realwear HMT-1Z1

HMT Release 10 User Guide

Version 1.1.4 – Updated for Release 10.4.0

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RealWear Head Mounted Tablet One Z1

The RealWear HMT-1Z1 is the world's first hands-free Android™ tablet class wearable computer for industrial workers and is an intrinsically safe ATEX Zone 1 and CSA C1/D1 certified fully rugged head-mounted device.

The RealWear HMT-1Z1 provides the foundation for Connected Worker programs.

Use it in wet, dusty, hot, dangerous and loud industrial environments.

It optionally snaps into safety helmets or attaches to bump caps and can be used with safety glasses or corrective eyewear.

The high-resolution micro display fits just below your line of sight and views like a 7" tablet. It's an industrial dashboard: there when you need it and out of your way when you don't.

The HMT-1Z1 works with powerful software applications from our solution partners in four core categories, each optimized for completely hands-free voice control. That means no scrolling, swiping, or tapping - just simple voice commands.

Use it for remote mentor video calling, document navigation, guided workflow, mobile forms and industrial IoT data visualization.

HMT-1Z1 Features

Intrinsically Safe
ATEX ZONE 1 AND CSA C1/D1

100% Hands free
Voice based operating system with local speech recognition in loud areas.

Powerful Audio
Integrated speaker and 3.5mm audio jack for use with hearing protection.

Unmatched Noise Cancellation
The HMT-1Z1 uses four microphones and advanced algorithms to perform noise cancellation prior to voice recognition.

PPE Compatible
Designed to work with standard hard helmets, bump caps and safety glasses.

Full-Shift Internal Battery
8–10 hours with typical use.

Outdoor Display
Viewable in bright sunlight.

Water Proof
IP66 – Protected against heavy seas or powerful jets of water.

Dust Tight
IP66 – Complete protection against the ingress of micro particles.

Drop Proof
Resistant to 2-meter drops onto concrete from any angle.

Built Rugged
Fully operational from -20° C to +50° C.

HMT-1Z1 Product Specifications

Core Platform & Functions
Chipset 2.0 GHz 8-core Qualcomm® Snapdragon™ 625 with Adreno 506 GPU - OpenGL ES 3.1 & OpenCL 2.0

Included Applications
Document Navigator, Camera with Barcode Reader, Video Recorder, Media Player

Languages Supported
English, Spanish, French, German, Italian, Portuguese, Russian, Mandarin Chinese, Japanese, Korean, Thai, Polish

Memory
16 GB Internal Storage / 2 GB RAM / MicroSD slot (max card supported 64 GB)

Operating System
Android 8.1.0 (AOSP) + WearHF™ hands-free interface

Connectivity & Sensors

Bluetooth
BT 4.1 LE (Low Energy)

Wi-Fi
802.11 a/b/g/n/ac – 2.4GHz and 5GHz

GPS and Location
GPS, GLONASS, A-GPS

IMU
9-DOF (3-axis accelerometer, magnetometer, and gyroscope), software enhanced stabilization

Battery

Capacity
3400 mAh Li-Ion, rechargeable

Battery Life
Full shift (8-10 hours) with typical use

Physical Characteristics

Weight
430 g

Ruggedization
Intrinsically safe, IP66, MIL-STD-810G, 2-meter drop test

Dedicated Keys
Power key, application-specific Action key

Ports
3.5mm audio, 1 micro-USB

Boom Arm
Adjust six ways for all head sizes, left or right eye compatible, display flips out of the way when not in use

Display

Type
20° field-of-view, 1-meter fixed focus 24-bit color LCD, 0.33 inch diagonal, outdoor visible

Resolution
WVGA (854x480)

Audio

Microphone
4 digital microphones with active noise cancellation
Accurate voice recognition even in 95 dBA of typical industrial noise

Speaker
Internal 91 dB loudspeaker

Multimedia

Camera
16 MP 4-axis optical image stabilization, PDAF with LED flashlight

Video
Up to 1080p @30fps. Codecs: VP8, VP9 and hardware encoding support for H.264, H.265 HEVC

Accessories

Included
Wall Charger, Micro-USB Charging Cable with inline Charging Protection “safety box”, Overhead Strap, Rear Head Pad

Optional
Hard Hat Clips, intrinsically safe (IS certified) Ear Bud Hearing Protection Headphone rated at 33dB noise reduction rating (NRR), Soft Pouch Carrying Case, Semi Rigid Carrying Case, replacement Overhead Straps and Rear Pads, Hard Hat, Micro SD card

Introduction: Understanding Intrinsically Safe Devices and Their Use in Hazardous Locations

Background
RealWear launched a model of its award-winning ruggedized head-mounted wearable computer for industry called the HMT-1Z1. The HMT-1Z1 is deemed “Intrinsically Safe.”

Introduction
While much has been written about operating equipment safely, there has been far less literature written on the equipment itself that must be used. This white paper attempts to explain simply what it means for a product to be deemed intrinsically safe, and what type of certification is necessary to effectively reduce the risk of an explosion. Choosing the right certified equipment for the right job is an important task of every buyer.

Company disclaimer
This paper should serve only as a primer and other documents and expertise is required for final purchasing decisions.

What does Intrinsically Safe mean?
Intrinsic safety is a design approach to make an equipment safe to be used in a hazardous location. Hazardous locations are the areas where flammable liquids, gases or vapors or combustible dust exist in sufficient quantities to produce an explosion or fire. In hazardous locations, specially designed equipment must be used to protect against the potentially explosive environments. These devices which can be used in the potentially explosive environments without causing an explosion are called Intrinsically Safe devices. The intrinsically safe design technique is based on limiting energy, electrical and thermal to a level below that required to ignite a specific hazardous atmospheric mixture.

What is an Explosion?
An explosion is a rapid increase in volume and release of energy in an extreme manner, usually with the generation of high temperatures and the release of gases. There are three elements which must be present to cause an explosion:

Figure 0: Three Required Elements for Occurrence of an Explosion

1. Ignition Source
An ignition source is an element which can cause a fire or explosion. Open flames, sparks, static electricity and hot surfaces are all possible ignition sources.
2. Flammable substance
Flammable substances are those gases, liquids and solids that will ignite and continue to burn in air if exposed to a source of ignition.
3. Oxidizer
An oxidizer is a kind of chemical whereby fuel is required to burn. An oxidizer must be present in sufficient quantity in combination with the flammable substance to produce an explosive mixture. The most common oxidizer is air (O2). Industries like refineries, chemical plants, paint shops, mills, flour silos, tanks, cleaning facilities, and loading facilities for flammable gases, liquids, and solids are the places where explosions occur frequently.

How to eliminate/minimize the possibility of an explosion?
As mentioned above, there are three elements which must be present to cause an explosion. If one of these elements is eliminated, ignition will not occur. In hazardous locations, flammable substances and oxidizers cannot be eliminated with certainty. Therefore, inhibiting ignition of a potentially explosive atmosphere can eliminate danger at the source. The intrinsically safe device limits the electrical energy at potential sources of ignition in electrical circuits (hot components and spark sources) to such low levels that – even under abnormal (fault) conditions – there is no possibility of the electrical energy igniting an explosive atmosphere.

How to tell if equipment is legitimately safe to be used in hazardous locations?
An intrinsically safe product must go through a rigorous set of tests put forth by experts in the field of safety. Products that stand up to these standards and pass these tests are considered “Intrinsically Safe Certified.”
There are many different authorized agencies that certify intrinsically safe equipment. The European certification is called ATEX; the most prevalent United States agency is called UL; the most well-known Canadian agency is called CSA; and, a general provider of certification across the globe is called IECEx. Any equipment that is used in hazardous locations should be certified by one of these well-known systems and agencies.

What is ATEX?
ATEX is an abbreviation for "ATmosphere EXplosible". At the same time, ATEX is the abbreviated name of the European Directive 2014/34/EU concerning the placing on the market of explosion-proof electrical and mechanical equipment, components and protective systems.
It also covers safety devices, controlling devices and regulating devices intended for use outside potentially explosive atmospheres but required for, or contributing to, the safe functioning of equipment and protective systems with respect to the risks of explosion.
Equipment and protective systems which fall under Directive 2014/34/EU may be placed on the market only if they bear a CE mark and are accompanied by an EC attestation of conformity certifying that the basic health and safety requirements have been met and that the applicable conformity assessment procedures have been observed.

Classification of Zones
According to Directive 2014/34/EU, a potentially explosive area is a space in which the atmosphere could become explosive on account of the local and/or operational conditions. An explosive atmosphere is defined as a mixture with air, under atmospheric conditions, of flammable substances in the form of gases, vapors, mists or dust in which, after ignition has occurred, combustion spreads to the entire unburned mixture. In North America, hazardous locations have traditionally been defined by a combination of classes and divisions as follows:

Hazard - Gas / vapor / mist	
Zone 0	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist *is present* continuously or for long periods or frequently
Zone 1	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist *is likely* to occur in normal operation occasionally
Zone 2	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist *is not likely* to occur in normal operation but, if it does occur, will persist for a short period only

Figure 1: Zone Classification for Gas/Vapor/Mist

Dust clouds in the explosive region (above the minimum explosible concentration) are categorized into 3 zones, based upon the grade of release.

Hazard - Powder / dust	
Zone 20	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air *is present continuously, or for long periods or frequently*.
Zone 21	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air *is likely to occur in normal operation occasionally*.
Zone 22	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

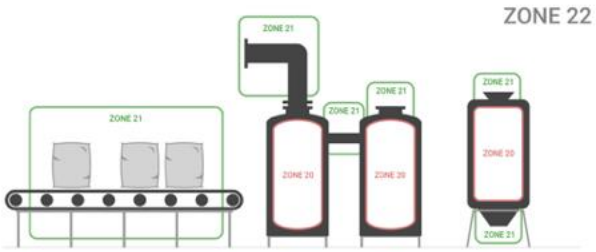


Figure 2: Zone Classification for Combustible Dust/Powder

What is IECEx?
International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres (IECEx System)
IECEx is a voluntary system which provides an internationally accepted means of proving compliance with IEC standards. IEC standards are used in many national approval schemes and, as such, IECEx certification can be used to support national compliance, negating the need in most cases for additional testing.

Benefits of IECEx
Because countries operate under different standards, "Ex" equipment often needs to be re-tested and re-certified to the appropriate standards of that country, adding to the cost of the equipment. The IECEx scheme significantly reduces the need for re-testing and certification by conforming to international IEC standards and therefore makes international trade easier, quicker and more cost-effective.

IECEx Process
CSA Group and Sira Certification Service are both Accepted Certification Bodies (ExCB) and Test Laboratories (ExTL) and, as such, can assess a product to the relevant standards, resulting in the compilation of an IECEx Test Report (ExTR) and IECEx Certificate of Conformity (CofC).

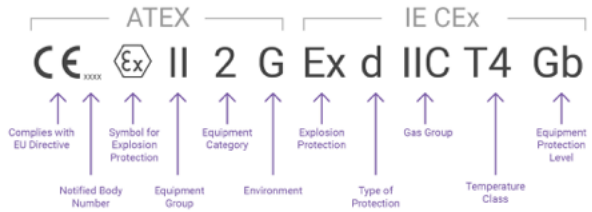
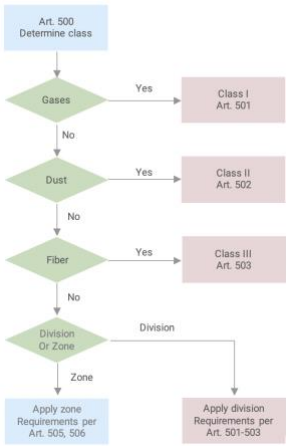


Figure 3: Typical ATEX and IECEx Markings

What is CSA?
CSA stands for the Canadian Standards Association. The organization, CSA International, is recognized throughout North America and Europe. Like other certification companies, it tests consumer and business products to see how it responds to certain situations and types of wear.
CSA uses the same classification of hazardous locations set forth by the NEC, which breaks hazardous locations into classes and divisions. CSA also accounts for the European zones, which are equivalent to divisions. For example, in North America, you may see it stated as, "Class 1, Division 1", while in Europe, you will see it stated as, "Class 1, Zone 1". It is also seen abbreviated as, "C1/D1", "C1D1," or "C1-D1."

What is NEC500?
The National Electrical Code (NEC), is a regionally adoptable standard for the safe installation of electrical equipment in the United States. NEC500 refers to Article 500 in NEC. A hazardous (classified) location is defined an area where the possibility of fire or explosion can be created by the presence of flammable or combustible gases or vapors, combustible dust, or easily ignitable fibers/filings. Electric arcs, sparks, and/or heated surfaces can serve as a source of ignition in such environments. Article 500 provides a foundation for applying Article 501 (Class I Locations), Article 502 (Class II Locations), Article 503 (Class III Locations), and Article 504 (Intrinsically Safe Systems)—all of which immediately follow Article 500.
The NEC organizes flammability properties into Class I, II, and III, in Article 501, 502, and 503, respectively. It defines and describes these in Article 500 (OSHA also defines and describes these). Article 500 is the basis for all hazardous location work and the related Articles that follow it (see Figure).



Flammability of combustible liquids are defined by their flash-point. The flash-point is the temperature at which the material will generate sufficient quantity of vapor to form an ignitable mixture. The flash point determines if an area needs to be classified. A material may have a relatively low auto-ignition temperature yet if its flash-point is above the ambient temperature, then the area may not need to be classified. Conversely, if the same material is heated and handled above its flash-point, the area must be classified for proper electrical system design, as it will then form an ignitable mixture.

Divisions, zones, and groups
NEC article 500, 501, 502, and 503, Class I, II, and III locations are further broken down into Divisions. Divisions and zones simply refer to the constancy and/or level of the hazard.

Figure 4: Article 500

There are two divisions and three zones:

Division 1 or Zone 0	the hazard is continuous
Division 1 or Zone 1	the hazard is intermittent
Division 2 or Zone 2	the hazard is present only under abnormal conditions

There are three hazardous location classes – respectively Class 1, Class 2, and Class 3. They simply refer to the type of hazard in general terms:

Class 1	the hazard is a flammable vapor
Class 2	the hazard is a flammable dust
Class 3	the hazard is a flammable fiber

Each chemical gas or vapor used in industry is classified into a gas group.

NEC Division System Gas & Dust Groups		
Area	Group	Representative Materials
Class I, Division 1 & 2	A	Acetylene
	B	Hydrogen
	C	Ethylene
	D	Propane
Class II, Division 1 & 2	E (Division 1 only)	Metal dusts, such as magnesium (Division 1 only)
	F	Carbonaceous dusts, such as carbon & charcoal
	G	Non-conductive dusts, such as flour, grain, wood & plastic
Class III, Division 1 & 2	None	Ignitable fibers/flyings, such as cotton lint, flax & rayon
Zone 0, 1 & 2	IIC	Acetylene & Hydrogen(equivalent to NEC Class I, Groups A and B)
	IIB+H2	Hydrogen (equivalent to NEC Class I, Group B)
	IIB	Ethylene (equivalent to NEC Class I, Group C)
Zone 20, 21 & 22	IIIC	Conductive dusts, such as magnesium (equivalent to NEC Class II, Group E)
	IIIB	Non-conductive dusts, such as flour, grain, wood & plastic (equivalent to NEC Class II, Groups F and G)
	IIA	ignitable fibers/flyings, such as cotton lint, flax & rayon (equivalent to NEC Class III
Mines susceptible to firedamp	I (IEC only)	Methane

Table 0: NEC Division System Gas & Dust Groups

Group IIC is the most severe Zone system gas group. Hazards in this group gas can be ignited very easily indeed. Equipment marked as suitable for Group IIC is also suitable for IIB and IIA. Equipment marked as suitable for IIB is also suitable for IIA but NOT for IIC. If equipment is marked, for example, Ex e II T4 then it is suitable for all subgroups IIA, IIB and IIC

A list must be drawn up of every explosive material that is on the refinery/chemical complex and included in the site plan of the classified areas. The above groups are formed in order of how explosive the material would be if it was ignited, with IIC being the most explosive Zone system gas group and IIA being the least. The groups also indicate how much energy is required to ignite the material by energy or thermal effects, with IIA requiring the most energy and IIC the least for Zone system gas groups.

Temperature classification

Another important consideration is the temperature classification of the electrical equipment. The surface temperature or any parts of the electrical equipment that may be exposed to the hazardous atmosphere should be tested that it does not exceed 80% of the auto-ignition temperature of the specific gas or vapor in the area where the equipment is intended to be used.

The temperature classification on the electrical equipment label will be one of the followings (in degree Celsius):

USA °C		International (IEC) °C	Germany °C Continuous - Short Time
T1 - 450	T3A - 180	T1 - 450	G1: 360 - 400
T2 - 300	T3B - 165	T2 - 300	G2: 240 - 270
T2A - 280	T3C - 160	T3 - 200	G3: 160 - 180
T2B - 260	T4 - 135	T4 - 135	G4: 110 - 125
T2C - 230	T4A - 120	T5 - 100	G5: 80 - 90
T2D - 215	T5 - 100	T6 - 85	
T3 - 200	T6 - 85		

Table 1: Temperature Classification

What does it mean to have Class 1, Div 1, Zone 1 Certification?

A device that is designed for locations where flammable vapors are continuously present is designated with a CSA Class 1, Div 1 certification and ATEX Zone 1 device. Those certified devices can be used in environments in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally. It may be obvious, by now, that the correct designation is extremely important for worker safety reasons. Failing to correctly designate a product can result in an injury or fatal disaster, severe damage to both facilities and resources, and bring about legal ramifications or other risks. Of course, this certification comes only after thorough and rigorous testing by experienced, independent third parties.

RealWear HMT-1Z1 is the world's first and only Class 1, Div 1, Zone 1 Certified Wearable Computing device which can be safely used in such hazardous locations. Here are the current certifications for the RealWear HMT-1Z1:

ATEX	II 2G Ex ib IIC T4 Gb II 2D Ex ib IIIC T135°C Db IP6X
IECEx	Ex ib IIC T4 Gb Ex ib IIIC T135°C Db IP6X
NEC500	Class I, Division 1, Groups A,B,C,D T4 Class II & III, Division 1, Groups E,F,G

Table 2: RealWear Certifications (as of 5.25.18)

Intrinsically Safe Certification Process for RealWear

Manufacturing an Intrinsically Safe product and certifying it to be used in hazardous locations across the world is a skilled and challenging task. RealWear partnered with industry experts at i.safe MOBILE for the development and certification of the RealWear HMT-1Z1 product. i.safe MOBILE incorporates all international standards into the product development and is also a member of relevant standards committees. To fulfill all requirements for explosion protection, i.safe MOBILE develops its products from the ground up, so users all over the world can be sure to use high-quality communication technology compliant with current standards. i.safe MOBILE developed and tested the RealWear HMT-1Z1 which was certified by renowned notified bodies ATEX, IECEx and NEC500 to ensure that the products satisfied all country-specific requirements. To achieve the highest level of certification that RealWear achieved is no small feat and took more than two years to complete.

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HMT Release 10 – Overview

Purpose-built hands-free secure software for increased productivity.
Safer. Faster. Smarter.

HMT Release 10 - powered by Android 8 - is the only software purpose-built for harsh or dangerous environments where workers use their hands for more connected and secure work. Release 10 is optimized for safe and secure jobs, taking hands-free to new heights of productivity and connectivity.

With Release 10, the overall experience and functionality has been improved, extending the HMT's capabilities and making it much more powerful. The major upgrade is a comprehensive, end-to-end overhaul, improving usability, look and feel, security, and includes an entirely new and improved camera system. The new camera functionality gives your connected workforce more granular control resulting in faster turnaround for visual verification and inspection when safety and compliance of your work on the frontline matters most.

HMT Release 10 lays the groundwork for RealWear Foresight Cloud Services, improving your overall hands-free experience while keeping you securely connected to the data in your cloud.

Enhanced Usability
Redesigned user interface, keyboard and file management system, focused on ease of use and productivity.

Fortified Security with Android 8.1 OS
Android 8.1 OS upgrade with regular security patches & software updates, and additional remote management.

Smarter Camera System
Camera features designed for productivity and performance in industrial environment

Core Functions	
Operating System	Android 8.1
Smart Camera System	My Camera App 2.0

Usability	
Enhanced UI	The new UI utilizes head movement for easy scrolling left to right. The new My Controls menu and speech keyboard allow the user to look left or right and make selections using their voice. Improved user experience with better screen layout and colors and a more consistent philosophy overall design. Better access to core Android capabilities such as Notifications.
Gestures	Better leverage head gestures when doing so is more effective than voice commands
Customization	White label design can be branded just for your business needs
My Files	Completely redesigned user interface Browse through high volumes of files through better structure and sorting capability Read full filenames Bigger thumbnails Locate files faster than ever
Keyboard	Fully redesigned hands-free keyboard with gestures and voice including: Standard keyboard Secure Entry mode enables hands-free password entry without speaking the characters aloud Full dictation for improved productivity

Security	
Android 8.1 Security	Security patch Level December 2018 Security patch updates targeted within 90 days Compliance with current enterprise IT security policies Regular software updates from RealWear API Level 27 support for developers

Customization and Configuration	
Centralized WearHF configuration	OS level and App level customization and configuration. Default values and preferences can be stored in a common configuration space and updated, refreshed, or managed for easier deployment and support
Cloud Services	Fully manageable by RealWear Foresight Cloud
Language	Dynamic and individual language strings can be adjusted or improved by administrators
More languages	Thai and polish languages have been added for a total of 12 languages Languages can be updated over the air (OTA)

Most Advanced Camera System for Harsh Environments	
Hands-free for industry	Command and control all features while keeping your hands free for work
Preview	Instant preview of photos and videos
Smoother experience	Seamless experience from 'MY CAMERA' to 'MY PHOTOS' and 'MY MEDIA'
Low Light Performance	Improved performance in low light settings and situations
Field of View (FOV)	Wide angle range or standard range
Focus and Exposure	Can lock focus and exposure to one of 9 points in the frame for capturing serial numbers in non-ideal lighting conditions
Image and Video Stabilization	More usable footage when work is being done and image and video accuracy is required for compliance, inspections and remote mentoring
Flashlight	Flashlight functionality can be controlled directly from the camera app
New Controls (MORE OPTIONS)	• Exposure level • Flashlight controller • Aspect ratio 16:9 and 4:3 • Image resolution: High and low • Video resolution: High and Low • Frame rate: 15, 25, 30 • Video Stabilization: On or Off • Picture preview • Manual focus • Field of view: narrow and wide • Direct access to your photos
Narrow Setting	Improves visibility of camera view when used with a baseball cap. Enhanced zoom to provide even more magnification for small or far away subjects
Wide settings	Full width of camera view is captured

HMT-1Z1 Safety Guidelines

Battery Performance

A rechargeable battery powers your device. The device comes with an inbuilt battery which is not replaceable. Never use any uncertified charger. Use the battery only for its intended purpose. Never use any charger or battery that is damaged. If the battery is completely discharged, it may take a few minutes before the charging indicator appears on the display or before the device can be used. The full performance of a new battery is achieved only after 3 to 4 complete charge and discharge cycles. The battery can be charged and discharged for multiple cycles, but it will eventually wear out. Unplug the charger from the electrical plug and the device when not in use. Ensure that you do not leave the fully charged battery connected to the charger. If left unused, a fully charged battery will lose its charge over time.

Warning: There is a risk of explosion while charging if a battery other than the specified model is used.

Avoid Short Circuit

Do not short-circuit the battery. An accidental short-circuit can occur when a metallic object such as a coin, clip, or pen causes direct connection of the positive (+) and negative (-) terminals of the battery. A short-circuit at the terminals may damage the battery or the connecting object.

Avoid High Temperatures

Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. For the best results, try to keep the battery between -10°C and +50°C (+14°F and 122°F). A device with a hot or cold battery may not work temporarily, even when the battery is fully charged. Battery performance is particularly limited in temperatures well below freezing.

Battery Disposal

Do not dispose of the device in fire as it contains an inbuilt battery which may explode. Dispose of the device according to local regulations and recycle when possible. Do not dispose as household waste. Do not dismantle, open or shred cells or batteries. In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. In the event of leak or a hazard seek medical help immediately.

Child Safety

Do not allow children to play with your device or its accessories. Keep it out of their reach. They could hurt themselves or others or could accidentally damage the device or accessories. Your device and its accessories may contain small parts, which could be detached and create a choking hazard.

Health and Safety Warnings

Stop using RealWear HMT-1Z1 or its display immediately if you experience a headache, vertigo, dizziness or nausea. Do not use the HMT-1Z1 display while operating any vehicle. Move the boom arm completely out of your line of sight when not using the display. Maintain situational awareness of your surroundings while using the HMT-1Z1.

Safety and Usage Guidelines

• Do not use HMT-1Z1 while driving
• Always wear HMT-1Z1 with eye protection.
• Always use your dominant eye for comfortable viewing.

Disposal of Old Electrical and Electronic Equipment

The symbol of the crossed-out wheeled bin indicates that within the countries in the European Union, this product, and any enhancements marked with this symbol, cannot be disposed as unsorted waste but must be taken to separate collection at their end-of-life.

Disposal of Battery

Please check local regulations for disposal of batteries. The battery should never be placed in municipal waste. Use a battery disposal facility if available.

Guideline for Headphone and Earphone

To prevent possible hearing damage, do not listen at high volume levels for long periods.

A pleine puissance, l'écoute prolongée du baladeur peut endommager l'oreille de l'utilisateur.

Charger Use Safety Instructions

Warning: To use the charger follow these instructions:

- Make sure that the cable plug is properly connected.
- Keep the charger away from liquids.
- In case of any strange smell or noise from the charger, disconnect it and contact support.
- Before cleaning the cable or charger, disconnect from power supply.
- When using an extension cable, check the integrity of the ground conductor.
- Disconnect the charger from HMT-1Z1, once the battery is fully charged.
- Do not use this charger in wet areas This charger is for indoor use only.
- Do not insert or remove the plug with wet hands.
- Do not open the charger. For any issues, contact support.
- Do not cut, break or bend the cable in a knot.
- Do not put any objects on the cable that may let it overheat. It may damage the cable and cause fire or electrocution.
- Do not use any cable other than the original cable as it may cause short circuit or electrocution.

HMT-1Z1 Connectivity

Operating Frequency Bands for RealWear HMT-1Z1

Wi-Fi operating frequency band(s) details and EIRP are as follows:

2412-2472: 15.89dBm
5180-5320: 17.09dBm
5500-5700: 17.37dBm
5745-5825: 12.98dBm

Bluetooth operating frequency band and EIRP is: 2402-2480: 12.16dBm

5G Wi-Fi Connection Information
Operations in the 5.15 — 5.35GHz band are restricted to indoor use only.

HMT-1Z1 Box Contents

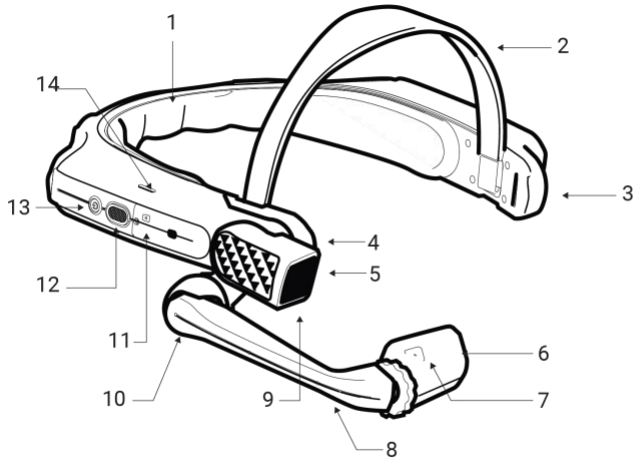
The list of items in the RealWear HMT-1Z1 box are:

RealWear HMT-1Z1 with preinstalled non-removable battery (3400 mAh Li-Ion)
- MicroUSB cable with inline Charging Protection “safety box”
- Overhead strap
- Rear head pad
- HMT-1Z1 Quick Start Guide

Included with purchase of HMT-1Z1, but shipped in a separate box:
- HMT-1Z1 Regional Wall Charger

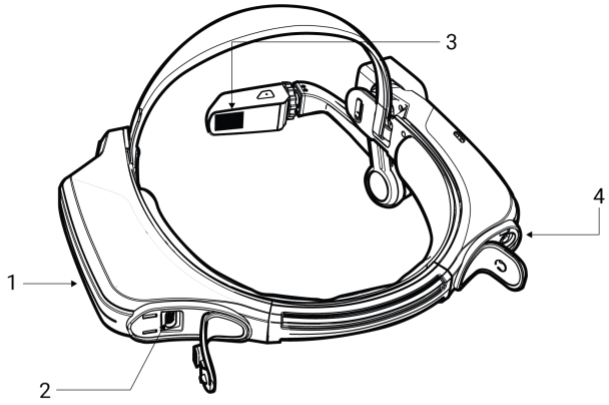
HMT-1Z1 Device Overview

Front View



1. Removable Head Pad
2. Removable Head Strap
3. Mic B1
4. Shoulder Joint
5. Flashlight
6. Display Pod
7. Mic A1
8. Boom Arm
9. Camera
10. Elbow Joint
11. MicroSD Card Slot
12. Action Button
13. Power Button
14. Mic B2

Rear View



1. Mic B2
2. Micro USB Data & Charging Port
3. Display Window
4. Audio Jack

HMT-1Z1 Device Overview – Details

Power Button

There are 2 buttons on the side of the boom arm side of the device. The smaller, silver, circular button is the power button. Later you'll learn how to use this button to turn on the device, turn off, put to sleep, or wake up.

Action Button

The action button is the large, textured button beside the power button, and serves multiple purposes. A single tap serves as a failsafe method of returning you to your home screen. Three quick, consecutive taps will toggle the microphone array between front and back configurations. Pressing and holding the action button will open the Language Select menu and will cycle through a list of supported languages. Release the button to select your desired language.

SD Card Door

The MicroSD card door can be opened with a 001 Phillips Head screwdriver. You can insert a FAT32 formatted microSD card with a maximum capacity of 64 GB for portable storage.

Details Continued

Camera Pod

The Camera Pod is located above the boom arm and can be pivoted up and down ((x)) degrees. It is capable of taking 16 MP photos and 1080p videos. It also includes a built-in flashlight that can be controlled with your voice.

Boom Arm

The Boom Arm allows the user to adjust the positioning of the Display Pod and allows for 6 degrees of freedom, which means it can be adjusted up and down, left and right, and forward and back. It is comprised of a Shoulder, Elbow, and Wrist joint (imagine the human arm). Its orientation can be inverted to allow use by left or right eye dominant users.

Wrist Joint Locking Ring

This is the small Wheel-shaped lock that locks the display pod in place, and is located between the Display Pod and Boom Arm.

Display Pod

The Display Pod can be rotated and adjusted so the user can see the display clearly. The Display itself is an 854x480p 24-bit LCD Display with 20-degree field-of-view and 1-meter focal depth, meaning that it appears like a 7in. Tablet at arm's length.

Microphone Array

There are two sets of two microphones on the HMT-1Z1. The Primary Microphones handle user input, while the reference microphones cancel external noise. The front microphones, active by default, are located on the display pod. The Primary Mic is downward-facing, close to the user's mouth, and the reference mic is upward-facing to pick up and remove background noise.

The rear microphones are located on the side of the device opposite from the boom arm. These should be used only when communicating when the boom arm is flipped back and out of your field of view.

Speakers

There is a 91 dB loudspeaker that sits above the ear when worn on either side.

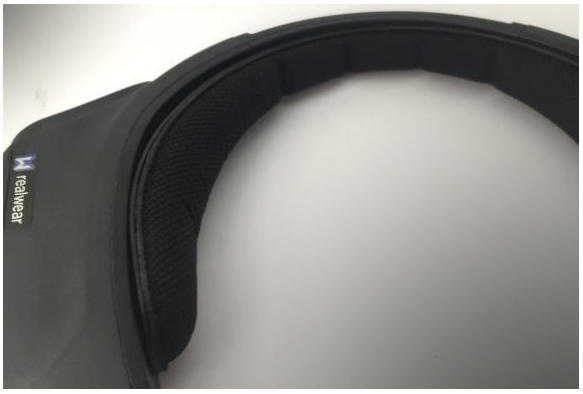
Micro-USB Port

For all data transfer, you must use the micro-USB port, which is located beside the battery compartment, beneath the rear flap on the side opposite the boom arm.

Auxiliary Jack (Headphones)

Headphones can be connected to the HMT-1Z1 via this jack. We recommend using RealWear 33 dB noise-reduction earbuds with your HMT-1Z1. This jack is located beside the USB-C port.

Rear Head Pad



The rear head pad is an adjustable and removable pad located at the inside rear of the device that rests along the back of your head. If you are mounting your HMT-1Z1 on a hard-hat or bump cap, you may choose to remove this for comfort.

Overhead Strap

This is an adjustable hook & loop strap that rests across the top front of the wearer's head. Again, if mounting via hard-hat or bump cap, this can be removed.

HMT-1Z1 Setup Guide

Wearing the HMT

This article will walk you through how to wear your HMT device and ensure the best possible experience.

Step 1 - Determining Left- or Right-Eye Configuration

The HMT can be set up so that the display and camera are aligned with the left or right side of your head.

First, it is important to determine your dominant eye, to do so, follow the simple instructions in this linked article.
Viewing the HMT's display with your dominant eye will allow for the most clear and comfortable use of the device.

Step 2 - Get the HMT Ready

Before wearing, hold the HMT level with the boom-arm/display on the left or right, whichever is your dominant eye side.
Bend the boom so it forms a slight "Z" shape as shown below.

Step 3 - Ensure proper head-mounting accessories are in place.

These can include the single strap, tri-strap, hardhat with clips, bump cap with tri-strap, or baseball cap with mounting kit. See the article on mounting accessories for instructions on how to attach the device to your chosen mounting option.

Step 4 - Putting on the HMT

Start by positioning the device on your head so that it is roughly level with ground. The head strap should be positioned vertically, not at an angle, resting over the top part of your head.

Step 5 - Fitting the HMT

Adjust the head strap or mounted headwear so that the device is not hanging too low - it should be positioned right along your temple area, above your ears.

Next, move the display pod into position. For the optimal experience it is recommended that the display is close to the center line of your face, in front of and close to your eye.

Step 6 - Adjusting the fit

Ensure that the display pod is not positioned too far to the outside or too far in front of your eye.

Move the display towards the center line by pushing from the outside inward.

Then holding the boom arm with one hand and holding the back of the HMT with the other, push the display pod inward so that it is close to, in front of and slightly below your eye.

Step 7 - Turning on the HMT

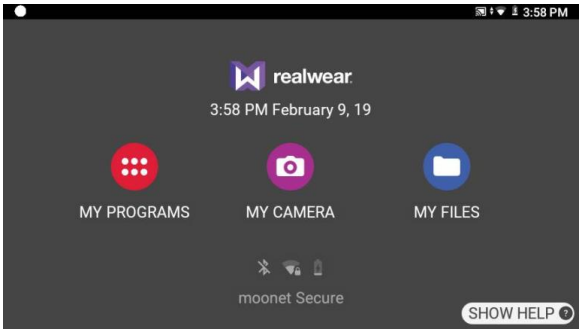
Before putting the HMT on your head, press and hold down the power button for about three seconds then release the power button. The power button is the round silver button on the same side of the HMT as the boom arm/display.

In about ten to fifteen seconds you will hear a sound as the start-up sequence completes. The HMT is now powered on and ready to wear. You should now be able to see the screen.

Step 8 - Fine tuning

It is best to tilt and rotate the display pod to make minor adjustments.

Make sure that the display pod is rotated so that all four corners of the screen are clearly visible to your eye. With your HMT powered on, and the display pod positioned correctly, you will see the entire HMT Home Screen.



Warning: If you are not able to clearly see what is on screen, review how your device and display setup - double check the fitting of the strap or headwear and if your display is correctly setup for your dominant eye.

Step 9 - Fine tune the camera

When you are ready to use the camera, you will need to make some final adjustments so that the view of the camera is forward and unobstructed.

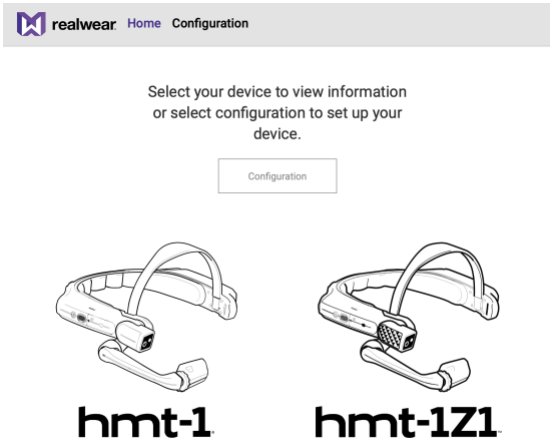
Remote configuration for HMT from web browser

Generate a QR Code for Configuration from a Web Browser

The Configuration App (found in My Programs) scans a QR code that can contain setup information for language, time zone, time, and WiFi connections. A web page enables anyone to create the QR code.

To setup the device, complete the following procedure:

1. Open a Web browser in your computer.
2. Visit realwear.setupmyhmt.com or http://www.realwear.com/configure
3. Click the 'Configuration' button on the page and then 'First Time Setup'. (Note: you can also click the 'Configuration' link on the top navigation bar:)
4. Select the desired language and click 'Next'. You will need to select the world region first, then the time zone.
5. The 'Set Automatically' checkbox will default to checked with the values from your computer or phone. If you desire different settings, uncheck the box and change any values necessary.
6. When the Date & Time values are set, click 'Next'.
   - Optional: Enter the WiFi access point name (or SSID) and password to setup the Wi-Fi network for your HMT. Note: most simple WiFi networks use WPA/WPA2 PSK security.
7. Click 'Generate Code'. A QR code will display on the computer screen.
8. On the HMT open the Configuration App. Say "NAVIGATE HOME" then "MY PROGRAMS" then "CONFIGURATION". The device will start beeping.
9. Scan the QR code by pointing the HMT camera so the QR code is within the target outline on the display.
10. When the QR code is scanned a tone will sound and you will be returned to the previous screen.



The preceding steps can also be accomplished using the RealWear Companion app, available on the App Store and Google Play.

Note: when you power on the HMT device for the first time a remote configuration screen will be displayed. To skip the remote configuration and perform later, press the Action button. You may return to the configuration app at any time by saying "NAVIGATE HOME" > "MY PROGRAMS" > "CONFIGURATION".

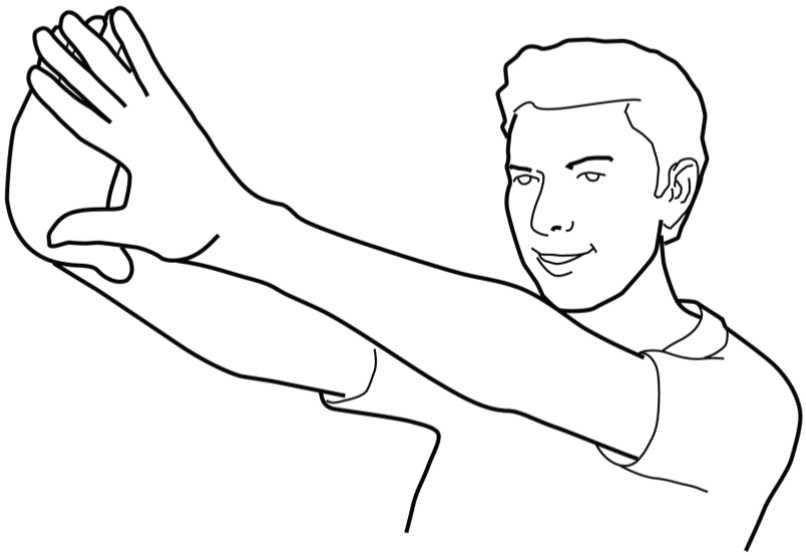
Determining Eye Dominance

Eye dominance is the tendency to prefer visual input from one eye to the other. It is best to use your dominant eye when viewing the display.

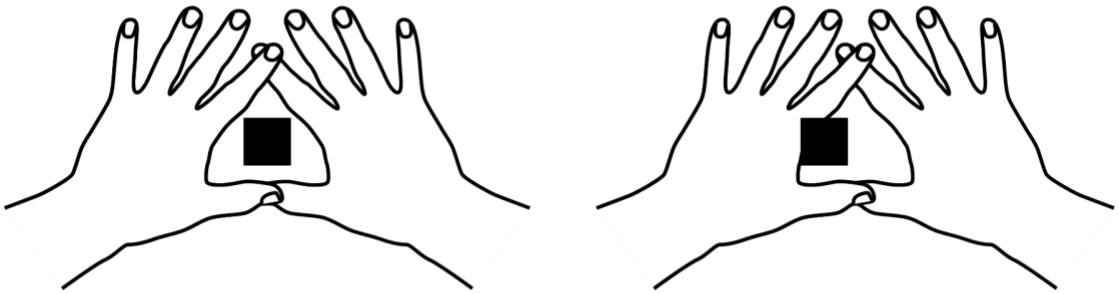
Eye dominance is not related to right- or left-handedness.

To determine which eye is dominant:

1. Form a triangle with your hands placed together at arm's length.



2. With both eyes open, focus on any distant object centered in the triangle (such as a light bulb or door knob).
3. Maintaining focus on the object centered in the triangle and - keeping your head and both hands still - close your right eye.
4. If the object is still in the triangle, you are left-eye dominant.
5. Maintaining focus on the object centered in the triangle and - keeping your head and both hands still - close your left eye.
6. If the object is still in the triangle, you are right-eye dominant



7. If the object is in the triangle with either eye, then you are dominant eye neutral.

Headwear with HMT Devices

(Check RealWear Website for specific model availability.)

HMT devices are equipped standard with a Removable Head Strap.

Compliant with your PPE, HMTs can be mounted several other ways in order to increase stability, comfort, and safety.

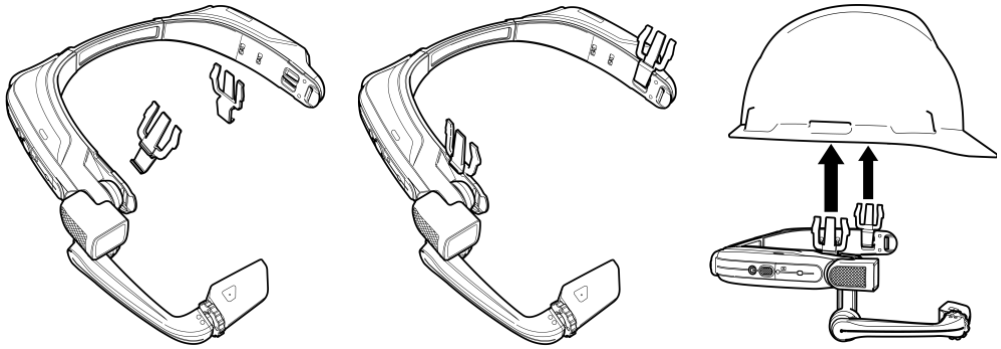
Mounting with Hardhat and optional accessory clips.

Headwear continued

The HMT-1Z1 can be mounted using a tri-band strap.

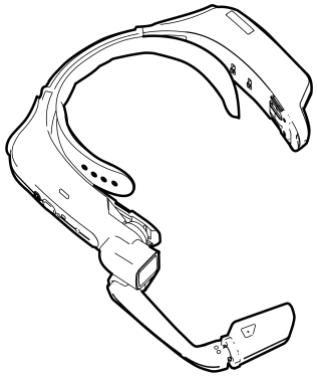
Using the HMT with a Hard Hat

To get hard hat clips, visit shop.realwear.com.



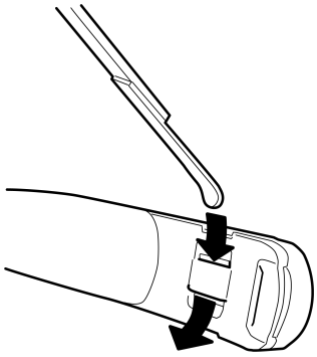
1. Hook the Hard Hat Clips into the HMT band and snap them into place.
2. Slide the clips into the hard hat accessory slots; the HMT band should sit outside of the hard hat's harness.
3. Put on the hard hat and if applicable, tighten until secure and comfortable.
4. To remove the HMT from the hard hat, pinch the clip fingers and push the clip out of the hard hat slots.

Using the HMT without a Hard Hat



Attaching the Rear Pad

The Rear Pad snaps onto the HMT's rear band; align the openings on the Rear Pad to the pegs on the HMT's rear band, and snap into place.



Attaching the Head Strap

Insert the end of the strap into the inside slot on both sides of the HMT as shown. Fold the end back on itself and secure using the Velcro patch.

Wearing HMT with Eye Protection

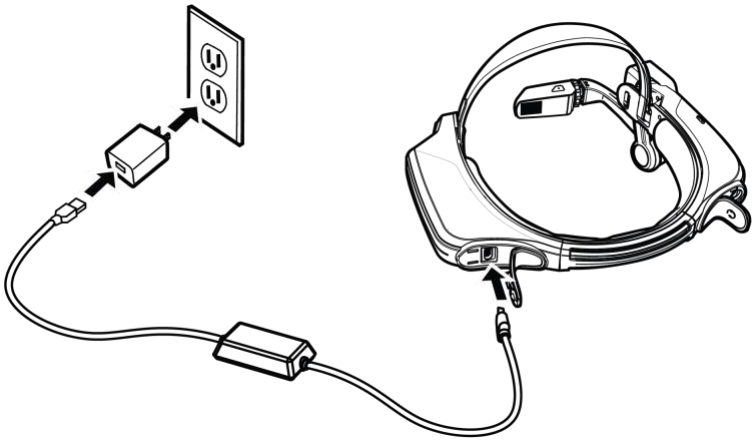
If you wear eye-glasses to operate a computer, or eye protection for your work, continue to wear the same glasses or eye protection while using HMT. While HMT devices are designed to work well with or without eye-glasses or eye protection, RealWear recommends wearing eye protection while using an HMT.

HMT-1Z1 Charging Basics

HMT-1Z1 Direct Charging

To recharge the battery:

1. Connect the microUSB charging cable to the microUSB port located under the rubber lid as shown.



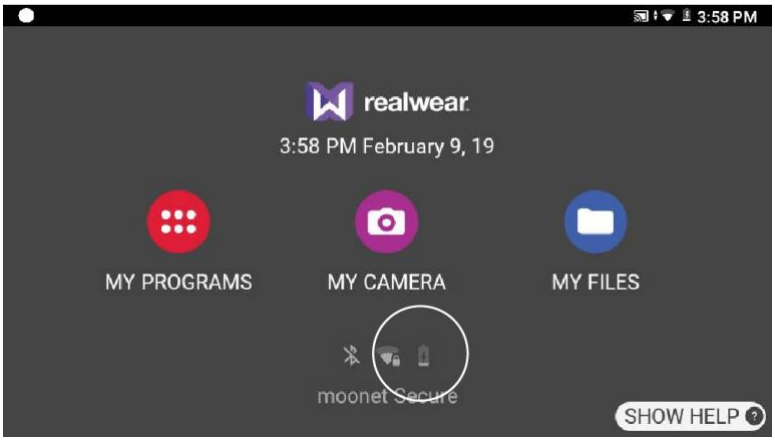
2. Connect the charging cable to the wall charger.
3. Plug the wall charger into an electrical outlet.

A Red light means the battery is extremely low or dead.
A Yellow light means the battery is less than 100% and charging.
A Green light means the battery is full.

Warning: Only use the Provided Charger

The USB cable included with the HMT-1Z1 is a special microUSB cable for data transfer and charging. It includes a safety box that protects the HMT-1Z1's safety circuits from power surges. These surges can damage the HMT-1Z1 and may occur when connecting the HMT-1Z1 to computers, wall chargers, car chargers, and other power sources that are not certified or approved as intrinsically safe. It is the only cable approved for charging the HMT-1Z1 and for moving files to and from the HMT-1Z1.

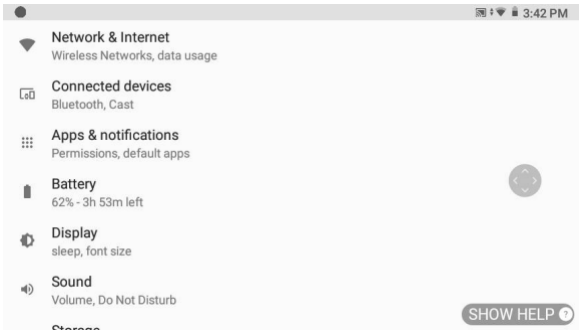
The battery icon will 'fill up' indicating its state of charge.



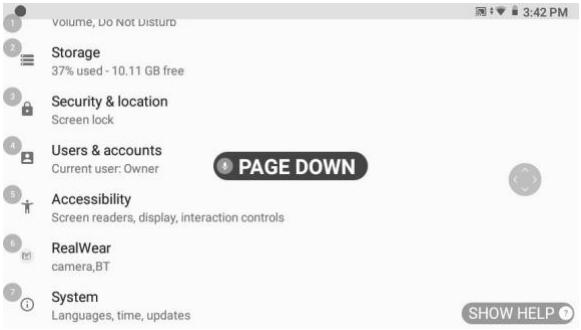
Configuring your HMT on Release 10

Settings

You can access Settings from My Programs. Go to My Programs and say 'SETTINGS'.



'Page down' to see more options.



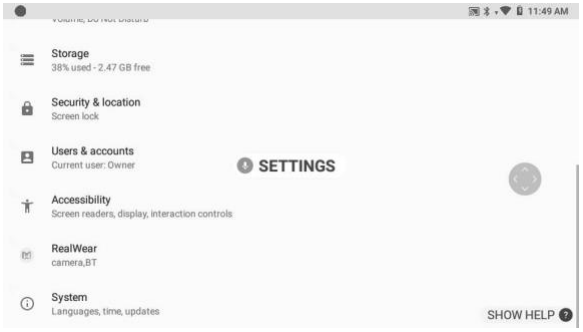
Settings provides access to important system level controls and capabilities. Each of the following Settings options can be select by speaking the corresponding commands:

- Network & Internet
- Connected devices
- Apps & notifications
- Battery
- Display
- Sound
- Storage
- Security and location
- Users & accounts
- Accessibility
- RealWear
- System

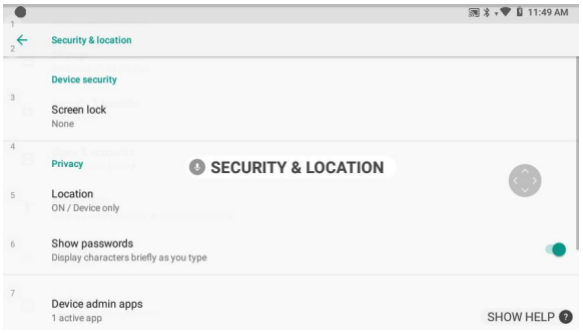
Setting Up Screen Lock

Using Android's Screen Lock feature protects your HMT device from unauthorized access. To setup the screen lock, do the following:

Step 1:
Enter Settings one of two ways. You can say "MY CONTROLS", then "MORE SETTINGS". Or you can say 'NAVIGATE HOME", then "MY PROGRAMS", then "SETTINGS".

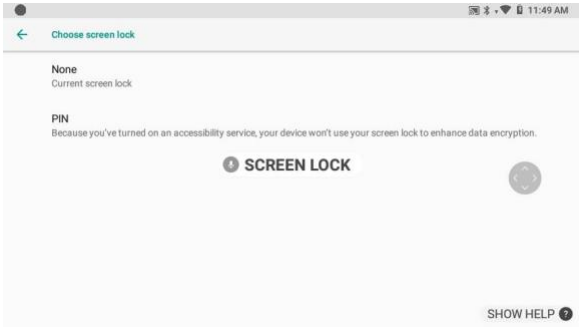


Step 2: Say "PAGE DOWN", then say "SECURITY AND LOCATION".

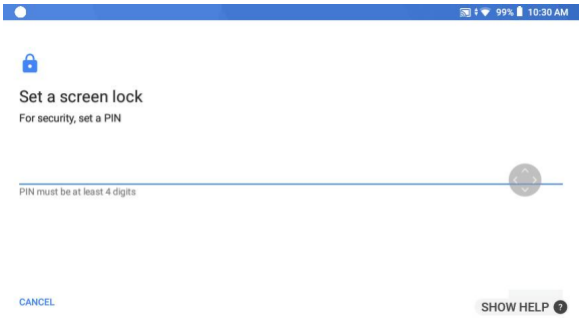


(Note, the Settings page will be scrolled to the last location visited after a reboot. So Settings may not be scrolled all the way to the top of the page. The instructions here assume you will start at the top of the page.)

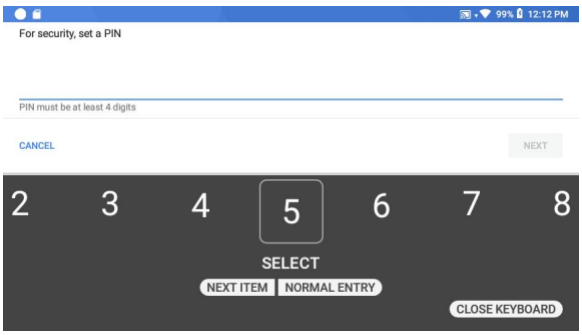
Step 3: Say 'SCREEN LOCK' or select using the 'SELECT ITEM #' command. On the screen above the correct command would be "SELECT ITEM 3"



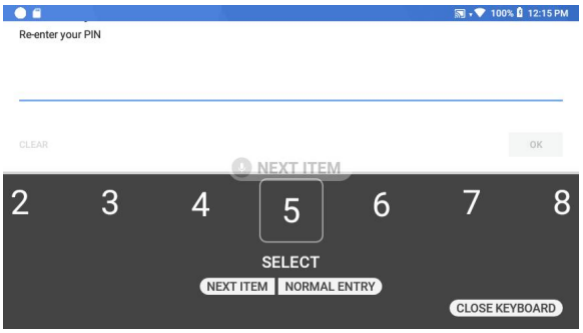
Step 4: Say the word 'PIN'



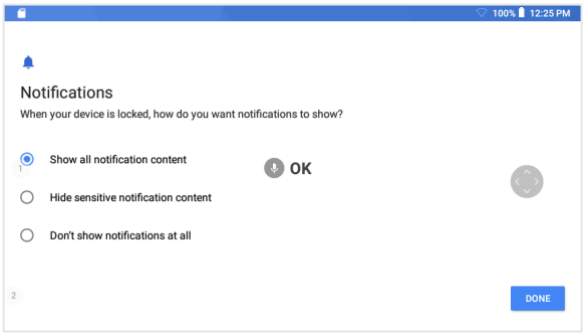
Step 5: Move your head left or right until the number you want to select is within the frame. Say "SELECT" to enter that number.



Step 6: Repeat to input your desired PIN sequence. The PIN may be from 4 to 16 digits. When complete say "NEXT ITEM".



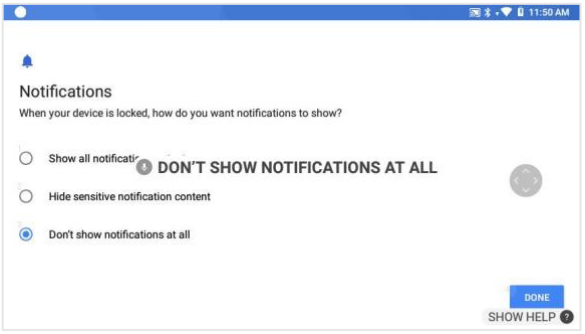
Step 7: Re-enter the PIN for confirmation. When finished, say "NEXT ITEM" or say "CLOSE KEYBOARD", then say "OK".



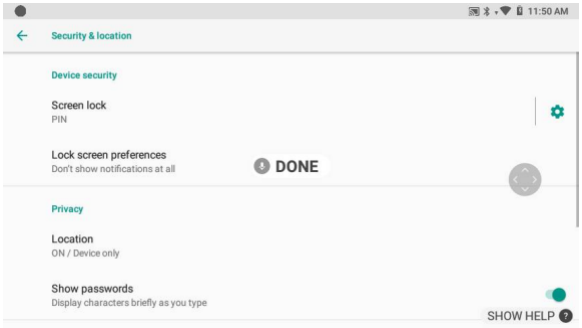
Step 8 Select desired Notifications display option. This will determine if the HMT will display notifications on the Home screen when the device is locked.

You can opt to view all the notifications or hide specific notifications.

You can also opt to hide all the notifications.
The default is "Show all notifications". Simply say "SHOW ALL NOTIFICATIONS", "HIDE SENSITIVE NOTIFICATION CONTENT" or "DON'T SHOW NOTIFICATIONS AT ALL" to select.



Step 9: When finished, say 'DONE'.



The Screen Lock is enabled, and the device will lock the next time it goes to sleep. You can press the power button for one second or less to lock the device. Or if the device is idle for an amount of time selected in Settings>Display>Sleep.

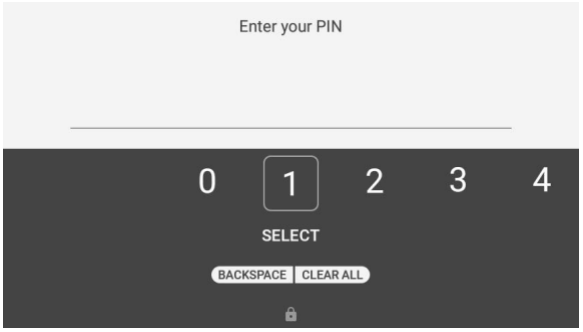
Unlocking the HMT

When screen lock is enabled, the device requires a PIN number upon waking from sleep mode or when the device is restarted.

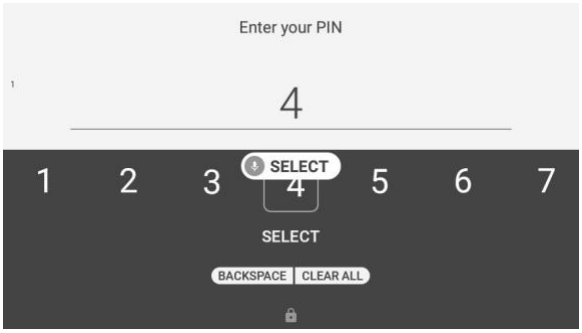
To unlock the device:

Step 1: Press the Power button. When the lock screen appears say “UNLOCK”.

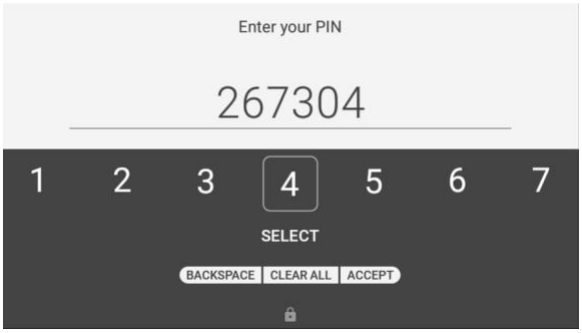
Step 2: Input your PIN. Move your head left or right to highlight numbers.



Step 3: When highlighted, say "SELECT" to enter the number. Repeat to enter your entire pin.



Step 4: When finished, say "ACCEPT" to unlock the device. The device will go to the Home Screen in the case of a reboot of the device or will return to the last screen open in the case of waking from sleep mode.



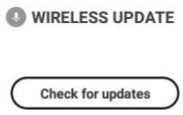
HMT Configure Continued

HMT Release 10 Wireless Update

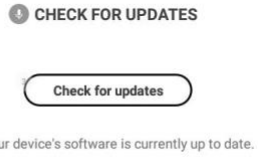
Your device is already configured to keep its operating system up to date via over-the-air (OTA) updates distributed by RealWear. The HMT will not update automatically, it requires a user to launch the update.

Step 1: Power ON the HMT and connect to a Wi-Fi network.

Step 2: Navigate to My Programs and say "WIRELESS UPDATE"



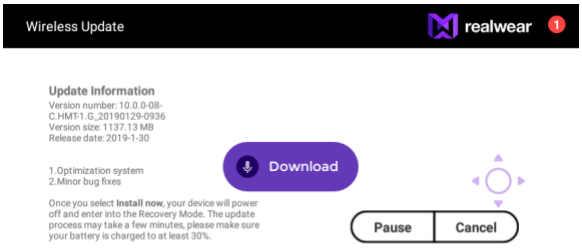
Step 3: An update may already have downloaded. If not, you may say “CHECK FOR UPDATES”.

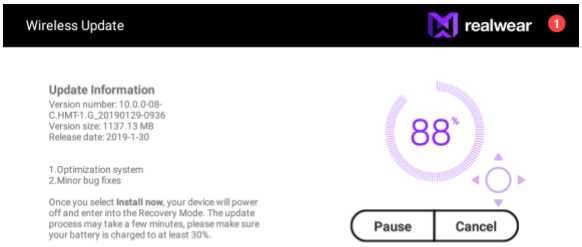


A message will display if you're up to date.

If there is an available update, an option to download the package is displayed.

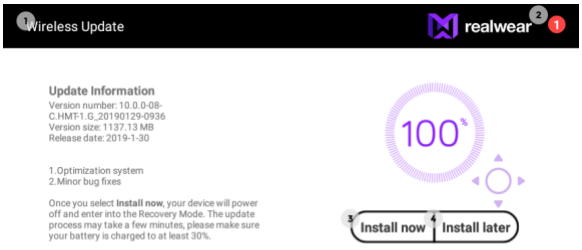
Step 4: Say “DOWNLOAD” or say, “SELECT ITEM (followed by the item number)”. The software update download will start. The download time depends on the size of the package and the network connectivity.



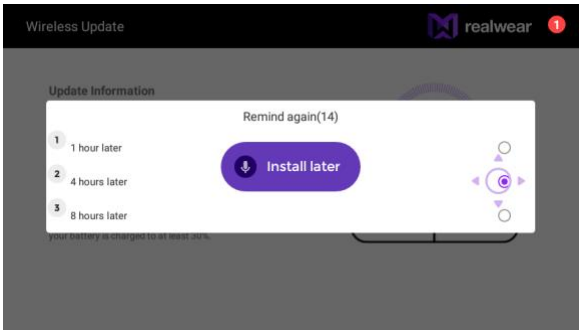


We recommend muting the microphones if the the download is large. Just say "MUTE MICROPHONE". When the download has finished, briefly press the large black Action Button on the boom-side of the HMT housing. Then you can install the update via voice commands.

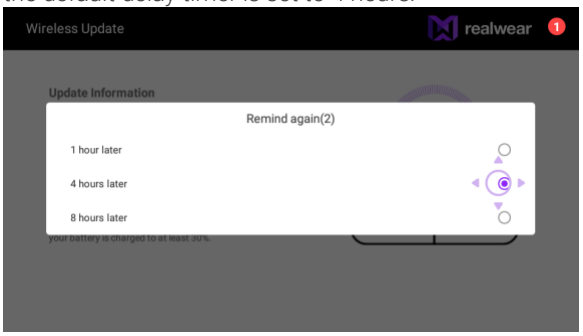
Step 5: Once the download is complete, an option to install now or later is displayed.



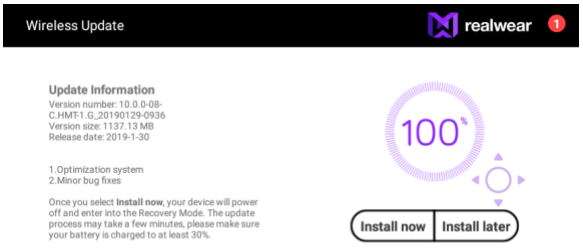
Step 6: If you say “INSTALL LATER”, a pop-up to set the installation delay time is displayed for about 15 seconds.



You can set the installation delay time to by 1, 4 or 8 hours. If the delay time is not set within the given time, the default delay timer is set to 4 hours.



Step 7: Say “INSTALL NOW” to install and update the HMT software immediately.



Warning Messages to Note During Software Update

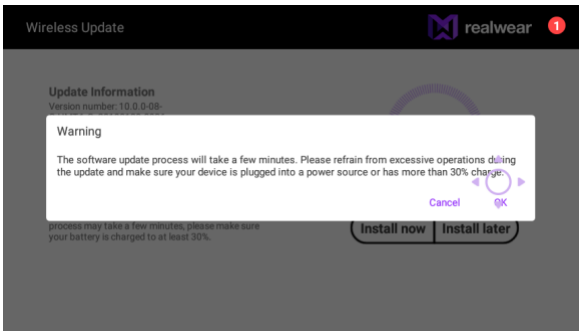
'Be sure to read the following warning messages before proceeding with the software update'

Battery Alert

'We recommend not to use HMT during the software update. Also ensure that there is at least 30 % charge before installing an update.'

Software Update Warning

'When the software update begins, the following warning is displayed.'



Say "OK" to proceed with the update.

The HMT will reboot itself upon completion of the update.

HMT Configure Continued

Selecting HMT Interface Language

The HMT supports the following languages:

1. English (US)
2. French
3. German
4. Italian
5. Japanese
6. Korean
7. Mandarin Chinese
8. Polish
9. Portuguese (Brazil)
10. Russian
11. Spanish
12. Thai

To select the user interface language:

Step 1: Press and hold the large, black Action button on the boom-side housing.

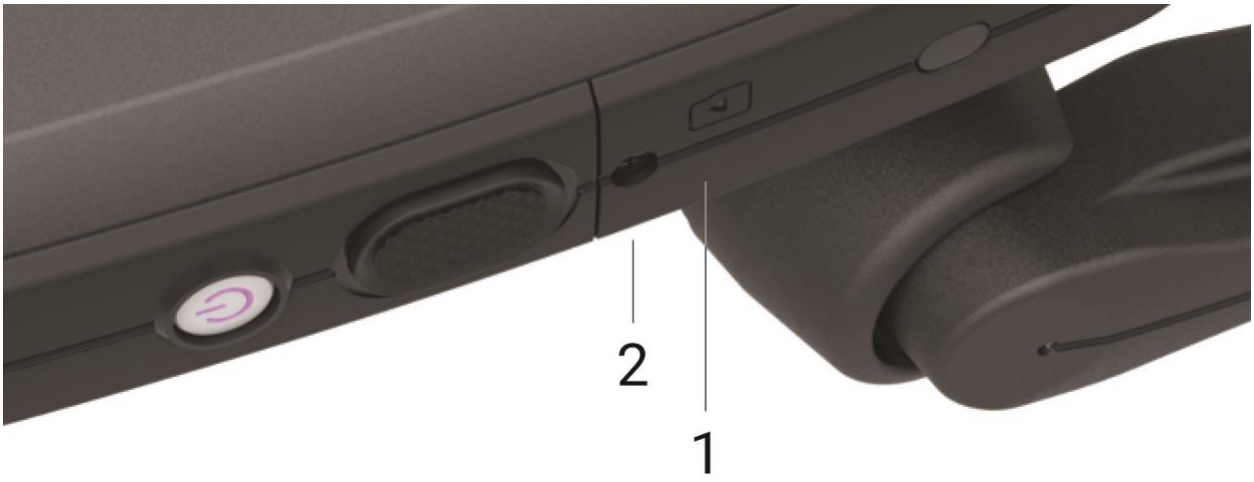
Step 2: All the supported languages are displayed as preview, using their respective Country flags:

The device automatically scrolls through the language list and highlights one language at a time, for about two seconds each.

Step 3: When the desired language is highlighted, release the Action button and the device will immediately reconfigure to show commands only in that language.

HMT MicroSD Card

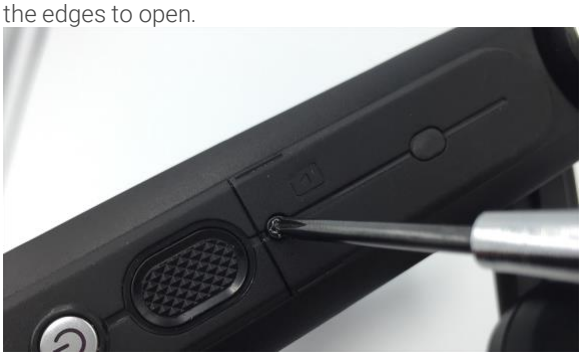
You can insert a MicroSD card into the specified slot and store media files and documents.



	Part Name	Action
1	MicroSD card slot door	Covers the MicroSD card slot. Open this door to insert/remove the micro SD card.
2	Screw to open MicroSD card slot	Holds the MicroSD card slot door. Unscrew to open the door using a Philips #00 screwdriver.

How to insert a MicroSD card:

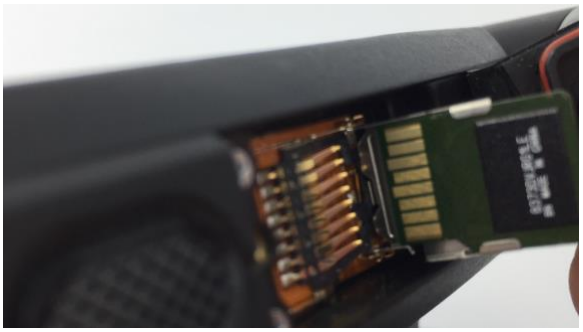
Step 1: Unscrew the MicroSD card slot door and pull the edges to open.



Step 2: Open the MicroSD card slot door and hold open with your thumb.

Step 3: Unlock the metal compartment and swing out to open.

Step 4: Insert the MicroSD card into compartment as shown below.



Step 5: Close the compartment and slide compartment left to lock in place.

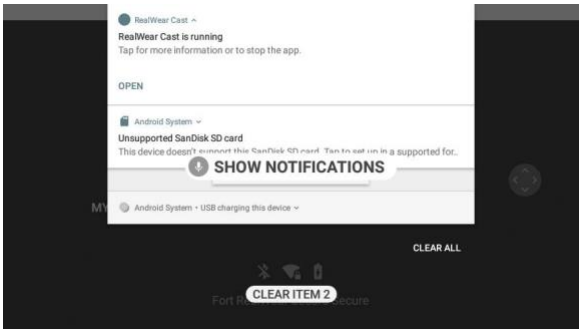
Step 6: Close the MicroSD card slot door.

Step 7: Re-insert the screw and tighten to secure.

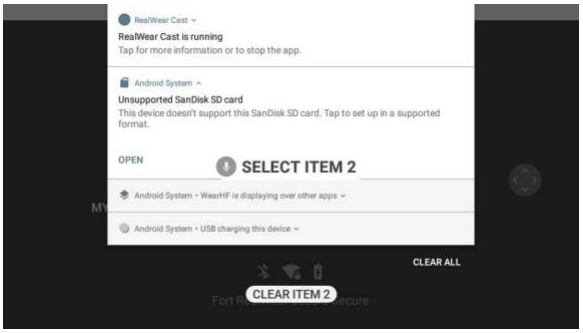
Setting Up and Using a MicroSD Card

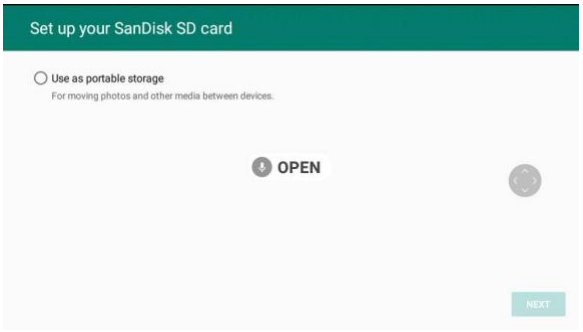
Complete the following procedure to setup the MicroSD card. When first installed, the card will need to be formatted.

Step 1: Say "SHOW NOTIFICATIONS". One of the notifications should be an SD card message. It is expected that the message will state the card is unsupported, but this simply means it needs to be formatted. Follow the steps on this page to format and configure the card.

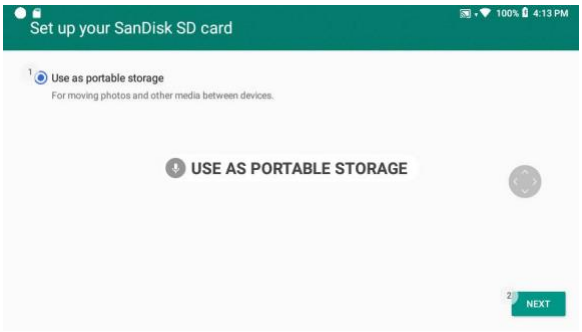


Step 2: Use the "SELECT ITEM #" command to select the notification number and setup the MicroSD card. Then say "OPEN".



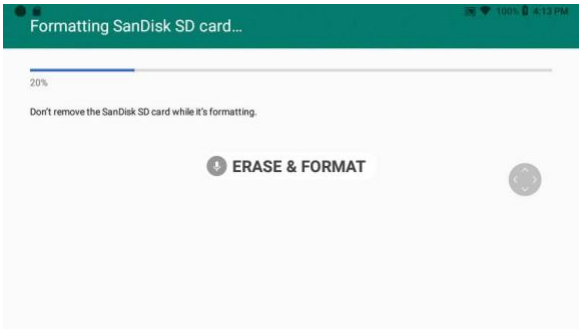


Step 3: Say "USE AS PORTABLE STORAGE"



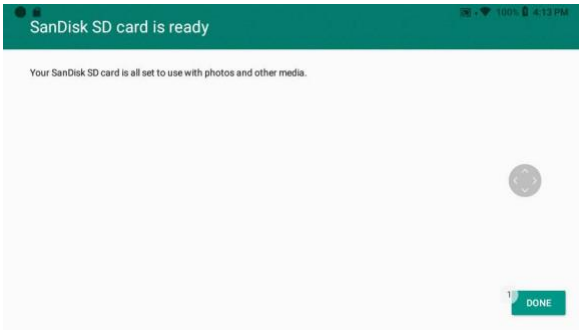
Step 4: Say "NEXT ITEM"

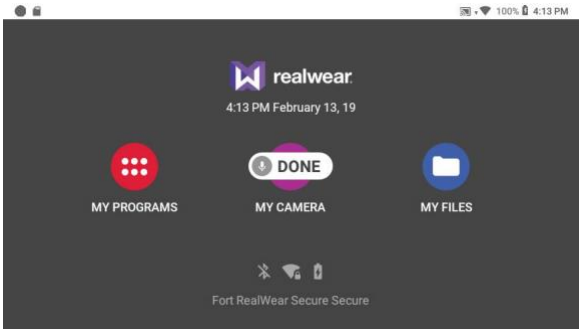
Step 5: Say "ERASE AND FORMAT". The MicroSD card formatting progress is displayed.



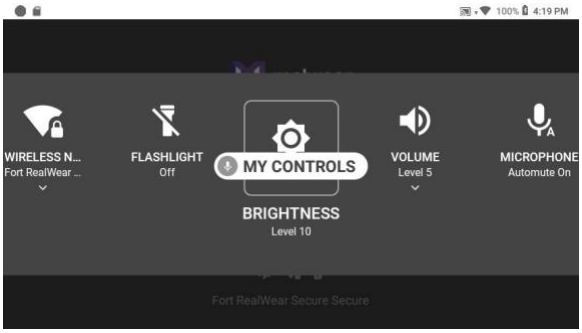
MicroSD Card Setup Continued

Step 6: When finished, say "DONE"

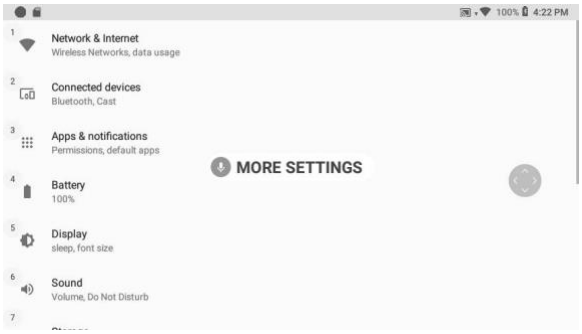




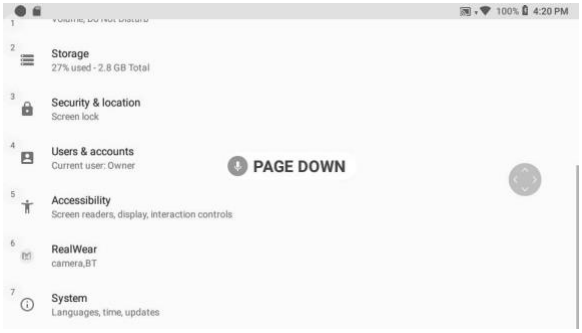
Step 7: Now enable the card as the default storage. Say "MY CONTROLS"

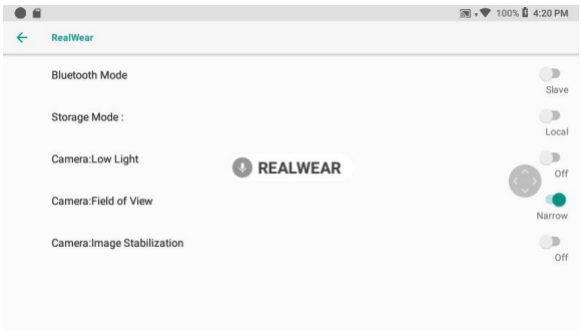


Step 8: Say "MORE SETTINGS"

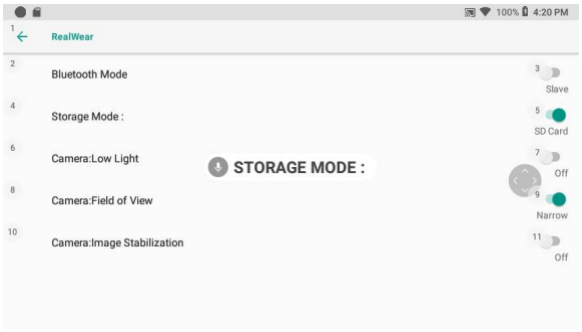


Step 9: Say "PAGE DOWN", then say "REALWEAR"





Step 10: Say "STORAGE MODE" to toggle between Local Storage and SD Card. When the Storage Mode toggle shows on and is labeled 'SD Card' you are ready to use your SD Card.



HMT Device Care

Powering Off the HMT

RealWear recommends that you power off your HMT device when not in use to conserve battery and ensure the longevity of the device. You can do so in two ways:

A. Hands Free
1. Say “MY CONTROLS”
2. Say “POWER OPTIONS”
3. Say “POWER DOWN”

B. Manual
1. Simply press and hold the silver power button on the boom-side of the device for three seconds.
2. Release the power button as soon as the tone is heard.
3. A Shutting Down screen will show briefly and then the device will turn off.

Rebooting the HMT

A. Hands Free
1. Say “MY CONTROLS”
2. Say “POWER OPTIONS”
3. Say “REBOOT”

B. Manual
1. Follow steps for turning off device
2. After device is fully off and the power light is off, press and hold the power button for 3 seconds. The device will boot up.

Sleeping/Waking the HMT

A. Hands Free
1. Say '“MY CONTROLS”
2. Say “POWER OPTIONS”
3. Say “SLEEP NOW”
4. When asleep, a single, brief press of the Power Button will wake up the HMT.

B. Hands On:
- Press the power button briefly (less than one second) and release to sleep or wake up the device.

Storing the HMT

The HMT-1 and HMT-1Z1 are built rugged, but to ensure a long and healthy life:

Power off the device or put to sleep when not in use.

1. Store the HMT device in a cool, dry place.
2. Place the device on a level surface or securely hang it on a wall.
3. If mounted, you can keep the HMT device connected to a hard-hat or bump cap as needed.

HMT Care Continued

Cleaning the HMT device

Follow these instructions for cleaning the different areas of the HMT-1 or HMT-1Z1:

- The HMT is water resistant so cleaning with a damp cloth and mild soap is appropriate. Ensure that all covers are firmly secured when cleaning. The HMT should never be submerged.
- You may also use isopropyl alcohol wipes to clean and lightly sterilize the hard surfaces of the HMT. Dry surfaces or simply allow to air dry.
- Display and Camera glass: Use a standard micro-fiber cloth to wipe off glass parts. You can use screen cleaner to enable the sharpest possible images.
- Fabric parts: Under normal use the Overhead Strap and Rear Head Pad are expected to eventually wear down and need replacement. Replacement straps and pads can be purchased at http://shop.realwear.com. They may be cleaned with alcohol wipes, but excessive cleaning may accelerate wear.
- Battery: Should the battery become dirty, clean with a dry cloth alone or in combination with alcohol. If dirty, they may be cleaned with cloth, cotton swaps, toothbrush, and alcohol if needed. The contacts should not corrode. If the battery appears as all damaged, replace the battery immediately.
- Battery: The battery must always be kept dry. An indicator on the battery housing will turn red if exposed to excessive moisture. If the indicator is red, the warranty is voided, and the battery should be immediately disposed of properly.

Cleaning HMT Accessories

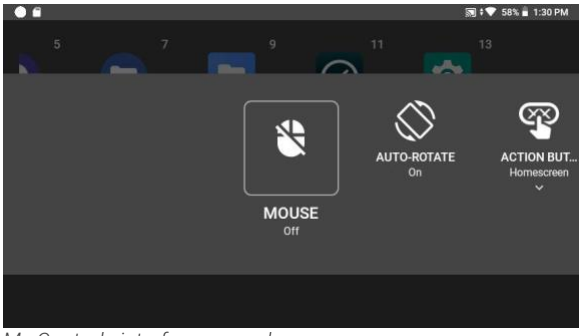
- Hardhat Clips: Hardhat mounting clips are made of plastic and can be cleaned with alcohol wipes or water. Tip: Toothpicks can be used to remove dirt in hard-to-reach areas.
- Tri-band Strap: The Tri-band Strap is comprised of plastic and fabric. It can be cleaned with alcohol wipes, but excess cleaning may accelerate wear. Replacement straps can be purchased at http://shop.realwear.com.
- Hearing Protection Ear Buds: The RealWear Hearing Protection Ear Buds are an electronic component with a metal connector, and cleaning of the buds themselves is not recommended. A polish with a dry or lightly damp cloth should be sufficient. Too much moisture could cause damage to the speakers.
- Foam Tips for Hearing Protection Ear Buds: The foam tips for the ear buds are comprised of memory foam. You may clean with a dry cloth. Too much moisture could damage the foam. The Foam Tips are considered consumables and are expected to eventually require replacing.
- Replacement parts can be purchased at http://shop.realwear.com.

HMT Interaction Modes

Control Using Gestures

Head gesture list control

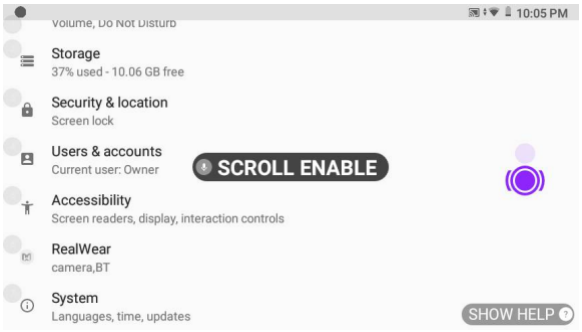
Some interfaces leverage head movement to browse options.

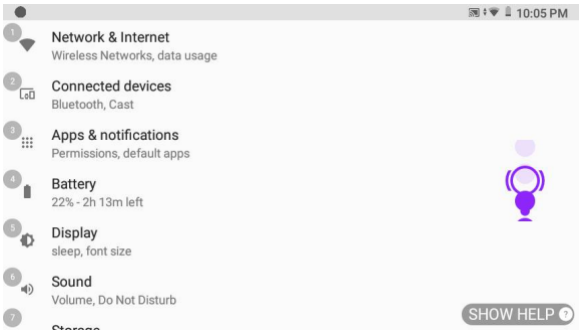


My Controls interface example.

Scroll Enable

From screens with a scroll view, you can say the command "SCROLL ENABLE".





This will enable vertical head scrolling on list user interfaces such as the settings menu and will take the place of the page up and page down commands.
To use, look downward and the screen will scroll down one page at a time.

To stop scrolling, bring your head back up to a level position, so that you are looking straight ahead.
When you want to stop using this gesture and return to page up/down commands, say "SCROLL DISABLE".

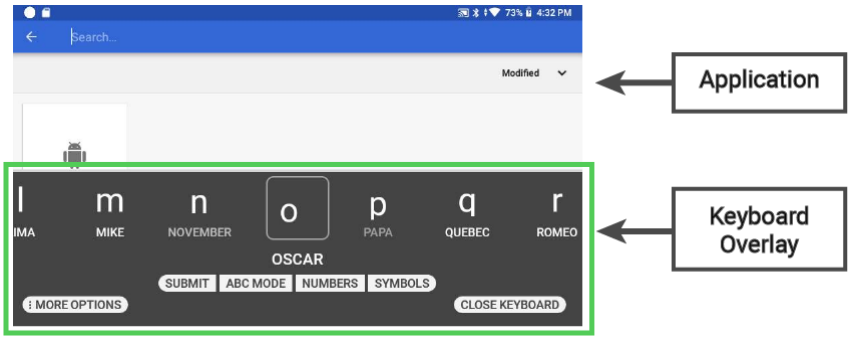
This is extremely useful for quick scrolling to the bottom of a list; when the bottom is reached, quickly say "SCROLL DISABLE".

HMT Interaction Continued

Speech Keyboard

UPDATED FOR RELEASE 10.4.0

Speech Keyboard is the default method by which text may be entered into a text field using the HMT-1 or HMT-1Z1. Whenever a text entry screen is brought into focus or selected, the hands-free keyboard is displayed overlaying part of the application.



Speech keyboard provides various input methods:

- Normal Entry Keyboard
- Secure Entry Keyboard
- ABC Mode Keyboard
- Scan Code
- Dictation

Normal Entry Keyboard

Using the Normal Entry Keyboard you may enter letters, numbers, or symbols.

The Normal Entry Keyboard opens in the letter list. Scroll left or right to see the code word associated with the character.
To switch to the Numbers keyboard, say “NUMBERS”.
To switch to the Symbols keyboard, say “SYMBOLS”.

Note, the letter does not have to be in the focus square in order to say each code word. You may speak the phonetic commands for letters either individually or as a group. For instance, you could enter one character at a time by saying “ROMEO”, then saying “ECHO” once the “R” character has registered, or you could enter an as many letters as is needed with one command.

EXAMPLE: Saying "ROMEO ECHO ALPHA LIMA WHISKEY ECHO ALPHA ROMEO" in one breath without break will enter 'realwear' into the text field.
Remember the command ‘SPACEBAR’ is part of all three Normal Entry lists; you can say that at any time to add a space.

Secure Entry Keyboard

When a password field is selected, the Secure Entry keyboard appears. This means that phonetic speech commands are disabled, and the user instead uses head movements, left or right, to highlight a character. The user then says “SELECT” to make a selection.

Scan Code

Saying the command 'SCAN CODE' opens the barcode reader and allows the user to scan a QR Code for remote keyboard entry using the RealWear Companion app on a mobile phone. This is convenient for passwords and long strings of text. Simply open the RealWear Companion app, select 'Remote Keyboard', enter text and tap on the QR Code. From the HMT keyboard say, 'SCAN CODE', then scan the QR Code visible on the screen of your smartphone. You can also access the 'SCAN CODE' option by saying 'MORE OPTIONS'.

Speech Keyboard Continued

Dictation

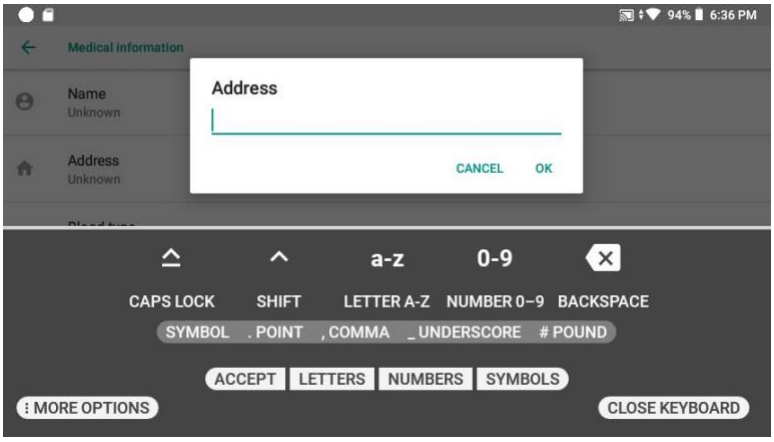
For Speech-to-Text entry, say 'Dictation', then immediately begin speaking freely. Dictation is cloud-based for all languages, so an internet connection may be required. Some languages support local dictation as well. You can also access the 'DICTATION' option by saying 'MORE OPTIONS'. For more information, please visit www.realwear.com/support.

NOTE: If the keyboard becomes hidden or accidentally closed, use the "SELECT ITEM #" command to select the text field again and the speech keyboard will reappear.
If entering a password for WiFi authentication, simply say "PASSWORD" to activate the speech keyboard.

ABC Mode Keyboard

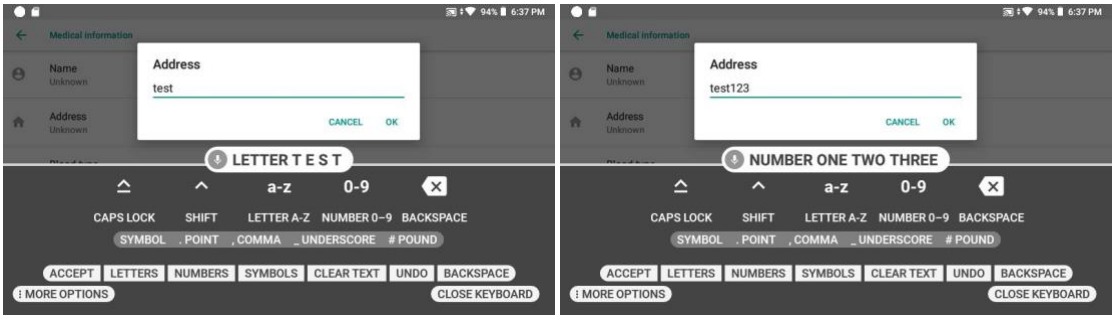
Introduced as a new feature in Release 10.4.0, ABC Mode for the speech keyboard is an alternative method of entering data into text fields. For longer text entry situations Dictation Mode might be a better, quicker option.
Note: Only English is currently supported in this mode - other languages may work to varying degrees but are not optimized for this mode and could cause user issues.

To enter ABC Mode simply say "ABC MODE" while the text entry field is active.



To enter letters say "LETTER (desired letters here)"; for example "LETTER T X T R Y" to enter the string 'txtry'. To enter numbers say "NUMBER (desired numbers here)"; for example "NUMBER NINE FIVE TWO" to enter the number '952'. Changing case, adding spaces, or adding numbers will necessitate a pause in the text string and re-use of the commands as needed.

Extended example:
To enter the text "Sample text 324" the user must say "SHIFT", "LETTER S", "LETTER A M P L E", "SYMBOL SPACEBAR", "LETTER T E X T", “SYMBOL SPACEBAR”, "NUMBER THREE TWO FOUR".



At any time the user may switch to other entry modes by simply saying the appropriate command as displayed. For example, say "LETTERS" to return to scrolling letter entry mode.

Speech Keyboard Continued

Keyboard Voice Commands

Voice Command	Action
"SECURE ENTRY"	Toggles to Secure Entry mode
"NORMAL ENTRY"	Toggles to Normal Entry Mode
“SCAN CODE”	Allows user to scan QR code for text entry To set the zoom level for clear scanning say “Zoom level 1-5”. For example, to set the zoom level to 3, say “Zoom level 3”.
“DICTATION”	Activates dictation and allows user to enter text based on speech recognition.
"NUMBERS"	Toggles to the Number Keyboard
"SYMBOLS"	Toggles to the Symbol Keyboard
"LETTERS"	Toggles to the Letter Keyboard
“ACCEPT”	Accepts the entered information and navigates to the next screen in sequence.
“SPACEBAR”	Inserts a single space.
“BACKSPACE”	Deletes the last character.
“CLEAR TEXT”	Clears the text in the Input box.
“CAPS LOCK”	Toggles between Uppercase and Lowercase letters
“ABC MODE”	Toggles to the ABC Mode keyboard
“LETTER [a-z]”	Starts a text string as spoken by the user. For example “LETTER X Z Y” will enter the text ‘xzy’ to the field.
“NUMBER [0-9]”	Starts a number string as spoken by the user. For example “NUMBER 4 7 2” will enter the number ‘472’ to the field.
“SYMBOL [?]”	Starts a symbol string as spoken by the user. For example “SYMBOL UNDERSCORE DOLLAR QUOTE” will enter ‘_$”’ to the field.
"MORE OPTIONS"	Displays the 'NORMAL ENTRY'/'SECURE ENTRY', 'DICTATION' and 'SCAN CODE' commands
"CLOSE KEYBOARD"	Closes the Speech Keyboard
“SHOW HELP”	Displays pop-up window with the help for commands associated with the current screen.

Voice Control

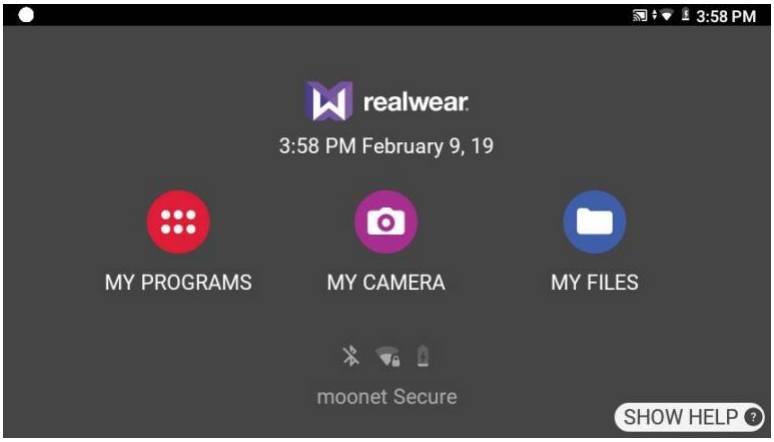
Introducing WearHF™

WearHF™ is an innovative software solution that enables you to use your RealWear HMT as a hands-free device. It is easy to use and loaded with intuitive functions.

Speech Recognition — Say What You See

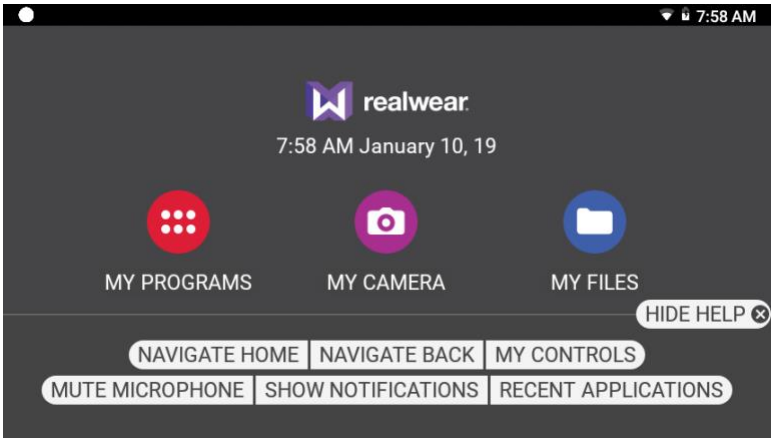
HMT devices operate based on speech recognition. Instead of pressing or tapping a control button on the screen, all you need to do is speak the name of the respective control. HMT devices use the latest technology for advanced noise cancellation and speech recognition which work even in the harshest noisy environments. It can recognize many different languages and accents and can detect the command even if you speak in a low voice.

All the commands associated with the specific screen should be displayed clearly on the screen, usually in ALL CAPITAL LETTERS. You can operate the device by speaking the name of any control. For example, the Home Screen has large icons with respective names such a "MY PROGRAMS" or "MY FILES". To access these applications, you can say the application name and the corresponding screen is launched.



Anytime Access Help

You can access the help information regarding the commands associated with a particular screen, with “SHOW HELP” command. The “SHOW HELP” command is displayed on all the screens. The help screen is displayed as a pop-up window. You can either say the command you desire or say "HIDE HELP" to close the pop-up window. Even when the help window is closed, the HMT will continue to listen for and respond to those commands.

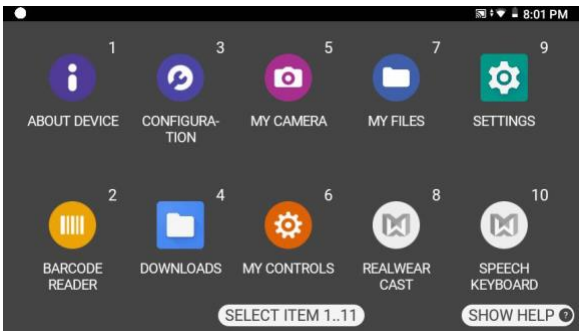


Voice Continued

Alternate Speech Recognition

Sometimes, the control on the screen has no name, is a scroll button without a label, or is a file with an unpronounceable filename such as 3454-x.pdf. WearHF™ automatically proposes an alternative speech command and assigns a number. This number is displayed next to the respective control on the screen. To recall the specific control numbers for that screen, say “SHOW HELP”. To select a specific control, use the number assigned to it. For example, you can say “SELECT ITEM 1” to select the item associated with number 1.

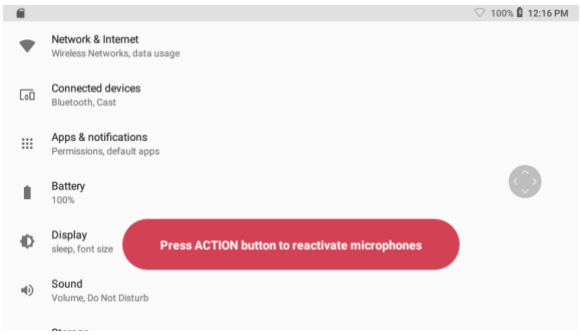
Note some command numbers might be hidden by a SHOW HELP command as it may bring up both the command label popup and the alternative speech command numbers. When you say "HIDE HELP" the command numbers will remain on screen for a moment in order to see those items behind the pop-up window.



Mute Microphone

To stop the speech recognizer, say “MUTE MICROPHONE”. The device will not respond to your voice commands while the microphone is muted, and a red warning sign is displayed on the screen.

To restart the speech recognizer, tap once on the Action button on the side of the device, located just in front of the Power button.



Scroll Up and Down

On screens with scroll views, you can scroll using the following voice commands.

Voice Command	Action
“PAGE UP”	Navigates to 1 page up.
“PAGE DOWN”	Navigates to 1 page down.
“PAGE LEFT”	Navigates to 1 page left.
“PAGE RIGHT”	Navigates to 1 page right.
“SHOW HELP”	Displays pop-up window with the help for commands associated with the current screen.

For example, In Settings page, we can use voice command “PAGE DOWN” to scroll down and “PAGE UP” to scroll up.

HMT Release 10 Software Overview

Home Screen

The Home Screen is the primary user interface view and dashboard for the HMT and is where you start when you power on the HMT.

The Home Screen allows HMT users to quickly access files and key applications while providing useful information such as the time, date, WiFi, and battery status.

Jump to primary applications directly from the Home view by simply saying what you see. To launch the apps, simply say the corresponding commands:

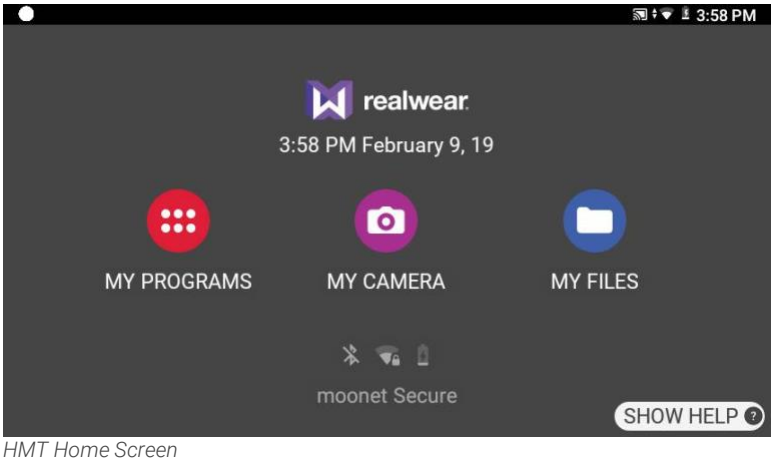
"MY PROGRAMS"

"MY CAMERA"

"MY FILES"

Tip:

- Quickly return Home at any time using the global speech command "NAVIGATE HOME".
- You can also single tap the Action Button once to return to the Home Screen when needed.
- Note: your organization may have modified the home screen to add or subtract some of the launch icons.



HMT Home Screen

Accessing the Home Screen

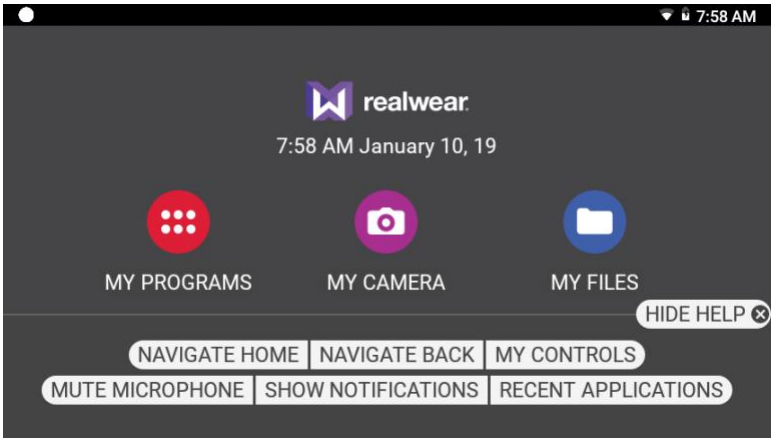
To access the Home Screen from anywhere in the system, say “NAVIGATE HOME”.

Home Continued

Control Buttons
You can access the various applications by activating the following controls provided in the Home Screen.

Voice Command	Action
“MY PROGRAMS”	Launches application launcher to see and access all the applications installed in the device.
“MY CAMERA”	Launches camera.
“MY FILES”	Launches file manager to easily access documents, videos, photos and other files.
"SHOW HELP"	Opens the help panel.
"MY CONTROLS"	Launches the Control Panel for easy access to some commonly used settings
"SHOW NOTIFICATIONS"	Launches and displays recent notifications.

Home view with Help panel active:



When the Help Panel is open, say "HIDE HELP" to hide.

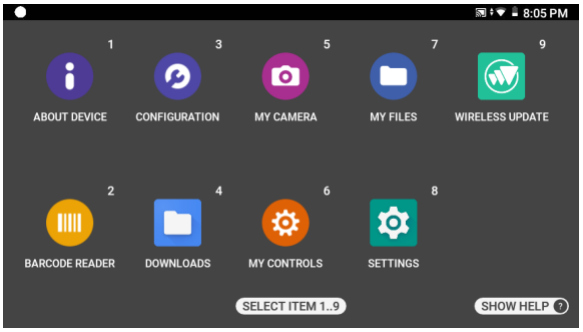
My Programs

My Programs enables HMT users to access installed applications.

Applications provided by default are:

- About Device
- Barcode Reader
- Configuration
- Downloads
- My Camera
- My Controls
- My Files
- Settings
- Wireless Update

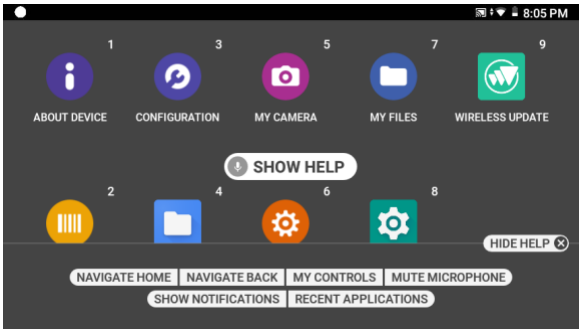
My Programs user interface view.



You can activate any application by just saying the application name as written underneath the application icon even if the icon is not fully visible. For example, to start the camera, say “MY CAMERA”.

You can also launch an application by saying the number associated with the application. For example, to launch an application with item number 8, you say “SELECT ITEM 8”. You can see up to ten applications in a single screen. To scroll and view other applications, move you head to your left or right.

To view contextual voice commands, say, "SHOW HELP."

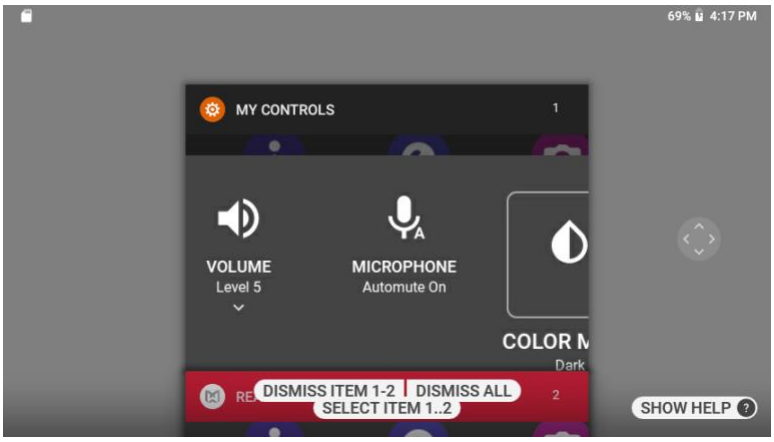


The help menu will stay active until you dismiss it by saying “HIDE HELP”.

Software Overview Continued

Recent Applications

To browse recent applications, from any screen, say "RECENT APPLICATIONS".
After a moment, numbers will appear in the upper right corner of each open app.



Use the "PAGE DOWN" and "PAGE UP" commands to scroll through open applications.

Select an app to open by speaking the name of the application, or use the "SELECT ITEM #" command, referencing the number in the upper right corner.

To dismiss an app from the list say, "DISMISS ITEM #", or to dismiss all, say "DISMISS ALL"

Recent Applications Voice Commands

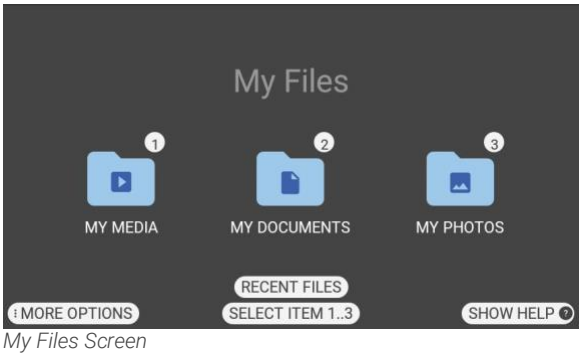
Voice Command	Action
“RECENT APPLICATIONS”	Displays the list of all the applications running in the background, along with the item number associated with each application.
“PAGE UP”	Scrolls to the previous page of recent applications list.
“PAGE DOWN”	Scrolls to the next page of recent applications list.
“SELECT ITEM 1” “SELECT ITEM 2” “SELECT ITEM 3” …	Opens the application associated with the specified item number.
“DISMISS ITEM 1” “DISMISS ITEM 2” “DISMISS ITEM 3”	Stops the application corresponding to the specified item number. For example, to stop the application associated with item number 5, say “DISMISS ITEM 5”.
"DISMISS ALL"	Stops all currently running applications.
“SHOW HELP”	Displays extra commands.

My Files

View documents, photos and video files locally stored or stored on an installed MicroSD card using the My Files app. Launch My Files from the Home Screen or My Programs.

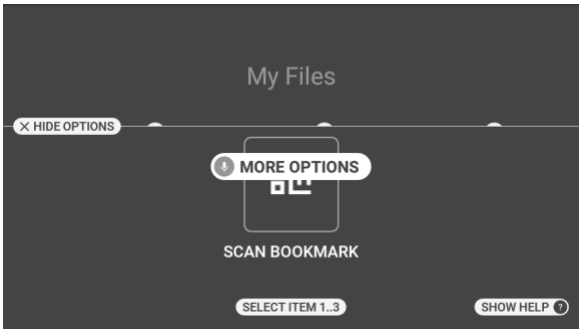
The My Files view displays a set of folders for:

- "MY MEDIA"
- "MY PHOTOS"
- "MY DOCUMENTS"



My Files Screen

When on the My Files view, say 'MORE OPTIONS' to open the options panel and access the Scan Bookmark tool.

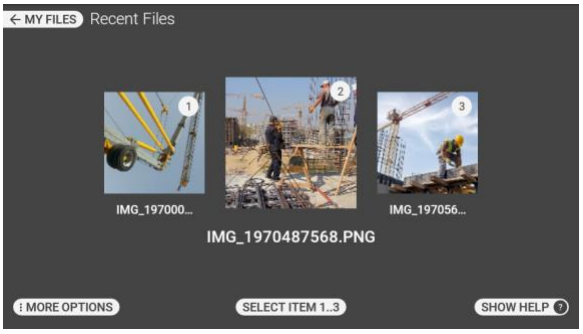


From My Files say "RECENT FILES" for quick reference to any recently opened file.

My Files Continued

My Photos

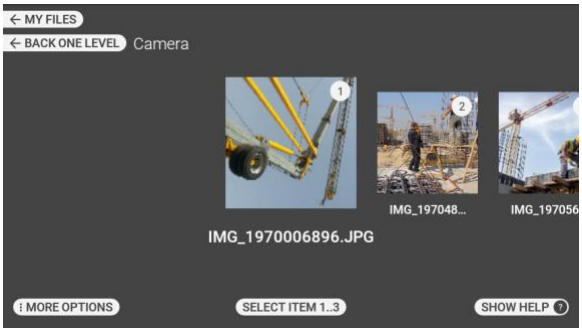
My Photos contains all still image files organized into folders in supported formats. By default, a folder called Camera will display. It contains images captured in the HMT Camera app.



Open My Photos from the My Files view.

The command "MORE OPTIONS" provides access to a sorting featuring to help manage photo files. Open the options panel from the My Photos view.

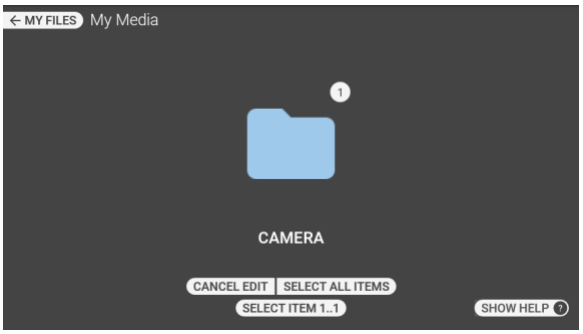
The Camera folder contains a list of photo files. Browse images by looking left or right, then select using the "SELECT ITEM #" command to open the file.

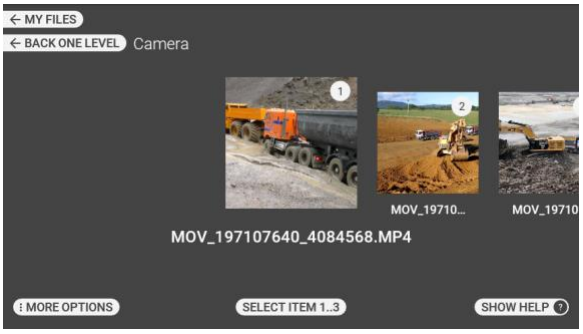


My Files Continued

My Media

The Camera folder contains a list of video files taken using the HMT.





My Documents

Accessing File Browser Functions

Voice Command	Action
“MY MEDIA”	Displays files stored in the Videos folder and videos recorded using the HMT camera and stored in DCIM folder. The supported file formats are: MP3, WAV, AVI, MP4, WEBM.
“MY DOCUMENTS”	Displays files stored in the Document folder. The supported file formats are: PDF
"MY PHOTOS"	Displays files stored in the photos folder and still images captured using the HMT camera.
"RECENT FILES"	Displays recent files.
“BACK ONE LEVEL”	Navigates to the previous folder in the folder tree.
“SHOW HELP”	Displays extra commands.
"MORE OPTIONS"	Displays contextual options for each view.

My Files Continued

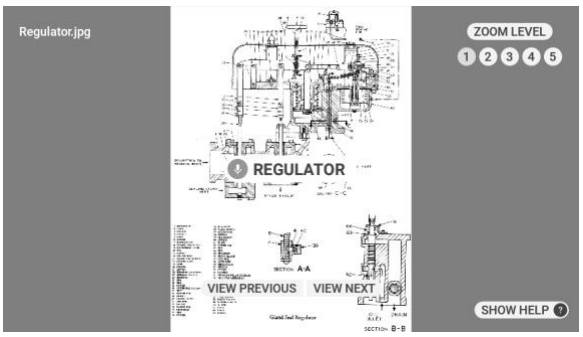
My Documents

My Documents

My Photos

You can open PDF files and image files using document viewer with hands-free control.
If you select a PDF or image file from My Documents or My Photos, it is opened using the Document Viewer app.

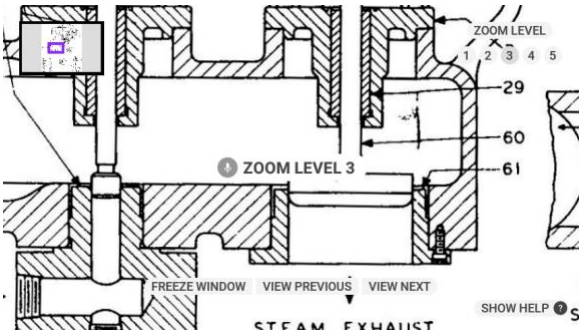
Open a file by using the "SELECT ITEM #" command or by saying the name of the document without the file extension.



Zooming and Panning

To zoom in say "ZOOM LEVEL 2" or any level from 1 to 5. "ZOOM LEVEL 5" will zoom in furthest. When a document is zoomed in at any level past level 1, you can move your head to view different areas of the document.

A small thumbnail will appear in the upper left part of the screen with a purple rectangle representing the current view.



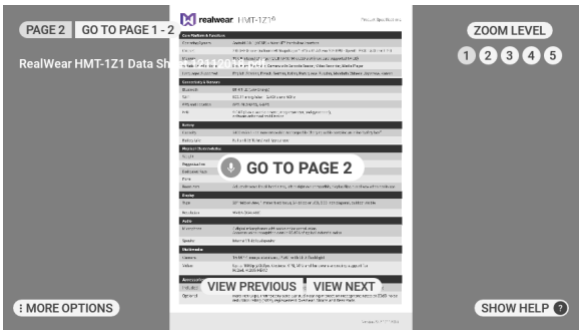
If you want to lock the location of the document say, "FREEZE WINDOW". You can then move your head while the view is frozen.

To return to panning say, "CONTROL WINDOW".
Even when frozen, the view can be zoomed in or out.
To return a zoomed in window to the exact center say, "RESET WINDOW".

Document Viewer Functions

Voice Command	Action
“ZOOM LEVEL 1-5"	Zooms the document view size by setting the level to specific value — 1 to 5.
“FREEZE WINDOW”	Prevents the document from scrolling in response to head gestures.
“CONTROL WINDOW”	Unfreezes the document and enables document scrolling in response to head gestures.
"RESET WINDOW"	Moves the zoomed in window to the center of the full size image/document.
"VIEW PREVIOUS"	Switches to the previous document.
"VIEW NEXT"	Switches to the next document.

Viewing Multiple Page Documents



To view documents with multiple pages, you need to use the following navigations controls.

Voice Command	Action
“GO TO PAGE 1”,“GO TO PAGE 2”,“GO TO PAGE 3”...	Scrolls to the specified page. For example, to go to page 5, say “Go to page 5”.
“NEXT PAGE" "PREVIOUS PAGE"	Scrolls to next/previous page.
"MY BOOKMARKS"	Displays the bookmarks currently saved in the device, for the open document.
"SHOW HELP"	Displays extra commands.

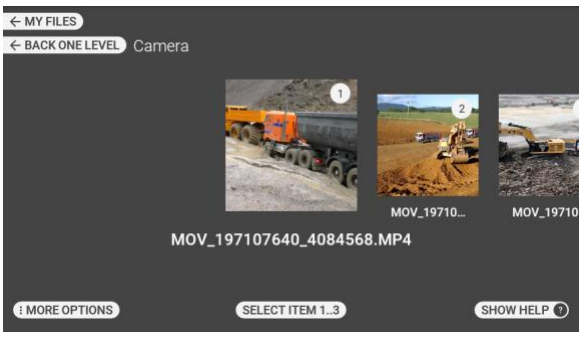
Software Overview Continued

Media Player

My Media

If you select an audio or video file from My Media, it is played using the media player.

View or open files that you've captures using the HMT by navigating into the Camera folder.



Select a file by using the "SELECT ITEM #" command. For instance, to select the third item, say "SELECT ITEM 3"

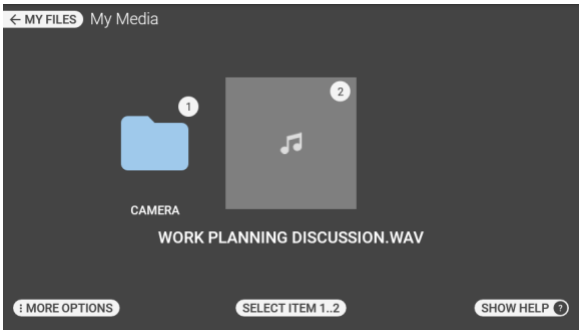
Playing a video file in the Media Player:

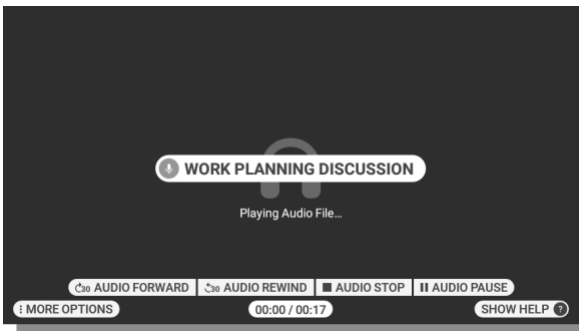
Media Player Commands for Video Playback:

Voice Command	Action
"VIDEO FORWARD"	Fast forwards the video 30 seconds.
"VIDEO REWIND"	Rewinds the video 30 seconds.
"VIDEO STOP"	Stops the video and goes to My Media screen.
"VIDEO PAUSE"	Pauses video while playing.
"VIDEO PLAY"	Plays paused video.
"SELECT VOLUME 1-10"	Sets the default volume level of the device to specified value. For example, to set the volume to 3, say “SELECT VOLUME 3”.
"SHOW HELP"	Displays extra commands.

Media Player Continued

Playing an audio file in the Media Player:





Media Player Commands for Audio Playback:

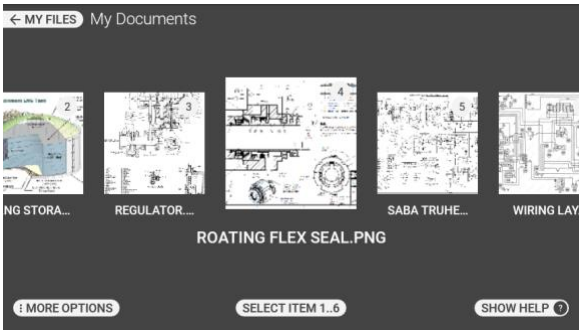
Voice Command	Action
"AUDIO FORWARD"	Fast forwards the audio 30 seconds.
"AUDIO REWIND"	Rewinds the audio 30 seconds.
"AUDIO STOP"	Stops the audio and goes to My Media screen.
"AUDIO PAUSE"	Pauses audio while playing.
"AUDIO PLAY"	Plays paused audio.
"SELECT VOLUME 1-10"	Sets the default volume level of the device to specified value. For example, to set the volume to 3, say “Select volume 3”.
"SHOW HELP"	Displays extra commands.

Software Overview Continued

Deleting Files from File Manager

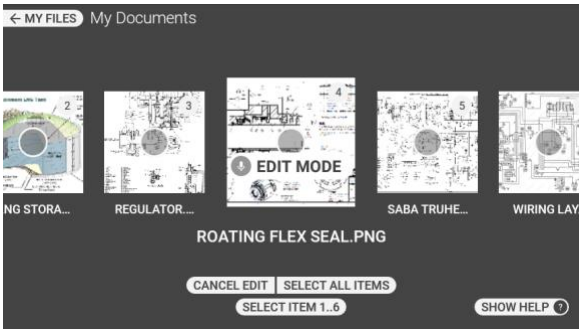
You can delete the files from My Media, My Documents or My Photos folders.

To delete one or more files,
Step 1: Go to the My Media/My Documents/My Photos folder.

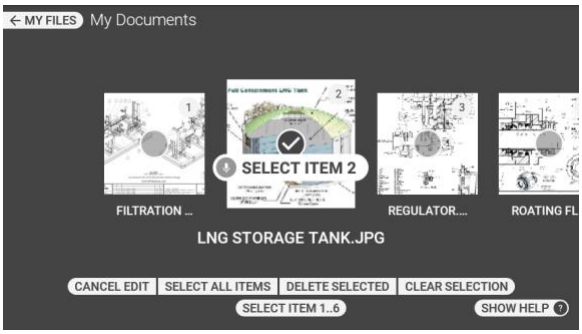


Step 2: Say "MORE OPTIONS"

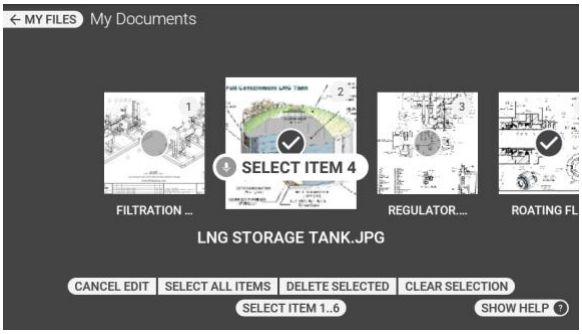
Step3: Say “EDIT MODE”. The Edit screen with option to select one or more files is displayed.



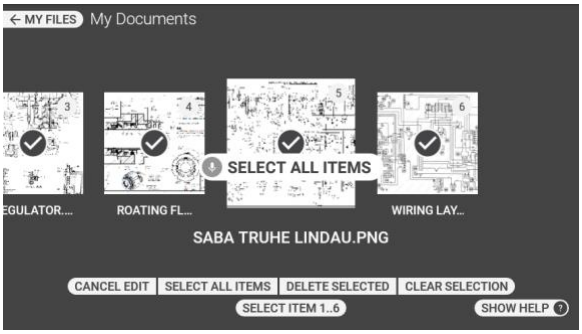
Step 4: To select a specific file, you need to use the number assigned to it. For example, you can say “SELECT ITEM 3”, to select the third file, or “SELECT ITEM 5”, to select the fifth file.



Step 5: Repeat as needed to select multiple files.

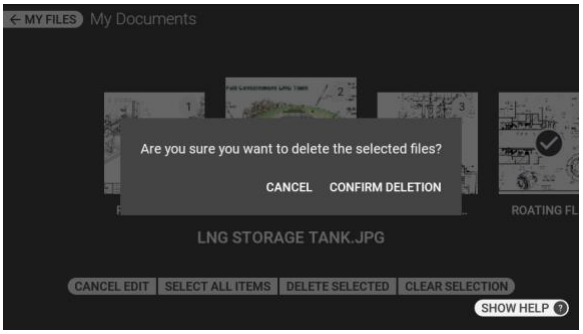


Step 6: To select all files say "SELECT ALL ITEMS".

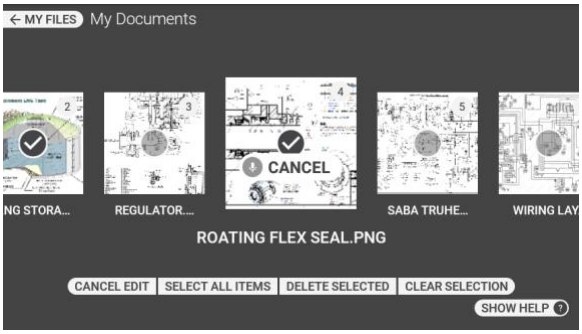


Deleting Files Continued

Step 7: To delete the selected files, say “DELETE SELECTED” and “CONFIRM DELETION”.



Step 6: To cancel the delete and retain the files, say “CANCEL”.



Options Command List

Voice Command	Action
"SORT FILES"	Open file sorting sub menu.
“EDIT MODE”	Open file editing sub menu.

My Documents - Edit Mode Command List

Voice Command	Action
"MORE OPTIONS"	Open the Options panel.
“SELECT ITEM 1”, “SELECT ITEM 2” ...	Select an item by number.
"SELECT ALL ITEMS"	Select all items.
“DELETE SELECTED”	Delete selected item.
"CONFIRM DELETION”	Confirm deletion of selected item.

Software Overview Continued

My Camera

My Camera is a hands-free application for taking photographs and videos.

From the Home Screen or from the My Programs screen, say "MY CAMERA" to launch the My Camera application. When My Camera is launched, a live view of the HMT camera's optical input will be visible in the HMT display pod.

The Camera head-up display provides a full range of camera control and settings.

- Record video
- Take photo
- My Files
- Photo Preview
- Exposure level
- Zoom level
- Aspect ratio
- Image resolution
- Video resolution
- Frame rate
- Video stabilization
- Manual focus
- Field of View
- Camera flash

My Camera Continued

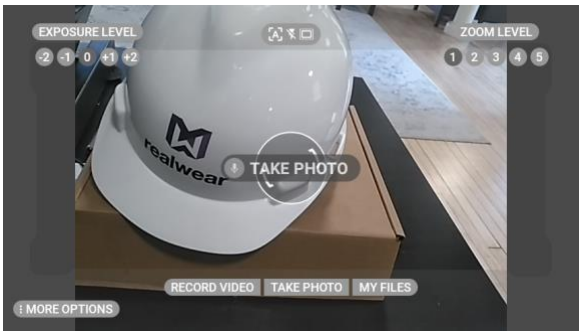
Record Video

Start capturing video by saying "RECORD VIDEO".

Say "STOP RECORDING" to stop recording video.

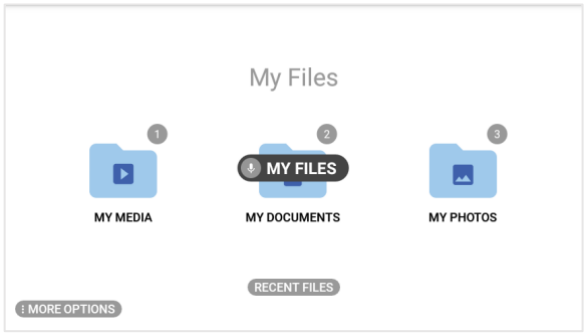
Take Photo

Take a photo by saying "TAKE PHOTO".



My Files

Say "MY FILES" to access stored files on the device.



Preview

When a video or photo is captured, a preview will be displayed in the mid to upper right corner of the view.

Open it by saying 'PREVIEW' while the preview pane is displayed.

Preview of Photo:

Preview of Video:

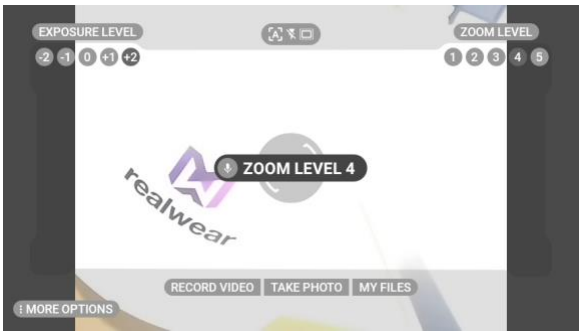
My Camera Continued

Exposure Level

For greater adaptation to more environmental situations, Exposure levels can be adjusted on the fly simply by saying "EXPOSURE LEVEL MINUS TWO."

Zoom Level

As in other applications that use the Camera, say "ZOOM LEVEL #" to adjust it as you go.



More Options

Saying "MORE OPTIONS" displays more camera settings that are useful for fine adjustments and device adaptation.

More Options in the My Camera app include:

- Aspect ratio
- Field of View
- Image resolution
- Video resolution
- Frame rate
- Video stabilization

Aspect Ratio

Saying "ASPECT RATIO" allows you to toggle between the two capture aspect ratio settings.

Say "SIXTEEN BY NINE" or "FOUR BY THREE" to change the setting.

My Camera Continued

Field of View

Saying "FIELD OF VIEW" toggles between narrow and wide field of view.

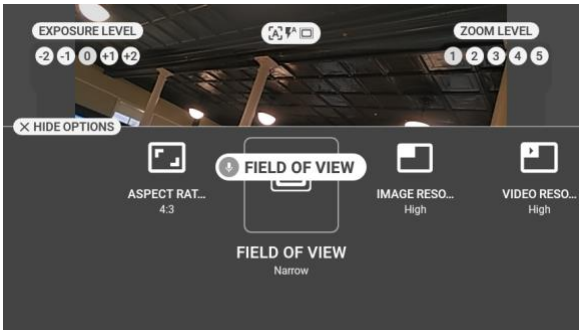
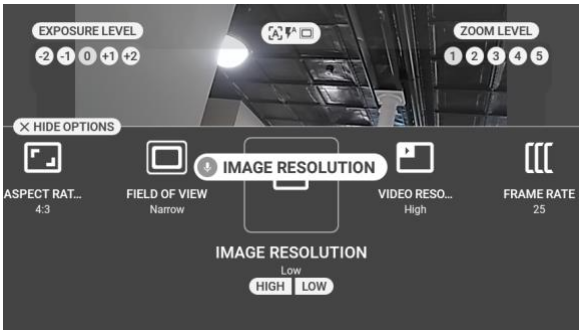


Image Resolution

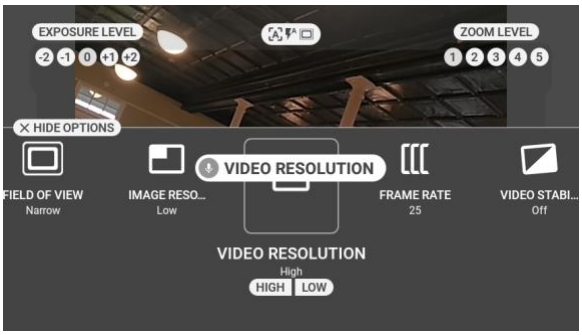
Saying "IMAGE RESOLUTION" allows you to toggle between image resolution options.



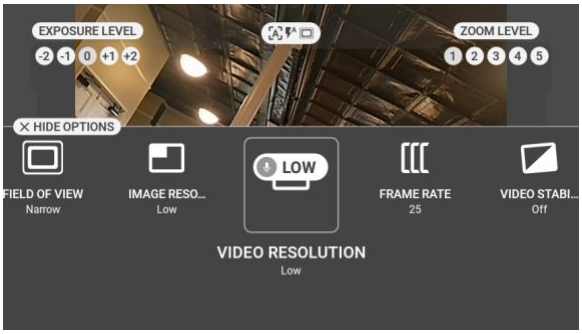
Say "HIGH" or "LOW" to switch modes.

Video Resolution

Saying "VIDEO RESOLUTION" allows you to toggle between video resolution options.



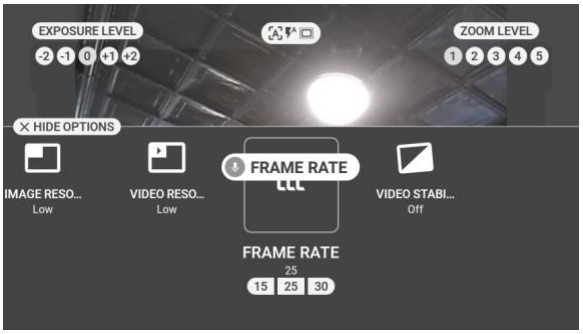
Say "HIGH" or "LOW" to switch modes.



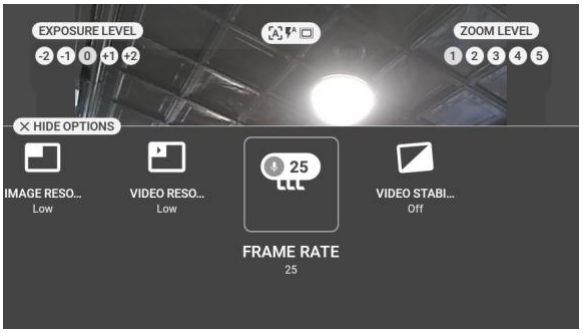
My Camera Continued

Frame Rate

Saying "FRAME RATE" allows you to toggle the frame rate at which video will be captured.



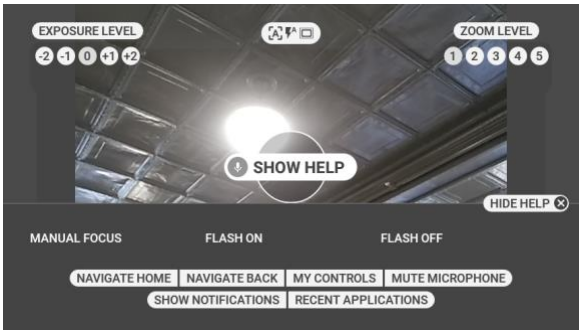
Say "FIFTEEN", "TWENTY-FIVE" or "THIRTY" to select the desired frame rate.



Video Stabilization

Saying "VIDEO STABILIZATION" will toggle on or off the built-in video stabilization function. When enabled, this provides a smoother video compensation for movement.

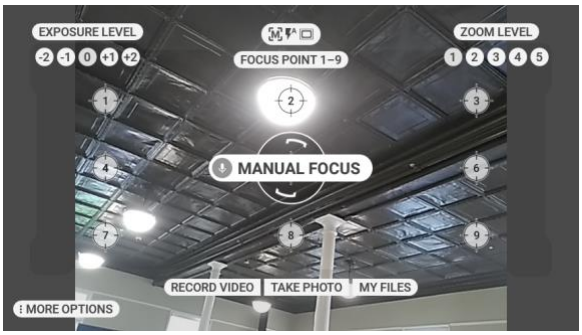
Additional Camera commands can be referenced by opening the Help panel.



- "MANUAL FOCUS"
- "FLASH ON"
- "FLASH OFF"

Manual Focus

Saying "MANUAL FOCUS" toggles on Manual Focus.



Once enabled, you can set a focus point by saying "FOCUS POINT ONE"..."FOCUS POINT NINE". For instance, to focus on point 6, say "FOCUS POINT SIX".

Say "AUTO FOCUS" to return to the Auto-focus function.

My Camera Continued

Flash On / Flash Off / Flash Auto

The default flash setting is off. Flash commands can be found in the SHOW HELP menu.
To turn on the Flash on say “FLASH ON”. To turn off say “FLASH OFF”.
Auto-Flash will use the camera’s light sensor to detect if a flash is needed. To activate say, “FLASH AUTO”. To take off of auto-flash, either say “FLASH ON” or “FLASH OFF”

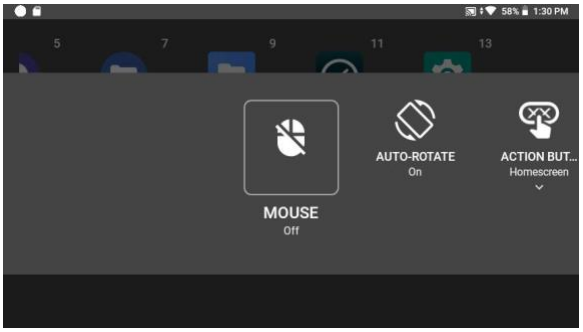
Voice Command	Action
"RECORD VIDEO"	Starts recording video.
"TAKE PHOTO"	Captures a photo.
"MY FILES"	Opens my files.
"PREVIEW"	While preview thumbnail is visible, will open last captured photo or video.
"EXPOSURE LEVEL MINUS TWO", EXPOSURE LEVEL MINUS ONE", "EXPOSURE LEVEL ZERO", "EXPOSURE LEVEL PLUS ONE", "EXPOSURE LEVEL PLUS TWO"	Adjusts exposure level. The screen will immediately show the results of the exposure level change. Default is Exposure Level 0.
"ZOOM LEVEL ONE", "ZOOM LEVEL TWO", ... , "ZOOM LEVEL FIVE"	Adjusts zoom level.
"MORE OPTIONS"	Opens Camera Options panel.
"MANUAL FOCUS"	Switches focus mode to manual.
"AUTO FOCUS"	Switches focus mode to auto.
"FLASH ON"	Turns flash on.
"FLASH OFF"	Turns flash off.

From My Camera options menu

Voice Command	Action
"ASPECT RATIO"	Opens settings sub menu for Aspect Ratio.
"FIELD OF VIEW"	Opens settings sub menu for Field of View.
"IMAGE RESOLUTION"	Opens settings sub menu for Image Resolution.
"VIDEO RESOLUTION"	Opens settings sub menu for Video Resolution.
"FRAME RATE"	Opens settings sub menu for Frame Rate.
"VIDEO STABILIZATION"	Opens settings sub menu for Video Stabilization.

My Controls

UPDATED FOR RELEASE 10.4.0



You can access the control panel from any screen. To access the control panel, say “MY CONTROLS”.

My Controls is designed with a combination of voice controls and head movements.

Browse the list of commonly used controls by turning your head left or right, then say the name of the item you want to adjust.

Note that Items are active and can be selected even when not in the viewable area.

My Controls provides device-level control of the following:

Mouse

Auto-Rotate

Action Button

Power Options

Bluetooth

Wireless Network

Flashlight

Brightness

Volume

Microphone

Color Mode

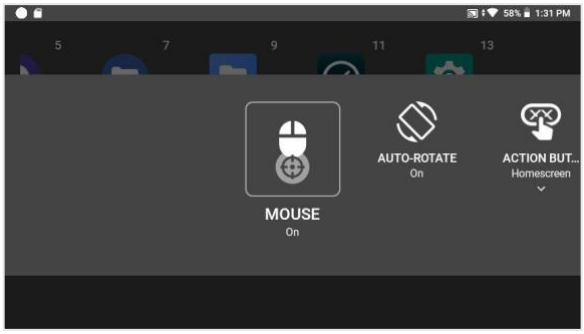
Dictation

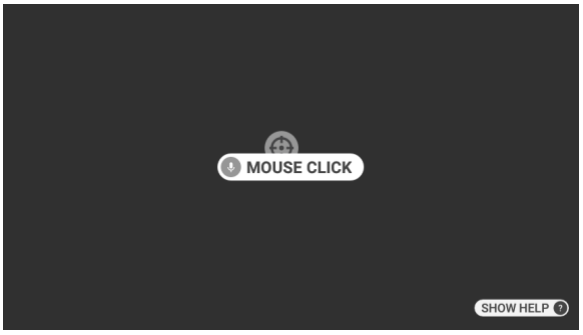
Help Command

My Controls Continued

Mouse

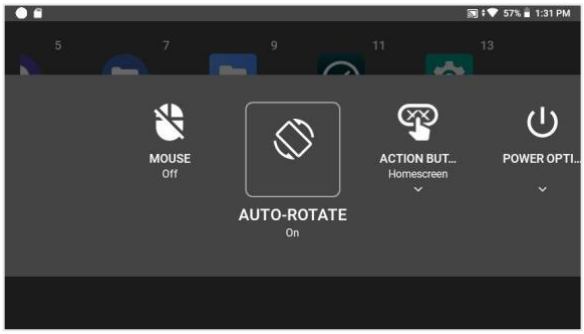
Saying "MOUSE" toggles the head-tracked mouse on or off. When enabled, use the command "MOUSE CLICK" to make selections.





Auto-Rotate

Saying "AUTO ROTATE" toggles on or off screen rotation.

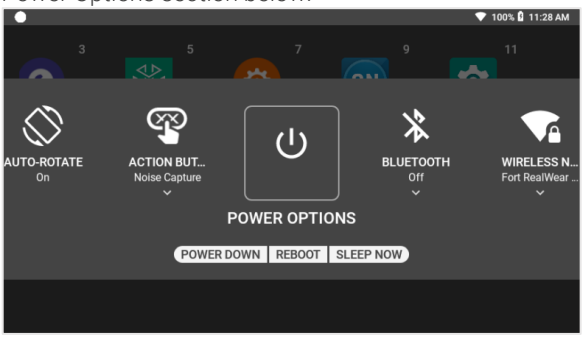


Action Button

Saying "ACTION BUTTON" allows you to toggle the result of pressing the Action Button between "HOMESCREEN" and "NOISE CAPTURE" modes.

Power Options

Saying "POWER OPTIONS" provides access to power management options "POWER DOWN", "REBOOT", "SLEEP NOW" and "HOTSWAP".
NOTE: HOTSWAP feature is only present on the HMT-1. For HMT-1Z1 specific information please refer to the Power Options section below.

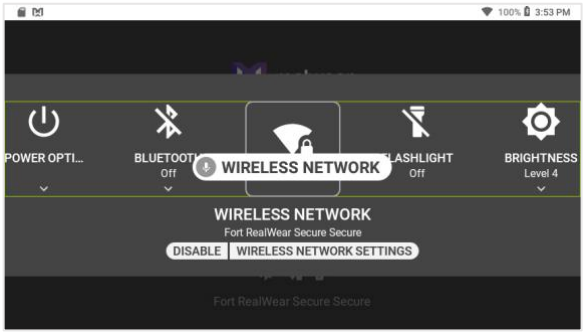


Bluetooth

Saying "BLUETOOTH" allows you to "ENABLE" or "DISABLE" Bluetooth, as well as access the "BLUETOOTH SETTINGS" for pairing to an external Bluetooth enabled device.

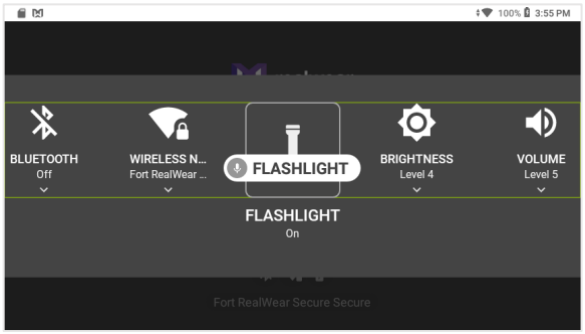
Wireless Network

Saying "WIRELESS NETWORK" allows you to "ENABLE" or "DISABLE" WiFi, as well as access the "WIRELESS NETWORK SETTINGS" for connecting to a WiFi network.



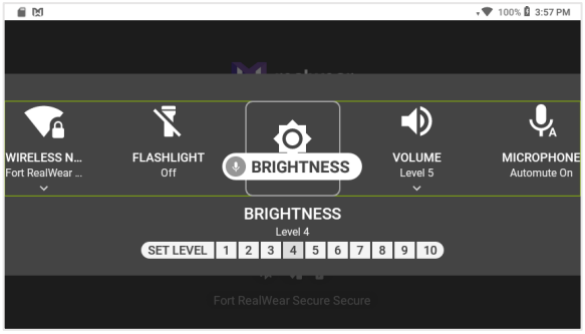
Flashlight

Saying "FLASHLIGHT" toggles on and off the built-in flashlight.



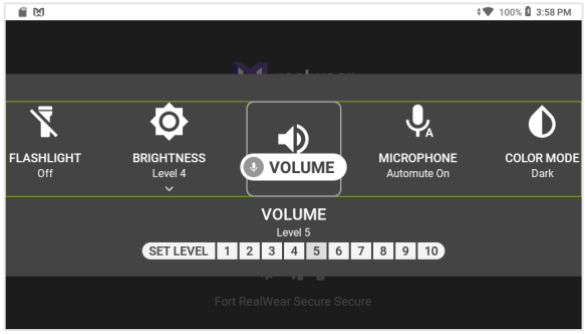
Brightness

Saying "BRIGHTNESS" allows you to change the brightness setting on the system. Say "SET LEVEL 1-10" to change the brightness setting.



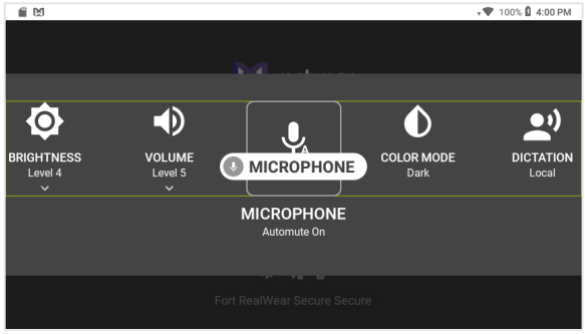
Volume

Saying "VOLUME" allows you to change the volume setting on the system. Say "SET LEVEL 1-10" to change the volume setting.



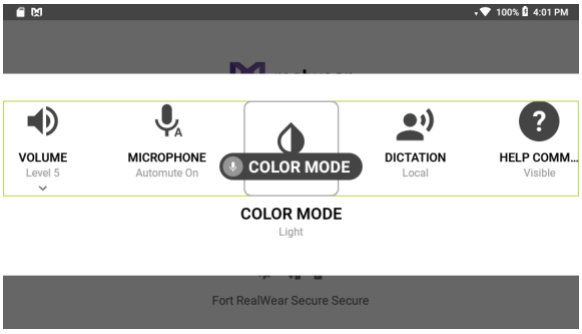
Microphone

Saying "MICROPHONE" toggles on and off the auto-mute function. When enabled, if the device has been sitting idle without movement detected for 30 seconds, the device will stop listening for Speech Commands.



Color Mode

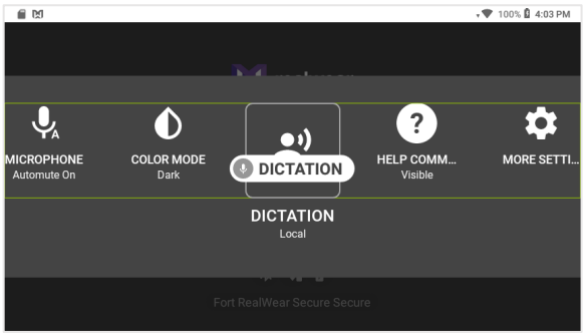
Saying "COLOR MODE" toggles between light and dark modes.



My Controls Continued

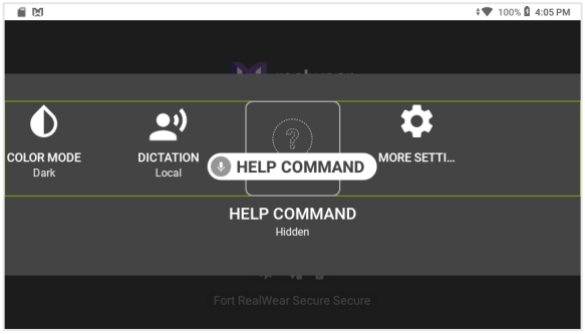
Dictation

Saying "DICTATION" toggles between Local and Cloud-based dictation. Note that Local dictation is not available for all system languages, so a WiFi connection may be required.



Help Command

Saying "HELP COMMAND" toggles on and off the visibility of the "SHOW HELP" icon that is by default visible across many screens. When disabled, the global "SHOW HELP" command is still active and usable.



My Controls command list

Voice Command	Action
"MOUSE"	Toggles the head-tracked mouse on or off.
"AUTO ROTATE"	Toggles on or off screen rotation.
“ACTION BUTTON”	Toggles Noise Capture mode.
"POWER OPTIONS"	Provides access to power management options.
"BLUETOOTH"	Enable or disable bluetooth.
"WIRELESS NETWORK"	Enable or disable wifi.
"FLASHLIGHT"	Turn the flashlight on and off.
"BRIGHTNESS"	Change the brightness of the display.
"VOLUME"	Change the volume of the system.
"MICROPHONE"	Toggles on and off the auto-mute function
"COLOR MODE"	Toggle light and dark mode.
"DICTATION"	Toggles between Local and Cloud-based dictation.
"HELP COMMAND"	Toggles the visibility of the "SHOW HELP" icon across all screens where it is visible by default.

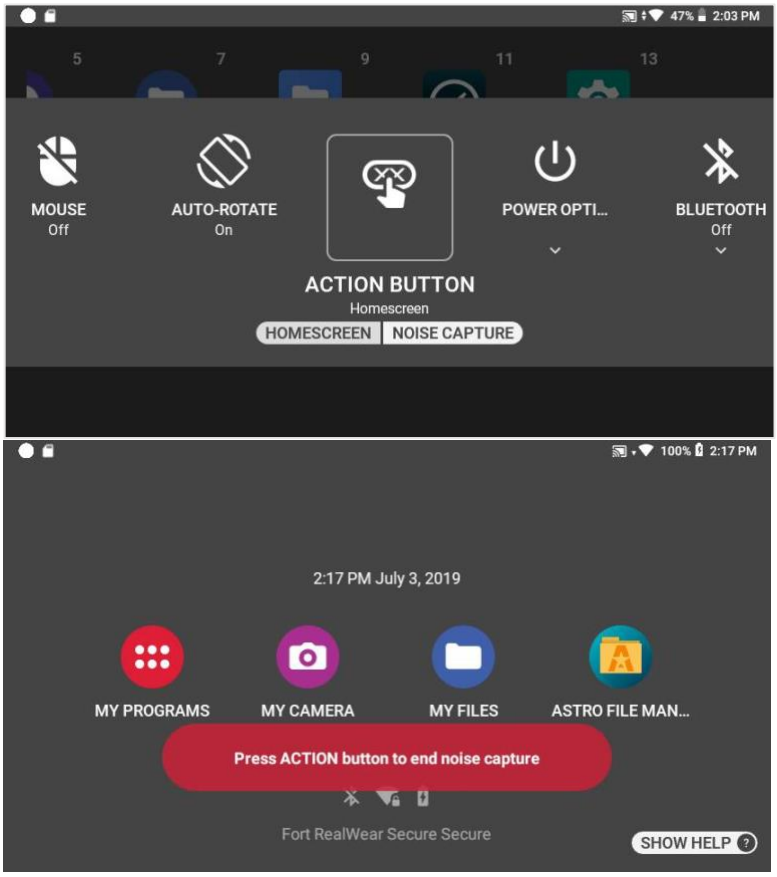
My Controls Continued

Action Button

The action button control, found in the My Controls menu, allows an HMT user to change the result of a single press of the Action Button. By default the Action Button control is present in My Controls and set to Home Screen mode, meaning that pressing the Action Button will return the user to the Home Screen. This has been the sole function of the action button since the first release of the HMT-1.

Saying "ACTION BUTTON" while in My Controls will activate a selection for the HMT user. "HOMESCREEN" and "NOISE CAPTURE" are the two options and the text below the ACTION BUTTON command shows the current setting. In the example above, the current state is HOMESCREEN and the command "NOISE CAPTURE" may be selected.

When set to Noise Capture mode pressing the Action Button will alternatively disable or enable the noise cancellation ability of the HMT, allowing external noise to be captured in video/audio transmission and recordings. A single press of the Action Button enters Noise Capture mode (and disables noise cancellation); this displays a warning on the screen while active and voice commands will not be recognized. Another single press of the button reinstates noise cancellation and restores voice command ability. Voice commands are disabled because non-noise captured sound will usually launch unwanted commands.



Voice Command	Action
“HOMESCREEN”	Sets the Action Button to go to the Home Screen when pressed
“NOISE CAPTURE”	Sets the Action Button to enable Noise Capture mode when pressed

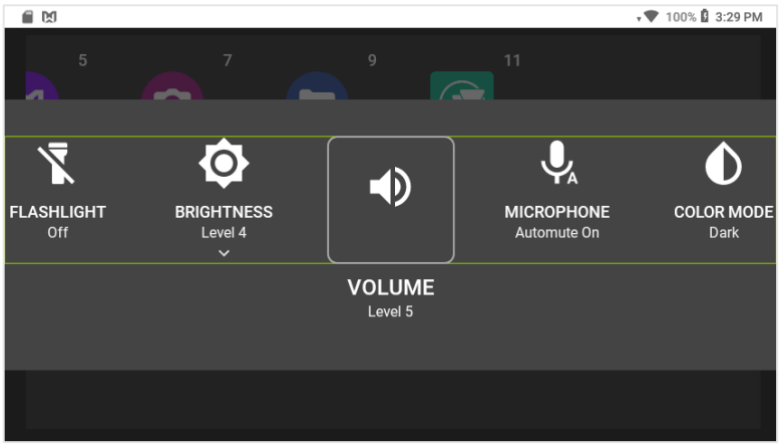
My Controls Continued

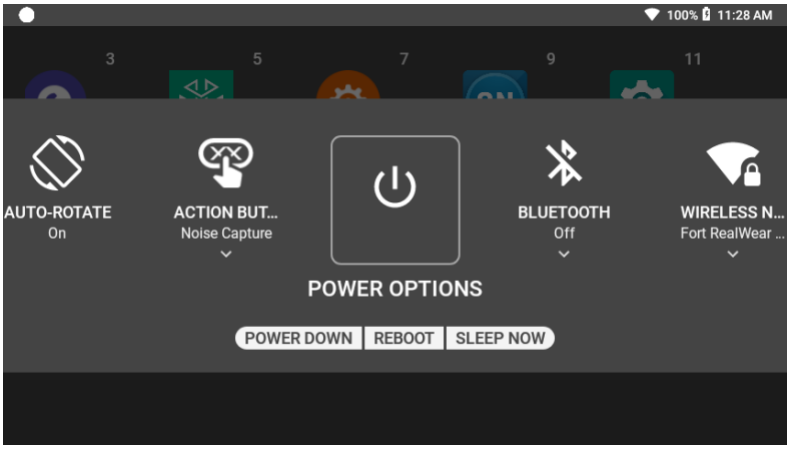
Power Management

Power Options allow you to access power management functions using voice commands.
NOTE: As the battery for the HMT-1Z1 is not removable, the HOTSWAP feature is not available.

To access Power Options:

From any screen say, "MY CONTROLS", then say "POWER OPTIONS".





The following voice commands are made available:

Voice Command	Action
“POWER DOWN”	Powers Off HMT device
“REBOOT”	Reboots HMT device
"SLEEP NOW"	Puts the HMT into sleep mode. Press the Power On button to wake up

My Controls Continued

Microphone Settings

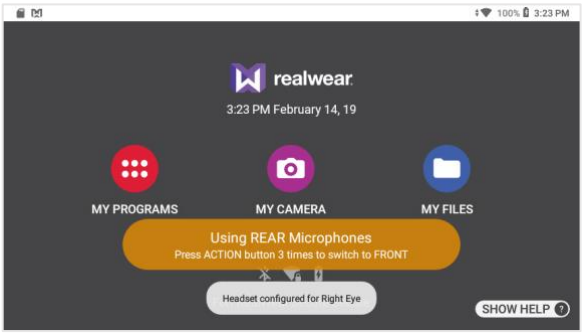
Switch between Front Microphones and Rear Microphones.

By default, the Front Microphones are enabled.

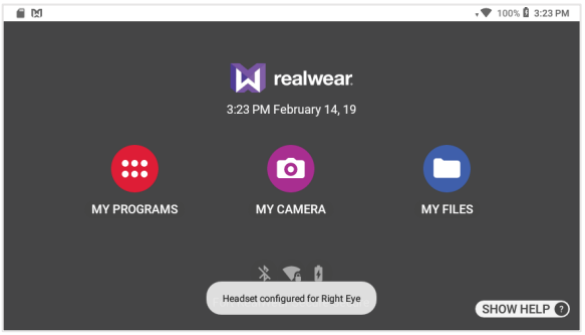
The front microphones are built into the display pod and provide optimal noise-cancellation. If using the HMT with the display flipped back and out of your line of sight, you can use a second set of microphones that are built into the frame of the HMT. These are called the rear microphones.

Important: To toggle between front and rear microphones, press the Action button three times quickly.

When the rear microphones are active, an audio notification is played, and a message is displayed on the screen.



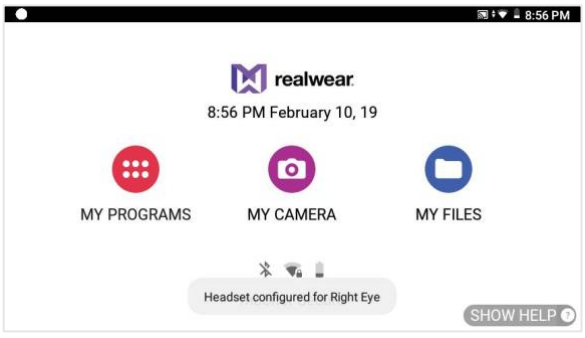
When the front microphones are active, another audio notification is played the message is removed.



Screen Orientation

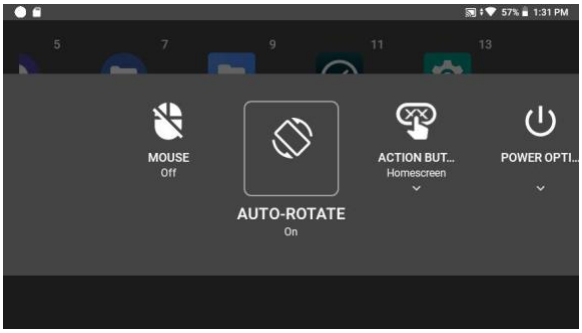
Screen Rotation

When the HMT device rotates the display will automatically rotate by default. This is important when setting the display position to left eye or right eye.



A toast message appears on the screen indicating the change in the orientation.

Auto-rotate can be toggled on or off in My Controls. Say “AUTO ROTATE” to toggle the setting on or off.



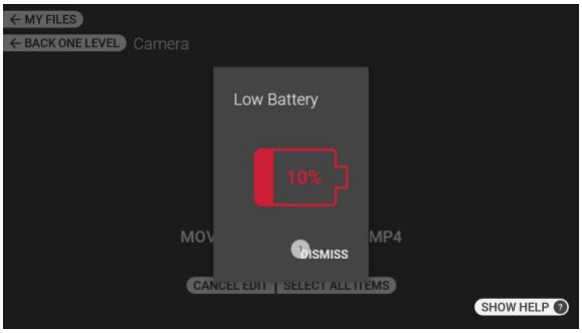
Power Warnings

The HMT will monitor the battery and warn you when it is below 15% remaining charge.

The warning popup will appear when the battery discharges to 15%, 10%, and 5%. At each level, a different color battery warning graphic appears.

You may dismiss the warning and continue operating the device by saying "DISMISS".

NOTE: The HOTSWAP feature is not available on the HMT-1Z1 as the battery is not removable on this model.



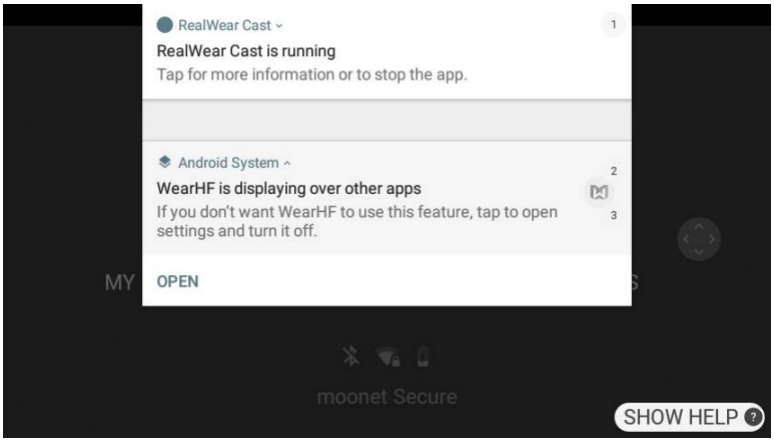
Software Overview Continued

Notifications

Notifications are actionable messages sent from the operating system and applications. They highlight and communicate important information with HMT users.

Notifications on the HMT are easy to access at any time, just say "SHOW NOTIFICATIONS".

The Notifications panel will display above the current UI view (it will darken in the background.)
To close the Notifications panel simply say, "HIDE NOTIFICATIONS".
Recent notifications are presented as items in a list.



Each notification in the list will include:
- the notification source
- a headline
- a quick summary call to action
- an item #

You can open a notification by first selecting it, say "SELECT ITEM #"
When selected, say "OPEN" to view.
When a notification is opened, a more detailed view is displayed. From this view, specific actions can be taken. As a reminder and quick reference - when on the Home Screen, and you have notifications, the number of notifications will be displayed in the top left corner.

Notifications Voice Commands

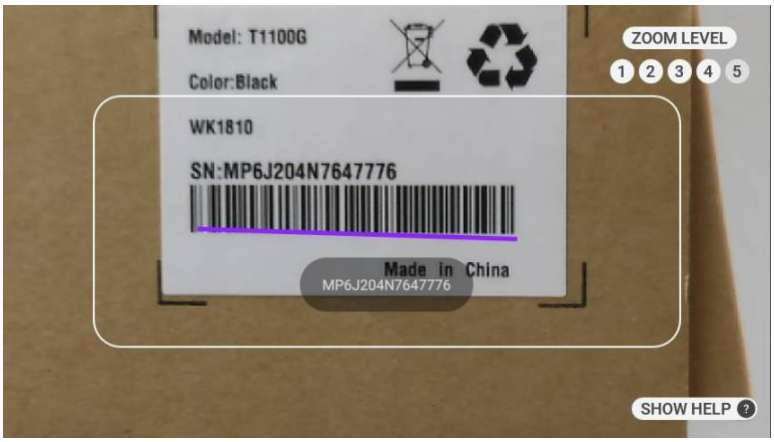
Voice Command	Action
"SHOW NOTIFICATIONS"	Opens the list of notifications.
“SELECT ITEM #”	To view a specific notification.

Barcode Reader

You can use the handsfree barcode reader built-in with the HMT to scan barcodes.

Supported Barcode Types are — UPC, EAN, QR Code, Data Matrix, and Code 128.

When launched, the barcode reader automatically scans any supported barcode that is detected and displays the details automatically. Point the camera at the barcode ensuring that the entire barcode is within the white rectangle with rounded edges.



You can also scan QR codes that contain RealWear bookmarks, URLs, and application codes to open the respective items. You can turn on or off the HMT Flashlight by saying “FLASHLIGHT ON” or “FLASHLIGHT OFF” while Barcode Reader is open.

Tip: Use zoom control to more easily frame and read some barcodes.

Barcode Scanner Functions

Voice Command	Action
“Zoom Level 1 to 5”	Zooms the camera view by setting the level to specific value — 1 to 5 For example, to set the zoom level to 4, say “Zoom level 4”.
“Flashlight ON/ OFF”	Switches On/Off flashlight.

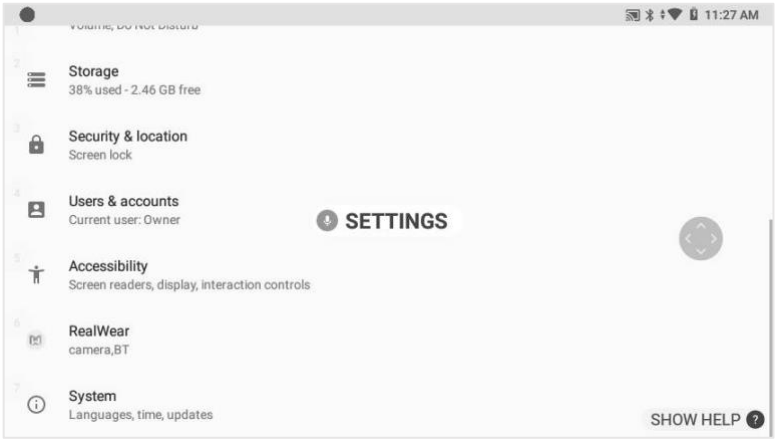
Software Overview Continued

Setting Up Bluetooth Master/Slave Switch

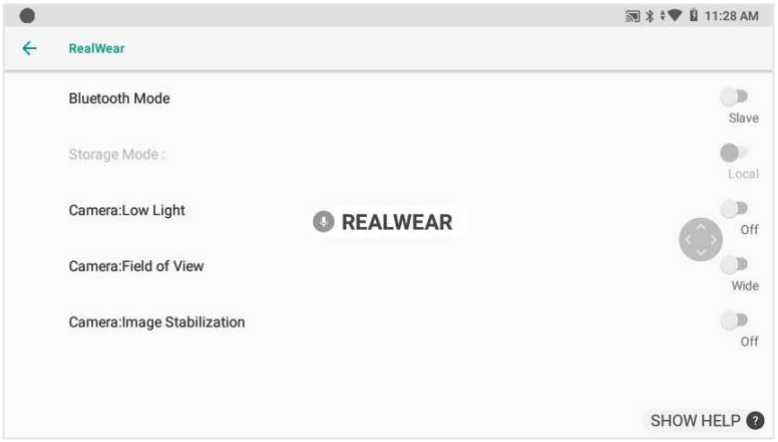
You can connect HMT-1 or HMT-1Z1 to other Bluetooth devices, in either Bluetooth master or Bluetooth slave modes.

- In Master mode, HMT can connect to audio devices such as Bluetooth earpieces and Bluetooth speakers.
- In Slave mode, the HMT can connect to mobile phones and act as a Bluetooth microphone/headset for the phone.

To change the Bluetooth mode, go to My Programs and say "SETTINGS".



Select the item called "REALWEAR" just by its name or select the item number using "SELECT ITEM #".



Here you'll see a setting called Bluetooth Mode. By default, this is set to Slave. Say "BLUETOOTH MODE" to toggle between Master and Slave modes.

HMT-1Z1 Ownership Information

All communications, notices and legal agreements have the meaning provided in the English language; translations into other languages are for convenience only. If there is any discrepancy between the translated and English version, the English version will prevail.

Models Covered

The information contained herein covers the following RealWear HMT-1Z1 model(s):
T1100S

You can find the model name on the HMT-1Z1 one of the two device labels on the rear inner band. You must take off the removable pad to see the label. Serial Numbers are 15 characters in length.

Ownership Information Continued

HMT-1Z1 Regulatory and Compliance Statements

WARNING: Changes or modifications made to this equipment not expressly approved by RealWear, Inc. for compliance could void the user's authority to operate the equipment.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

1. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
3. Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

IC Statement — English

1. This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
• This device may not cause interference, and
• This device must accept any interference, including interference that may cause undesired operation of the device
2. This Class B digital apparatus complies with Canadian ICES-003.
3. This device complies with RSS-310 of Industry Canada. Operation is subject to the condition that this device does not cause harmful interference.
4. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter, except tested built-in radios.
5. The Country Code Selection feature is disabled for products marketed in the US/Canada.

IC Statement — Français

1. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
• l'appareil ne doit pas produire de brouillage, et
• l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement
2. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
3. Cet appareil est conforme à la norme RSS-310 d'Industrie Canada. L'opération est soumise à la condition que cet appareil ne provoque aucune interférence nuisible.
4. Cet appareil et son antenne ne doivent pas être situés ou fonctionner en conjonction avec une autre antenne ou un autre émetteur, exception faites des radios intégrées qui ont été testées.
5. La fonction de sélection de l'indicatif du pays est désactivée pour les produits commercialisés aux États-Unis et au Canada.

Regulatory and Compliance Continued

IC Statement — FOR WLAN 5GHZ DEVICE

Caution

1. Operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.
2. The maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit.
3. The maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate.
4. The worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) shall be clearly indicated.
5. Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could 91 cause interference and/or damage to LE-LAN devices.

Avertissement 1

1. Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.
2. le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.
3. le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.
4. les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3), doivent être clairement indiqués.
5. De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Ownership Information Continued

Declaration of Conformity

EU Regulatory Conformance

Hereby,We, i.safe MOBILE GmbH declare that the radio equipment type T1100S is in compliance with Directive 2014/53/EU.

Declaration of Conformity

RF_067, Issue 01

EU Declaration of Conformity (DoC)

Hereby,

Name of manufacturer:	i.safe MOBILE GmbH
Address:	i_Park Tauberfranken 10 97922 Lauda-Koenigshofen,
City:	Lauda-Koenigshofen,
Country:	Germany

declares that the DoC is issued under its sole responsibility and that this product:

Product description:	Head Mounted Tablet
Type designation(s):	T1100S
Trademark:	realwear

Object of the declaration: T1100S is a Head Mounted Tablet which incorporates WIFI, Bluetooth and GPS/GLONASS.

is in conformity with the relevant Union harmonization legislation:
Radio Equipment directive: **2014 / 53 / EU** and Restriction of Hazardous Substances Directive: **2011/65/EU** and Waste Electrical and Electronic Equipment Directive: **2012/19/EU.**

with reference to the following standards applied:

1. **Health (Article 3.1(a) of Directive 2014/53/EU)**
   Applied Standard(s):
   - EN 50566: 2017
   - EN 50360: 2017
   - EN 62209-1 : 2016 / -2 : 2010
   - EN 62479 : 2010
2. **Safety (Article 3.1(a) of Directive 2014/53/EU)**
   Applied Standard(s):
   - EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013
   - EN 50332-1 : 2013 / -2: 2013
3. **Electromagnetic compatibility (Article 3.1 (b) of Directive 2014/53/EU)**
   Applied Standard(s):
   - Draft EN 301 489-1 V2.2.0 / -17 V3.2.0 / -19 V2.1.0
   - EN 55032: 2015 + AC: 2016
   - EN 55024: 2010
4. **Radio frequency spectrum usage (Article 3.2 of Directive 2014/53/EU)**
   Applied Standard(s):
   - EN 300 328 V2.1.1
   - EN 301 893 V2.1.1
   - EN 303 413 V1.1.1

The Notified Body Telefication B.V., with Notified Body number 0560 performed:
Modules: B+C and issued the EU-type examination certificate.

Signed for and on behalf of:

Date:	March 26, 2018
City:	Lauda-Koenigshofen,
Name:	Dirk Amann
Title:	Manager
Signature:	

HMT-1Z1 Specific Absorption Rate (SAR) Information

Radiation Exposure Statement — The United States and Canada

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. No minimum separation distance needs to be maintained between the user's body and the device, including the antenna, during body-worn operation to comply with the RF exposure requirements in the United States and Canada. The limit recommended by FCC and IC is 1.6 W/kg averaged over one (1) gram of tissue.
The highest SAR value of the HMT-1Z1 for use:
• By the ear is 1.31 W/kg (1g)

Radiation Exposure Statement — Europe

No minimum separation distance needs to be maintained between the user's body and the device, including the antenna during body-worn operation to comply with the RF Exposure requirements in Europe.
The limit recommended by RED is 2 W/kg average over ten (10) gram of tissue.
The highest SAR value of the HMT-1Z1 for use:
• By the ear is 0.34 W/kg (10g)

Radiation Exposure Statement — Canada

The product complies with the Canada portable RF exposure limit set forth for an uncontrolled environment and is safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

Déclaration d'exposition aux radiations

Le produit est conforme aux limites d'exposition pour les appareils portables RF pour les Etats-Unis et le Canada établies pour un environnement non contrôlé. Le produit est sûr pour un fonctionnement tel que décrit dans ce manuel. La réduction aux expositions RF peut être augmentée si l'appareil peut être conservé aussi loin que possible du corps de l'utilisateur ou que le dispositif est réglé sur la puissance de sortie la plus faible si une telle fonction est disponible.

Ownership Information Continued

HMT-1Z1 Limited Warranty and Software License

Please visit http://realwear.com/terms-of-sale/ for full Limited Warranty and Software license information.

HMT-1Z1 i.Safe Safety Instructions

Safety Instructions HMT-1Z1 model T1100S

Introduction

This chapter contains information and safety regulations which are to be observed without fail for safe operation of the device under the described conditions. Non-observance of this information and instructions can have serious consequences and / or may violate regulations.

Please read the manual and these safety instructions before using the device. In case of any doubt (in form of translation or printing errors), the English version shall apply.

Application

ATEX & IECEx

The HMT-1Z1 model T1100S is approved for use in zone 1, zone 2, zone 21 and zone 22 in accordance with directives 2014/34/EU (ATEX) and the IECEx System.

NEC & CEC

The HMT-1Z1 model T1100S is approved for use in Division 1 and 2 Class I, II, III.

Manufacturer

i. Safe MOBILE GmbH i_Park Tauberfranken 10

97922 Lauda-Koenigshofen; Germany

Faults and Damages

Before entering ex-hazardous areas, the safety of the device must be checked.

If there is any reason to suspect that the safety of the device has been compromised, it must be withdrawn from use and removed from any ex- hazardous areas immediately.

Measures must be taken to prevent any accidental restarting of the device. The safety of the device may be compromised, if, for example:

- Malfunctions occur
- The housing of the device shows damage
- The device has been exposed to excessive loads
- The device has been stored improperly
- Markings or labels on the device are illegible
- Permitted limit values have been exceeded

We recommend that a device displaying errors or which an error is suspected be sent back to authorized service center to be checked.

i.Safe Instructions Continued

Ex-relevant Safety Regulations

- Use of this device assumes that the operator observes the conventional safety regulations and has read and understood manual, safety instructions and certificate.
- Inside ex-hazardous areas the covers of all interfaces must be closed
- Exception is the audio jack cover. The audio jack can be used for approved headsets also inside ex-hazardous areas
- To ensure the IP-protection, it has to be ensured that all gaskets are present and functional
- Physical connections to other equipment are only allowed outside ex-hazardous areas using the i.safe PROTECTOR 1.0 USB-cable or other equipment approved by i.safe MOBILE GmbH
- During charging any headset or accessory must be unplugged from the audio jack
- The device may only be charged outside ex-hazardous areas using the i.safe PROTECTOR 1.0 USB-cable or other equipment approved by i.safe MOBILE GmbH
- The device may only be charged at temperatures between 5°C ... 40°C
- The battery is not removable by the user
- The device may not be exposed to any aggressive acids or alkalis
- The device may not be taken into zones 0 or 20
- The device must be protected from impacts with high impact energy, against excessive UV light emission and high electrostatic charge processes
- The permitted ambient temperature range is -20°C to +60°C
- Only accessories approved by i.safe MOBILE GmbH may be used
- It is not allowed to do the adjustment of the head strap in ex-hazardous areas