



AUSION

User Manual





Congratulations on becoming a proud owner of AUSION, a mobility aid from InnovationHub Technologies Private Ltd. We hope that it proves to be a valuable and helpful aid to your mobility. With care, your AUSION should give you long years of trouble-free use.

Please read these instructions carefully before using your new AUSION, and keep them in a safe place for future reference.



Getting Started

Your AUSION is an innovative electronic mobility and travel aid for the visually impaired. Based on the principle of echolocation, AUSION enables you to move around indoors and outdoors with confidence and least assistance. AUSION acquires information about the environment, especially objects and obstacles and translates them into sounds and tactile information that can be heard and felt. The interpretations of these audible and tactile feedbacks enable the virtual recreation of the environment. AUSION is compact, handheld, maneuverable, non-intrusive device. This offers a greater freedom of movement to you and helps detect overhanging obstacles at the chest, shoulder and head levels.

Your AUSION comes packaged in a box with other accessories. Exercise caution while opening the box. The box contains the AUSION main unit, an earphone, a wrist band and a battery. The Figure below highlights the various parts and their functions.

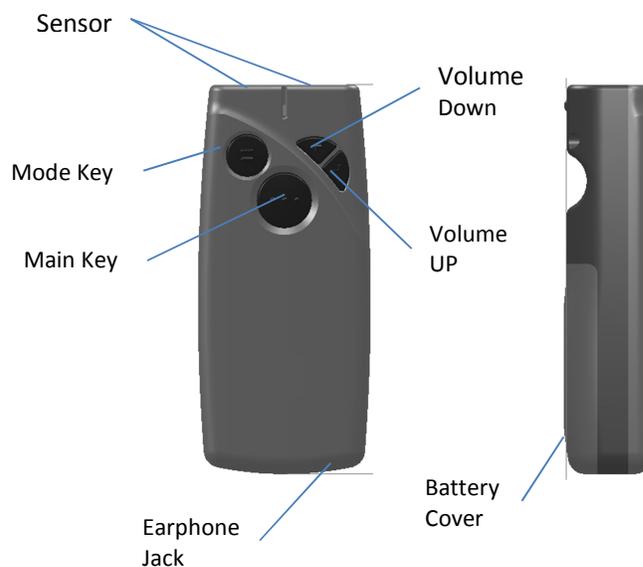


Figure 1. AUSION and its Components

Sensors:

Sensors form the most crucial part of AUSION and are located in the front of the unit. They help in identifying obstacles. Take precaution not to press, obstruct or manipulate them in any way. Doing so will hamper normal operation of your AUSION. Any damage to the sensors may make AUSION inoperable.

Main Key:

Main Key is a large button located in the middle of the upper part of your AUSION. It has 3 dots embossed over it for easy identification. It enables Switching ON/OFF AUSION and select a range for obstacle detection.

Mode Key:



Mode Key is located on the upper left part of your AUSION. It has two horizontal lines embossed over it for easy identification. This key enables the selection of various feedback modes that you may be comfortable with.

Volume UP Key:

The Volume Up key located on the top right side of your AUSION, enables increase of Audio Feedback sound level. This key has an upward facing arrow embossed over it for identification.

Volume Down Key:

The Volume Down key located below the Volume UP Key, helps lower the Audio Feedback sound level. This has a downward facing arrow embossed over it for easy identification.

Earphone Jack:

Your AUSION provides Audio Feedback through an Earphone. A standard stereo earphone is interfaced to AUSION through this jack.

Wrist Band:

An adjustable wrist band, supplied with your AUSION, can be attached to the unit through the socket provided at the bottom right side corner of AUSION. The wrist band is looped around the hand during normal operations and allows you to handle AUSION in a secure manner.

Installing Battery

Before starting to use AUSION, you need to install the battery. AUSION operates on a standard 9V battery. Your first battery is supplied along with the unit.

To install the battery, open the battery compartment cover located at the rear of AUSION. Gently push the latch at the bottom and pull it up. Keep the battery cover in a safe place. You can locate the battery compartment under the cover. The polarity and the shape of the battery contact terminals are embossed in the compartment. You can align the battery according to the polarity and contact terminal shape markings and push the battery inside all the way. Note that the contact terminals should align with the spring contacts in the compartment.

Once the battery is inserted and seated properly within the compartment, install back the battery cover, by gently pushing the notches inside the slots provided and shut it close with a gentle press, until you hear the click sound. Refer to Figure 2 below.



Figure 2. Battery Compartment and Cover



Installing Earphones

Your AUSION interacts through audio feedback via the earphones that are supplied with the unit. Any standard stereo earphone with a 3.5 mm jack, will function with AUSION.

The earphone socket is located at the bottom right corner of AUSION. Refer Figure 3 below. Gently insert the earphone jack such that the jack is fully into the socket.



Figure 3. Earphone Socket

Operation

Switching AUSION ON/OFF

The Main Key functions as the ON/OFF switch for AUSION and it does not have any other mechanical device for this function.

Holding the Main Key depressed for 1 second switches AUSION ON. When the unit comes ON, it provides a unique confirmatory tune acknowledging that AUSION is ready for use. At this time the Main Key should be released for proper operation.

To switch OFF AUSION, keep the Main Key depressed for 1 second. Just before the unit turns OFF, it provides a unique confirmatory tune as an acknowledgement and switches itself OFF. The Main key should be released at this instant.

Selecting Range

AUSION is capable of detecting obstacles in three distance ranges – 1 meter, 2 meters and 3 meters. At any time during the operation, you can select the range that is most suitable for the environment under consideration.

To select the 1 meter range option at any time, press the Main Key once. AUSION plays a unique confirmation tune (Distance Select Tune) once to indicate that the option has been programmed.

By depressing the Main Key twice in succession, you can set AUSION to operate in the range setting of 2 meters, thereby enabling it to detect all obstacles within 2 meters. AUSION will indicate the confirmation of this selection by playing the Distance Select Tune twice.

In order to select 3 meters range, depress the Main Key thrice in succession, to enable AUSION to detect obstacles within 3 meters range. AUSION will play the Distance Select Tune thrice to confirm this selection.

Note that you can select any of the ranges (1 meter, 2 meters or 3 meters) at any time during the operation, irrespective of the range selected earlier. AUSION will continue to operate in this range



setting until you select a different range as described above. There is no need to remember the range that was set earlier, thereby making things simpler.

Selecting Feedback Mode

AUSION can provide two modes of audio feedback – Continuous and Discrete. You can select any of these feedback modes, depending upon your comfort feel and the resolution you may want during navigation, in order to detect obstacles.

Continuous Feedback Mode, as the name indicates, provides continuous tonal feedback, whose frequency varies in correlation to the distance to an obstacle. Shorter the distance to the obstacle, higher will be the frequency of the tonal feedback. With a little training, you will be able to identify objects as close as 10 cm.

In the Discrete mode, the audio feedback is provided as a certain number of beeps per second. Though the frequency changes only in the range boundaries, the number of beeps vary according to the distance to the obstacle. Closer the obstacle, faster would be the rate of beeps. This does not provide the same resolution as that of the Continuous Mode, but coarser.

These modes can be selected by depressing the Mode Key once. Every time you depress the Mode Key once, the feedback mode toggles between Continuous and Discrete Feedback Modes. AUSION will provide a unique confirmatory tune to indicate the change of mode.

Increasing and Decreasing Audio Feedback Volume

The feedback mechanism in AUSION is primarily audio based. This means that the audio levels should be at a comfortable position for every individual. In addition, the volume level should not be hampering the audio cues that a visually impaired person gets from the surrounding environment. Your AUSION has a digital volume control to set the sound levels to the optimum values preferred by every individual user. The Volume UP and Volume Down buttons (Refer Figure 1) enable this feature.

Depressing the Volume UP / Down buttons once increase / decrease the audio level by 1 unit. Depressing the buttons multiple times consecutively (upto a limit of 8 times) either increments or decrements the volume exponentially depending upon which button is depressed, thereby changing the audio volume levels quickly.

Warning and Indications

Your AUSION provides certain other warnings and indications beyond what has been outlined above.

For AUSION to operate properly, the battery should remain in good condition and must maintain a minimum voltage level. After every Power ON, AUSION checks the battery voltage to ascertain if the voltage level is sufficient to maintain proper operation. If the measured voltage is below a certain preset level, AUSION provides a unique warning feedback tune, indicating that the battery voltage is dropping down.



This is only a first level warning and your AUSION will continue to operate without any issues and you can keep using it in a normal manner.

If AUSION senses that the voltage has dropped further below a certain level that is inadequate for proper operation, it provides a unique audio feedback tune and shouts itself OFF.

It is time to replace the battery with a fresh one. Refer to the earlier section on how to install battery.

AUSION also indicates any error that has occurred within the system or a malfunction, with a shrill audio tone as a feedback.

This can be set right, most of the time, by Powering OFF and ON your AUSION. In case the error condition persists, it is advisable to contact the nearest service / support center.

Auto Power OFF

In order to conserve battery power, your AUSION has an Auto Power OFF feature. If AUSION detects that there has been no key depressions (any of the Main Key, Mode Key or Volume Keys) over the previous 20 minutes, it automatically initiates a Power OFF sequence and shuts itself down. One minute before the Auto Power OFF sequence is initiated, AUSION provides a unique warning tune. If you envisage extended durations of usage of AUSION, ensure that you depress any one of the keys, say Volume Keys, to prevent AUSION from automatically switching OFF within the timeout period of 20 minutes or as soon as you get the Auto Power OFF warning tune.



Functionality At a Glance

| Function | Key | Action | Description |
|--------------|-------------|---|--|
| Power ON | Main Key | Long Press | <ul style="list-style-type: none">• When AUSION was OFF• Unique Sign on Tune |
| Power OFF | Main Key | Long Press | <ul style="list-style-type: none">• When AUSION was ON• Unique Sign off Tune |
| Range Select | Main Key | Single Press | <ul style="list-style-type: none">• 1 meter Range• Confirmation Tune played once |
| | | 2 presses in succession | <ul style="list-style-type: none">• 2 meter Range• Confirmation Tune played twice |
| | | 3 presses in succession | <ul style="list-style-type: none">• 3 meter Range• Confirmation Tune played thrice |
| Mode Select | Mode Key | Single Press | <ul style="list-style-type: none">• Toggles between Continuous and Discrete modes of feedback• Unique confirmation Tune |
| Sound level | Volume UP | Single press | <ul style="list-style-type: none">• Increment by 1 unit |
| | | Multiple presses in succession (limited to 8) | <ul style="list-style-type: none">• Exponential increment in correlation to the number of times pressed |
| | Volume Down | Single press | <ul style="list-style-type: none">• Decrement by 1 unit |
| | | Multiple presses in succession (limited to 8) | <ul style="list-style-type: none">• Exponential decrement in correlation to the number of times pressed |

Putting Your AUSION to Use

Once you become familiar with the controls, feedback tones, various modes offered by AUSION and become comfortable holding it, you are ready to try walking and navigating with AUSION. It would be advisable to first try it out in an area that you are already familiar with. Choose a Range and Mode setting that are most comfortable for you. Ideally a 2 meter range would be good for an indoor use. But it will depend on how crowded the environment is with obstacles and other objects.

In order to detect obstacles in front of you and which may span across your toe to head, you need to scan the area in front of you with AUSION. Being a handheld equipment, it would be advantageous to scan the area ahead in a “Z” fashion, while walking. This will enormously increase the probability of detecting most of the obstacles ahead of your path and thereby reducing the chances of you getting hurt.

Pay attention to the audio feedback and accordingly navigate your way around obstacles. With practice, you will even be able to judge how far the obstacle is, based on the tonal cues provided by AUSION.



Trouble Shooting Guide

| | |
|---|--|
| No sound output when Powered ON | <ul style="list-style-type: none">• Main Key should be kept depressed for atleast 1 second or until the sign on tune starts playing• Check if battery is installed with the correct polarity. If it is reversed, AUSION will not Power ON |
| After powering ON, AUSION plays another tune once | <ul style="list-style-type: none">• This could indicate that the battery voltage is dropping down. This is only a warning and you can continue to use AUSION• The battery may need replacement within the next few days, depending on the usage |
| After powering ON, AUSION plays another tune twice and switches OFF | <ul style="list-style-type: none">• The battery levels have dropped below the level required for AUSION to operate properly. Get a fresh battery and replace the existing one |
| AUSION keeps toggling between Power ON and Power OFF states | <ul style="list-style-type: none">• You may be keeping the Main Key depressed continuously. Once you begin to hear the Power ON Tune, you should release the Main Key• The Main Key may be stuck due to some reason. Release it gently. If this does not solve the issue, contact the service / support center |
| AUSION switches OFF after sometime into the operation | <ul style="list-style-type: none">• This could be normal. If AUSION senses that no keys have been depressed for 20 minutes, it automatically initiates a Power OFF sequence. It provides a unique warning tune 1 minute before this. If you need to use AUSION beyond 20 minutes, press any of the keys atleast once in 15 to 20 minutes duration or just after the unique warning tune and AUSION will not go into a Power OFF state. |
| AUSION gives some tone and after sometime gives no response | <ul style="list-style-type: none">• See point above. You might not have pressed any keys of AUSION while in use, for atleast 20 minutes. It might have initiated an Auto Power OFF cycle. Press the MAIN button to switch ON AUSION again. |
| Sometimes, under certain situations, AUSION gives a shrill tone as a feedback | <ul style="list-style-type: none">• This could probably be because of certain system related error conditions. Power OFF and ON once. If the situation persists, contact service /support center |



Care and Maintenance

- Do not use liquid cleaning agents, thinners, abrasive or corrosive materials on your AUSION. Use a damp cloth to wipe off any dirt or marks.
- Do not allow liquids to spill onto your AUSION or subject it to excessive dust, mechanical vibration or shock.
- Do not operate AUSION outdoors when it is raining. This may result in permanent damage.
- Do not immerse your AUSION in water.
- Do not store your AUSION near heat sources.
- Do not drop your AUSION. The sensors may get damaged due to the impact.
- Do not leave your AUSION within reach of young children. The product is not a toy.
- Do not attempt to open up your AUSION other than to replace the battery. There are no user serviceable parts inside the unit and opening up the product in any other way will invalidate the warranty. Contact your retailer or service/ support center if the product requires attention.
- Do not remove battery before storing your AUSION for extended periods of time.
- Do not leave discharged battery inside AUSION as it may leak and cause corrosive damage.
- Do not dispose of old battery in fire as they may explode.
- Do not attempt to charge the drained battery. It is not chargeable. It may explode if charging is attempted.

Specifications

- Ergonomic, compact, lightweight, handheld unit
- Selectable range 1 meter, 2 meter and 3 meter
- Easy to use: Two Keys for Distance Range / User Feedback Mode selection
- Unique tonal colors corresponding to object distances
- Continuous and Discrete modes of audible feedback
- Low cost of ownership (Ultra low power consumption)
- Audible feedback through earphone
- Weight and Size:
 - Length 100 mm
 - Width 50 mm
 - Height 25 mm
 - Weight : 95 grams
- Operating temperature: 0° to 35° C
- Storage temperature: -20° to 45° C
- Relative humidity: 5% to 95% noncondensing
- Battery Standard 9V 6F22

AUSION is not a primary mobility aid for the visually impaired. It is not a replacement for the traditional white cane. AUSION augments the white cane with advanced obstacle detection mechanisms and warnings that help detect all obstacles, thereby, enabling the visually impaired person to navigate confidently. AUSION should be used in conjunction with the white cane.

AUSION cannot detect wet surfaces. Adequate caution should be exercised to tackle wet surfaces.