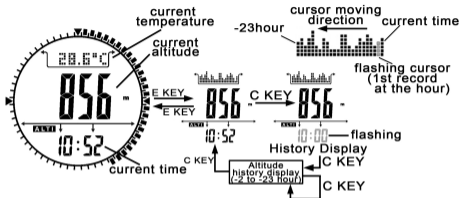
1. To select setting display, press and hold the B button for 2 seconds in dual time mode, and the flashing “**SET**” icon will appear.
2. In setting display, press the B button to change the selection

between minute and hour.

3. When the digits are flashing(selected), press the E or C button to increase/decrease the number. (Hold down the button change the number at a higher speed).

4. When the setting is completed, press and hold the B button to exit the setting display.

10.0 Altimeter Mode-Temperature and History Display



Function display

- The watch includes two altimeter functional displays: Temperature and History Display.
- One of the two functional displays will be appeared on the top row of the display. The current(history) altitude and the current(history) time shows on the middle row and bottom row of the display respectively.
- To perform force detect function which get one reading immediately, press and hold C button.

Temperature Display

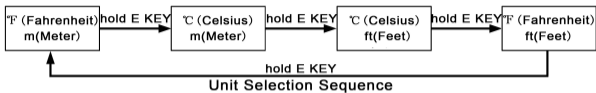
In temperature Display, the top display shows the current temperature in degree Celsius ($^{\circ}\text{C}$) or degree Fahrenheit($^{\circ}\text{F}$).

IMPORTANT: If you want to have an accurate reading of air temperature, you must remove the watch from the wrist that allows no body temperature effect on your watch.

History Display

- The watch records the altitude reading automatically every hour at the hour, i.e 1:00, 2:00. 3:00 and etc. These records will be plotted into a altitude record graph.
- In history display, the altitude record graph shows on the top row of the display.
- To review the altitude records of the last 23 hours, press the C button to move cursor left cyclically, then the respective altitude record and its recording time(flashing) will appear on the display following the adjacent diagram.

10.1 Altimeter Mode-Unit Selection and Altimeter Adjustment

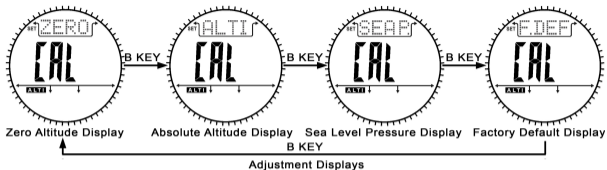


How to switch between Units?

- The watch can display altitude in meter(m) or feet(ft); the watch can display temperature in degree Celsius($^{\circ}\text{C}$) or degree Fahrenheit($^{\circ}\text{F}$).
- To switch among different unit, press and hold the E button to change the units following the adjacent units select sequence.

Why the Altitude need to be adjusted?

- As the absolute altitude is calculated from air pressure, the change of air pressure would affect the altitude reading.
- To achieve a more accurate reading, the weather master need to be calibrated from time to time as pressure may change gradually even within hours.



Altimeter Adjustment

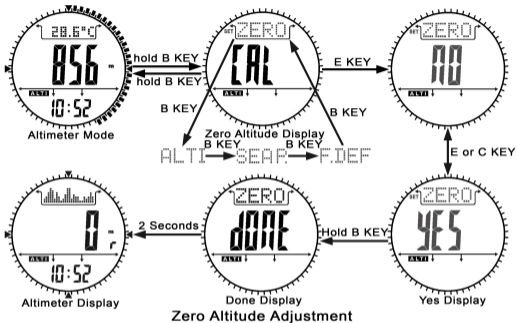
There are 4 kinds of adjustment method:

- Zero Altitude: Adjust altitude mandatory to zero for relative altitude measurement, then a indicator "0" will be appeared on the display.
- Absolute Altitude: Set altitude to a known value and it can recall for next setting.
- Sea level pressure: Input a specific sea level pressure which is got from an official source.
- Factory Default: Restore the watch to default factory setting where assume Sea Level Pressure is 1013.2mb.

NOTE: Altitude is adjusted independently, so that the effects of the previous sea level pressure adjustment will be ignored if the absolute altitude is selected.


NOTE: The watch includes an automatic Sea Level Pressure comparison feature, this smart feature allows NO fluctuation altitude readings will be recorded even staying at the same altitude.

10.2 Altimeter Mode-Zero Altitude Adjustment



How to measure the relative altitude?

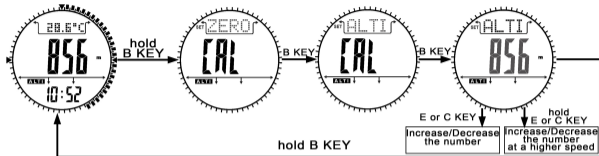
- The watch can measure relative altitude, for example, it can measure the ascending or the descending altitude between the starting point and the finish point of a trail.
- To measure the ascending or descending altitude of a trail by setting the current altitude to “zero” mandatory (by below) at a

reference point such as the starting point of a trail. An “” indicator will be appeared on the display.

Adjust the altimeter by using zero altitude adjustment

1. To select the adjustment display, press and hold the B button in altimeter mode. Then press the B button to select among the zero altitude, absolute altitude, sea level pressure and factory default adjustment.
2. To adjust the watch by using zero altitude adjustment, press the E button in zero altitude display, and the indicator “NO” will appear.
3. When the indicator “NO” is appeared, press the E button or C button to select between “YES” (adjust the altitude to zero) or “NO”(about the adjustment). When “YES” or “NO” is selected, press and hold the B button to confirm the setting.
4. To restore the watch from relative altitude measurement, please refer to the coming “absolute altitude adjustment”, “sea level adjustment”, and “factory default adjustment” for more detail.

10.3 Altimeter Mode-Absolute Altitude Adjustment



Before adjusting the altitude

Adjusting the altimeter at a place where the altitude is determined, such as sea level(0m) or beside an altitude sign pole(e.g., 89m), because that altitude will be inputted into the watch during the adjustment.

IMPORTANT: Input an incorrect altitude during the adjustment, it results a mistaken altitude in future.

To adjust the altimeter by using absolute altitude adjustment

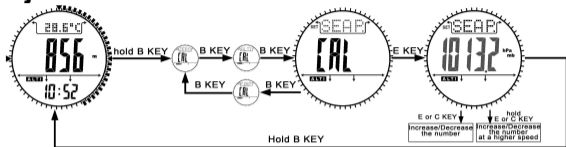
The watch can adjust the current altitude reading to an absolute altitude value.

1. To select the adjustment display, press and hold the B button in altimeter mode. Then press the B button once again to select

among the zero altitude, absolute altitude, sea level pressure and factory default adjustment.

2. To adjust the watch by using absolute altitude adjustment, press the E button in absolute altitude display, and the altitude reading will appear.
3. When altitude reading is appeared, press the E or C button to increase or decrease the number to the target one. (hold down the button changes the number at a higher speed).
4. If the setting is completed, press and hold the B button to confirm setting and exit the adjustment display.

10.4 Altimeter Mode-Sea Level Pressure Adjustment



Why need to adjust the sea level pressure

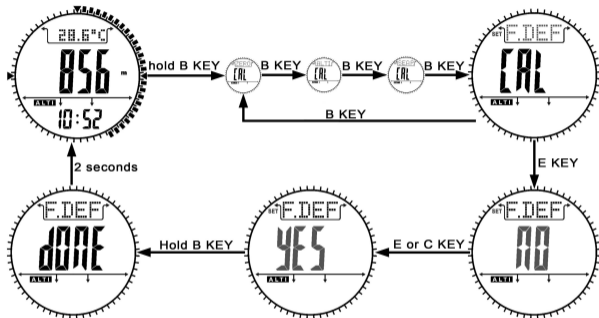
- As altitude is calculated by the difference between current and sea level pressure, so the sea level pressure changing or using the watch in a place which has a different sea level pressure will effect the altitude reading.
- To achieve a more accurate reading, sea level pressure need to be updated from place to place and from time to time.

How to adjust the altimeter by using sea level pressure adjustment

1. The watch can adjust the current altitude reading by sea level pressure adjustment.

2. To select the adjustment display, press and hold the B button in altimeter mode. Then press the B button to select among the zero altitude, absolute altitude, sea level pressure and factory default adjustment.
3. To adjust the watch by using sea level pressure adjustment, press the E button in sea level pressure display, and the sea level pressure reading will appear.
4. When sea level pressure reading is appeared, press the E or C button to increase or decrease the number to the target number. (Hold down the button changes the number at a higher speed).
5. If the adjustment is completed, press and hold the B button to confirm adjustment and exit the adjustment display.

10.5 Altimeter Mode-Factory Default Adjustment



How to adjust the altimeter by using factory default adjustment

1. The watch can also adjust the altitude reading calculation back to using factory default value.
2. To select the adjustment display, press and hold the B button in altimeter mode. Then press the B button to select among the zero

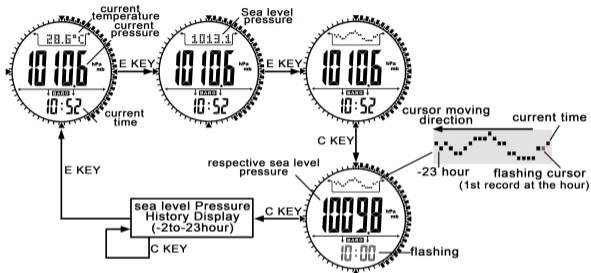
altitude, absolute altitude, sea level pressure and factory default adjustment.

3. To adjust the watch by using factory default adjustment (restore to factory default by setting sea level pressure to 1013.2mb), press the E button in factory default display, and the indicator "NO" will appear.

4. When the indicator "NO" is appeared, press the E or C button to select between "YES" (reset the watch to factory default) or "NO" (abort the resetting).

5. To exit adjustment display, press and hold the B button for 2 seconds, and then the watch will go back to altimeter mode. If the "YES" display is selected when exiting the adjustment display, the "DONE" display will appear for 2 seconds prior to the normal operation.

11.0 Barometer Mode-Temperature and History Display



Function Display

- The watch includes three barometer functional displays: Temperature, Sea Level Pressure and History Display.
- One of the three functional displays will be appeared on the top row of the display. The current(history) pressure and the current(history) time shows on the middle row and bottom row of the display respectively.

To perform force detect function which get one reading immediately, press and hold C button.

Temperature Display

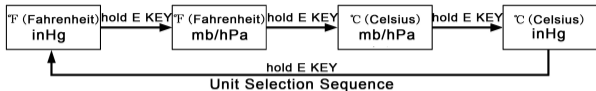
- In temperature display, the current temperature in degree Celsius($^{\circ}\text{C}$) or degree Fahrenheit($^{\circ}\text{F}$) shows on the top row of the display.

IMPORTANT: If you want to have an accurate reading of air temperature, you must remove the watch from the wrist (for 20 to 30 minutes) that allows no body temperature effect on your watch.

Sea Level Pressure History Display

- The watch records the sea level pressure reading automatically every hour at the hour, i.e 1:00, 2:00, 3:00 and etc. These records will be plotted into a pressure record graph.
- In sea level history display, the pressure record graph shows on the top row of the display.
- To review the pressure records of the last 23 hours, press the C button to move cursor left cyclically, then the respective pressure record and its recording time (flashing) will appear on the display following the adjacent diagram.

11.1 Barometer Mode-Unit Selection and Adjustment



How to switch between units

- The watch can display pressure in mb/hPa or inHg; the watch can display temperature in degree Celsius(°C) or degree Fahrenheit(°F).
- To switch among different unit, press and hold the B button to change the units following the adjacent units selection sequence.



absolute pressure display



Factory Default display

Adjustment Display

Why the barometer need to be adjusted

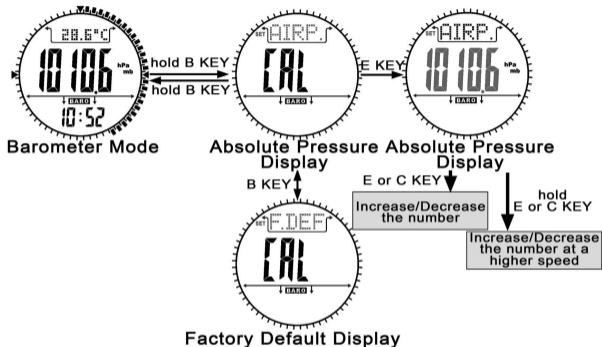
- The watch was calibrated for you in the factory. For normal use, you need not to calibrate the barometer.

But for vigorous users, the watch includes a adjustment procedure.

Barometer adjustment

- There are 2 kinds of barometer adjustment method: absolute pressure and factory default adjustment.
- Absolute pressure: Input the known atmospheric pressure into the watch directly.
- Factory default: Restore the watch to factory default setting.
- For in-depth information for each of the adjustment methods, it will be given in the coming sections.

11.2 Barometer Mode-Absolute Pressure Adjustment



Before calibrating the barometer

- Before calibrate the barometer, you must have the absolute pressure of your current position, because that pressure value will be inputted into the watch during the adjustment.

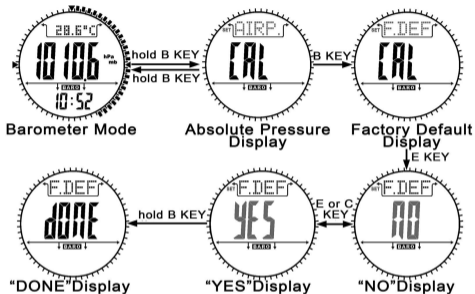
- Consult the nearest observatory station to get the ambient barometric pressure of your current position.

IMPORTANT: Input an incorrect pressure during the calibration procedure, it results a mistaken pressure reading in future.

How to adjust the barometer by using absolute pressure adjustment

1. The watch can adjust the current pressure reading to a absolute pressure value.
2. To select the adjustment display, press and hold the B button in barometer mode. Then press the B button to select between the absolute pressure adjustment and factory default adjustment.
3. To adjust the watch by using absolute pressure adjustment, press the E button in absolute pressure display and the pressure reading will appear.
4. When pressure reading is appear, press the E or C button to increase/decrease the number. (hold down the button changes the number at a higher speed).
5. If the setting is completed, press and hold the B button to confirm setting and exit the adjustment display.

11.3 Barometer Mode-Factory Default Adjustment



How to adjust the barometer by using factory default adjustment

1. The watch can also adjust the pressure reading calculation back to using factory default value.
2. To select the adjustment display, press and hold the B button in barometer mode. Then press the B button to select between

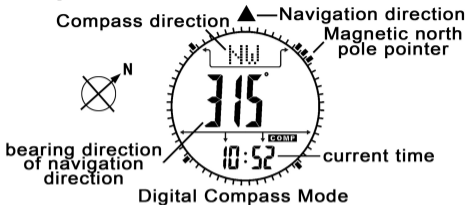
absolute pressure adjustment and factory default adjustment.

3. To adjust the watch by using factory default adjustment, press the E button in factory default display, and the indicator “NO” will appear.

4. When the indicator “NO” is appeared, press the E or C button to select between “YES”(reset the watch to factory default) or “NO”(abort the resetting).

1. To exit adjustment display, press and hold the B button for 2 seconds, and then the watch will go back to barometer mode. If the “YES” display is selected when exit the adjustment display, the “DONE” display will appear for 2 seconds prior to the normal operation.

12.0 Compass Mode-Precautions

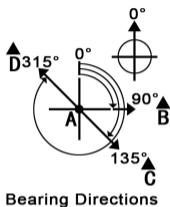
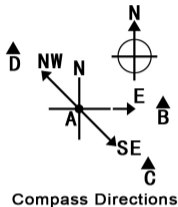


The precautions when using the compass

- Keep your watch away from magnets or the appliances which may contain magnetic objects such as mobile phones, speakers, motors and etc
- The watch, like most magnetic compass, point to the magnetic north which is slightly different from the true north. Check the “What is Magnetic Declination” section for more detail.
- Perform the compass calibration from time to time, because the calibration reinforces the precision of the compass.

- To achieve a accurate result, you should avoid measuring direction on the following conditions:
1. The watch is placed close to a magnetic objects.
 2. The watch is placed closed to a metal objects.
 3. The watch is placed close to an electrical appliances.
 4. The watch is placed inside a moving object or a ferroconcrete building.

12.1 Compass Mode-Compass and Bearing Directions



Marks	Compass Directions	Bearing Directions
N	North	345° - 11°
NNE	North Northeast	12° - 33°
NE	Northeast	34° - 56°
ENE	East Northeast	57° - 78°
E	East	79° - 101°
ESE	East Southeast	102° - 123°
SE	Southeast	124° - 146°
SSE	South Southeast	147° - 168°
S	South	169° - 191°
SSW	South Southwest	192° - 213°
SW	Southwest	214° - 236°
WSW	West Southwest	237° - 258°
W	West	259° - 281°
WNW	West Northwest	282° - 303°
NW	Northwest	304° - 326°
NNW	North Northwest	327° - 348°

The direction of an object

The direction of an object from a point can be specified in either compass directions or bearing directions.

The watch includes both compass directions and bearing directions.

The compass directions

The compass directions are shown on the adjacent table.

For example, in the figure, the compass direction of object B from point A is East. The compass direction of object C from point A is

Southeast. The compass direction of object D from point A is Northwest.

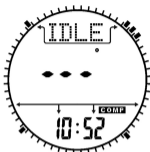
The bearing directions

- The bearing direction of an object is defined as the angular difference between North and the object. (Assume 0° for North, and the measuring range is from 0° to 359°)
- For example, in the figure, the bearing direction of object B from point A is 90° . The bearing direction of object C from point A is 135° . The bearing direction of object D from point A is 315° .

12.2 Compass Mode-Compass Mode



Normal Display



Idle Display



Distortion Display

Compass Mode

- In the compass mode, the top of the displays shows the compass direction.
- The middle display shows the bearing direction.
- The bottom display shows the current time in hour and minute.
- The pointer encircled the display shows the direction of magnetic north analogically.

IDLE Mode

- If NO any key has been operated for about 1 minutes in

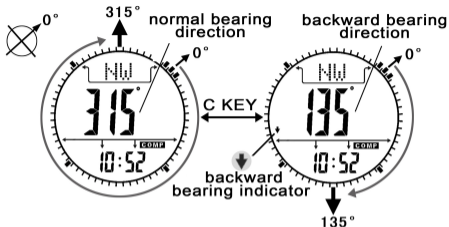
compass mode, the watch will go to the IDLE Mode automatically.

During the IDLE mode, press any button except A button to activate the compass again.

Distortion

- If distortion is detected, the indicator “OFF CAL” with flashing direction digits will appear.
- Please refer to the coming section “Calibrating the compass” to restore the compass to normal operation when distortion occur.

12.3 Compass Mode-Backward Bearing

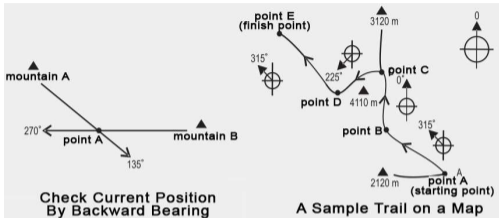


Normal Bearing Direction Backward Bearing Direction

Backward Bearing Direction

- The watch includes a backward bearing function.
- The backward bearing direction is the bearing direction that is on the opposite direction from normal bearing direction.
- When the "Backward Bearing" indicator "↓" is appeared, the watch is showing the backward bearing direction of the navigation direction.
- In compass mode, press the E button to select between normal and backward bearing direction.

12.4 Compass Mode-Applications of the Compass



Check your position by backward bearing directions

- Spot two distant identifiable landmarks such as mountains, light-house, fort and building of your current position, for example the mountain A and B.
- Check out the backward bearing directions of mountain A and B of your current position such as 135° from mountain A and 270° from mountain B.
- Use a ruler to draw the line 135° on the map which starting from the mountain A. Draw the lines 270° on the map which

starting from the mountain B.

Your current position on the map will be the intersection point (point A) of the lines 135° and 270° .

Check the Trek course correct

- During a trekking, the watch can keep your course correct. For example, the correct trail starts from point A and finishes at point E as it is drawn on the adjacent map.
- Mark the points (identifiable landmarks) where the trail turns its direction or the trail branches its way, such as the points A, B, C, D and E on the adjacent map.
- Find out the bearing directions of point B from point A (315°), point C from point B (0°), point D from point C (225°), and then point E from point D (315°).
- During the trekking, make sure that the heading direction is 315° from point A to point B. Performing the similar checking in other sections of the trail.

IMPORTANT: If you are in doubt of the directions and positions of the trail, consulting the park administration office before starting the trekking.

12.5 Compass Mode-Magnetic Declination



What is Magnetic Declination

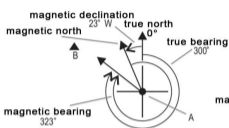
- The Magnetic North Pole which is slightly different from the True North Pole.
- Like most magnetic compass, points to the Magnetic North Pole. On the contrary, everything measure from a map is related to the True North Pole.
- The angular difference between Magnetic North Pole and True North Pole is called magnetic declination. Its amount(degrees and minutes) and direction (easterly and westerly) depend on where you are in the world.

- For serious compass user or who intends to perform accurate navigation, compass must be adjusted for magnetic declination.
- The watch also includes a compensation setting for Magnetic Declination. Check the coming section “Calibrating the compass-Magnetic Declination Mode”for more detail.

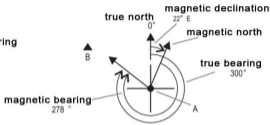
Magnetic Declination information

- Most topographic maps include a small arrow which shown magnetic north pole and or the magnetic declination information.
- For the benefit of the user,this manual includes the magnetic declination for some major cities, check the coming section “Magnetic Declination at Major Cities” for more detail.
- For the cities are not included in the list, please refer to the online magnetic declination information.

12.6 Compass Mode-Magnetic Declination Compensation



True Bearing(TB)=
 Magnetic Bearing(MB)-Westerly Magnetic Declination(W)
 $300^{\circ}(TB)=323^{\circ}(MB)-23^{\circ}(W)$
Compensate the Bearing
 with Westerly(W) Magnetic Declination



True Bearing(TB)=
 Magnetic Bearing(MB)+Easterly Magnetic Declination(E)
 $300^{\circ}(TB)=278^{\circ}(MB)+22^{\circ}(E)$
Compensate the Bearing
 with Easterly(E) Magnetic Declination

Magnetic Declination Compensation

- To compensate an object's bearing by subtract westerly (W) magnetic declination or add westerly (E) magnetic declination with the magnetic bearing.
- **Example 1:** 23° Westerly magnetic declination and the compass needle points 323° .
- $TB=MB-W$. While $MB=323^{\circ}$; $W=23^{\circ}$
- $TB=323^{\circ} -23^{\circ}$
- $TB=300^{\circ}$

- The true bearing will be 300° .
- **Example 2:** 22° Easterly magnetic declination and the compass needle points 278° .
- $TB=MB+E$. While $MB=278^\circ$; $E=22^\circ$
- $TB=278^\circ +22^\circ$
- $TB=300^\circ$
- The true bearing will be 300° .
- The watch allows you compensate the compass bearing at a place where the magnetic declination is either Westerly declination or Easterly declination.

Check the coming section “Calibrating the compass” for more detail of the setting.

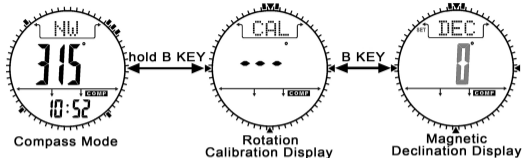
12.7 Compass Mode-Magnetic Declination at Major Cities

No.	Country/Place	Major City	Declination	No.	Country/Place	Major City	Declination
1	Afghanistan	Kabul	+3E	33	Netherlands	Amsterdam	+0E
2	Australia	Canberra	+12E	34	New Zealand	Wellington	+22E
3	Austria	Vienna	+3E	35	Norway	Oslo	+2E
4	Bahrain	Manama	+2E	36	Pakistan	Islamabad	+2E
5	Bangladesh	Dhaka	+0E	37	Philippines	Manila	-1W
6	Belgium	Brussels	+0E	38	Portugal	Lisbon	-3W
7	Brazil	Brasilia	-21W	39	Russia	Moscow	+10E
8	Canada	Ottawa	-14W	40	Singapore	Singapore	+0E
9	Chile	Santiago	+3E	41	South Africa	Cape Town	-24W
10	China	Beijing	-6W	42	Spain	Madrid	-2W
11	China	Hong Kong	-2W	43	Sweden	Stockholm	+5E
12	Costa Rica	San Jose	-1W	44	Switzerland	Bern	+1E
13	Cuba	Havana	-4W	45	Taiwan	Tai-pei	-4W
14	Czech Republic	Prague	+3E	46	Thailand	Bangkok	-1W
15	Denmark	Copenhagen	+3E	47	UAE	Abu Dhabi	+2E
16	Egypt	Cairo	+4E	48	United Kingdom	London	-2W
17	Finland	Helsinki	+3E	49	United States	Washington, DC	-11W
18	France	Paris	-1W	50	United States	Juneau	+22E
19	Germany	Berlin	+3E	51	United States	Phoenix	+11E
20	Greece	Athens	+4E	52	United States	Little Rock	+1E
21	Hungary	Budapest	+4E	53	United States	Sacramento	+14E
22	India	New Delhi	+1E	54	United States	Denver	+9E
23	Indonesia	Jakarta	+1E	55	United States	Atlanta	-4W
24	Israel	Jerusalem	+4E	56	United States	Honolulu	+10E
25	Italy	Rome	+2E	57	United States	Boston	-15W
26	Japan	Tokyo	-7W	58	United States	Saint Paul	+1E
27	Jordan	Amman	+4E	59	United States	Jackson	+0E
28	Kenya	Nairobi	+0E	60	United States	Santa Fe	+9E
29	Korea	Seoul	-8W	61	United States	Oklahoma City	+5E
30	Malaysia	Kuala Lumpur	+0E	62	United States	Salem	+16E
31	Mexico	Mexico City	+6E	63	United States	Harrisburg	-11W
32	Nepal	Kathmandu	+0E	64	United States	Salt lake City	+12E

NOTE: Since Magnetic declination will be changed as going with time, recommend to check the update data from following site: <http://www.magnetic-declination.com/> &

<http://www.ngdc.noaa.gov/geomagmodels/Declination.jsp>

12.8 Calibrating Mode-Calibration the Compass



When to Calibration the Compass

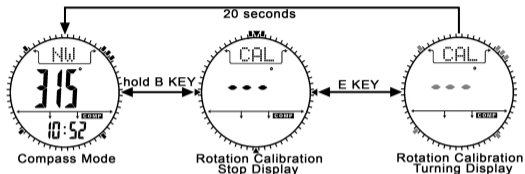
- The watch has to employ a compass calibration in one of the following conditions:
 - The watch is using for the first time
 - The battery has been replaced
 - The bearing direction digits are flashing, and the "OFF CAL" indicator appear
 - The compass use in a location that is apart from the place in which the compass had been calibrated
 - The user intends to regulate the precision of the digital compass

How to Calibrate the compass

- The compass calibration includes two different processes: Rotation Calibration Mode and Magnetic Declination Setting.
- It is advisable to carry out them both from time to time, that achieves a more accurate reading.

IMPORTANT: If the watch has not been calibrated, the direction made by the watch may be an inaccurate direction.

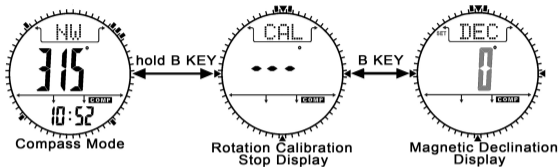
12.9 Calibrating the compass-Rotation Calibration Mode



Rotation Calibration Display

1. Press and hold the B button, into the Rotation Calibration Display.
2. Press the B button to switch between the rotation calibration and magnetic declination.
3. Press the E button to start rotation calibration in rotation calibration stop display, the pointers will start rotating, turning the watch (keep parallel to the horizon) in the same direction of the rotating pointers).
4. After the pointers rotate 2 turns, it will back to the compass mode.

12.10 Calibrating the compass-Magnetic Declination Mode



Magnetic Declination Mode

1. Check the coming section “Magnetic Declination at Major Cities” to get the magnetic declination of the city which is close to your current position. That angle will be inputted into the watch during the calibration.
2. To select magnetic declination display, press the B button in rotation calibration display.
3. When the current magnetic declination is appeared, press the E or C button to increase/decrease the number.(hold down the button changes the number at a higher speed).
4. If the setting is completed, hold the B button to confirm setting and exit the adjustment display.

13.0 Battery Replacement

Low Battery Indication



Low Battery Detection

- When the battery-low indicator appears on the display, it means that the capacity of the battery is low. It is recommended to replace the battery with a new CR2032.
- However, if the appearance of battery-low indicator is caused by using the watch under very cold condition, the indicator will be disappeared when normal temperature returns.

NOTE: It is recommended to complete the battery replacement by a certified service agency, because this watch contains precise electronic sensors and components.

NOTE: The memory will be cleared, if the battery has been replaced. Follow the previous section “Calibrating the Compass” to calibrate the compass before using the Compass.

14.0 Specifications

Current Time Mode

- Hour, minute, second, am, pm, month, date, and Day of week
- Sea Level Pressure Tendency Display, Altitude Tendency Display, Temperature.

Time System

- 12-hour or 24-hour format.

Calendar System

- Auto-Calendar pre-programmed from the year 2000 to 2099.

Daily Alarm Mode

- 2 daily alarms.
- Hourly chime.

Alarm Sound

- Sounds for 30 seconds at preset time of real time clock.

Chronograph Mode

- Resolution
 - 1/100 second.
- Measuring Range
 - 99 hours 59 minutes 59.99 seconds.
- Measuring Mode
 - Recall lap memories and total time.

Time Mode

- Resolution
 - 1 second resolution.
- Measuring Range
 - 99 hours 59 minutes 59 seconds.

- Operation Mode
 - countdown.
- Quick Set
 - 6 quick set Value(1, 3, 5, 10, 15 and 45 minutes)
- Timer Sounds
 - Sounds for 30 seconds when count to zero.

Pacer Mode

- Measuring Range
 - 30 BPM to 180 BPM.
 - 5 BPM per step.
- Step counter
 - Up to 99999 steps.

Altimeter Mode

- Resolution
 - 1m (1ft)
- Measuring Range
 - -706m to 9164m (-2316ft to 30065ft)
- Sampling Interval
 - First 5 minutes: 1 second.
 - After 5 minutes: 1 minute.
- History Recall
 - Last 24 hour.

Barometer Mode

- Resolution
 - 0.1 hPa/mbar
- Measuring Range
 - 300 hPa/mbar to 1100 hPa/mbar (8.85inHg to 32.48

inHg).

- Sampling Interval
 - First 5 minutes: 1 second.
 - After 5 minutes: 1 minute.
- History Recall
 - Last 24 hour.

Thermometer

- Resolution
 - $0.1\text{ }^{\circ}\text{C}$ ($0.1\text{ }^{\circ}\text{F}$) .
- Measuring Range
 - $-10.0\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$ ($14.0\text{ }^{\circ}\text{F}$ to $140\text{ }^{\circ}\text{F}$).

Compass Mode

- Resolution
 - 1° display (digital).
 - 1 of 60 pointers (graphical).
- Measuring Range
 - 0° to 359° (digital).
 - 1 to 60 pointer (graphical).
- Others
 - Digital backward bearing.

Backlight

- Electro-Luminescent (EL) backlight.

Battery

- Single 3V lithium battery (CR2032).