

Smart Glasses Review : Realwear HMT-1



Today I will be reviewing a device that is commonly used at our company; the RealWear HMT-1.



realwear[®]



RealWear is a smart glasses manufacturer based in Vancouver, WA.

The HMT-1 represents an entirely new concept; smart glasses intended for use by workers involved in roles requiring intensive manual labor.

When compared to smart glasses that are intended for use in factory jobs, such as Japan's popular EPSON BT-2000/2200 series, the HMT-1 turns out to be quite the sturdy product.

Waterproof, Dust Tight, and Drop Proof

The BT-2000/2200 receives an IP rating of IP54; whereas the HMT-1 receives a rating of IP66.

The first digit of the IP rating represents how dustproof the product is; a rating of IP6x conveys that the product is impervious to penetration by dust and any other such particles. The second digit represents how waterproof it is; a rating of IPx6 means that it will withstand direct high-pressure streams of water from any angle. However, it is unable to be used when submerged underwater.

Regardless, it offers perfect protection from both dust and water under any other circumstances.

As for durability, the HMT-1 can fully withstand the impact of being dropped on solid concrete from 2 meters high with no resulting damage. The HMT-1 can be used in environments with temperatures ranging from -20°C (-4°F) to 50°C (122°F). In just about any environment in which a human can function, the HMT-1 can function as well.

This is quite important when considering that temperatures can easily reach this range, especially during the summertime when sunlight often heats up concrete; no other similar products up until now have been able to handle environments such as these.

Battery

The battery capacity is 3250mAh, which RealWear states allows for between nine and ten hours of continuous usage. In our tests using the IDEye app (an app for long-distance operational support) with continuous Wi-Fi usage, we found that the HMT-1 was able to sustain power for roughly four hours.

Additionally, the battery is swappable, which considerably extends the device's usage time with spare batteries.

Though it is possible to use the product while simultaneously charging via portable battery, we do not recommend doing this, as the battery life will degrade, and the USB port is not dust and waterproof.

One-Eye Display

The majority of previous smart glasses have been binocular (screen projection to both eyes), however a key feature of the HMT-1 is that it is monocular, similar to GoogleGlass.

The advantages of this are:

- **Does not interfere with glasses**

The design of the HMT-1 makes it possible to wear other glasses simultaneously.

- **It is possible to move the display away when not in use**

If the display is not required at a given time, it is possible to move it away to reduce eye strain.

Reversible display

The HMT-1 has a reversible design that can be used on either the left or the right eye. If the device is turned upside down, the display automatically adjusts.

Of course, this comes with its disadvantages as well. For instance, if one were to view content that requires full immersion, such as a video or certain other AR content, a two-eye display would be preferable. Because of this, it is important to keep in mind the reason for

WearHF(Hands-free)

As the HMT-1 is designed to be a hands-free device, another one of its features is complete voice recognition-based control.

The design provides a noise-cancelling capability which allows workers to clearly input commands even in noisy environments, such as a factory. Because of this feature, workers are able to retain control of the device in work situations where both of their hands are required. I found the voice recognition capabilities to be quite advanced as well.

Furthermore, the device supports bluetooth, making it possible to control with a mouse and keyboard if necessary.

Spec Table

	Spec
OS	Android 8.1.0(AOSP)+WearHF Handsfree Interface
Chipset	Qualcomm Snapdragon 625(2.0 Ghz 8-core) (Adreno 506 Built-GPU)
Memory	2GB RAM / 16 GB Internal Storage
MicroSD Card Slot	1(Up to 256GB)
Bluetooth	4.1 LE(Low Energy)
Wi-Fi	802.11 a/b/g/n/ac
GPS and Location	GPD, GLONASS, A-GPS
IMU(Sensor)	9-DOF (3-axis accelerometer, magnetometer, and gyroscope), software enhanced stabilization
Battery	3250 mAh Li-Ion, rechargeable and field swappable
Battery Life	9-10 Hours
Weight	430g
Ruggedization	2 meter drop, IP66, MIL-STD-810G
Ports	3.5mm audio 1 micro-USB 1 USB Type-C
Display	.33inch diagonal(20 degree FOV) Resolution: WVGA(854x480)
Audio	Microphones: 4 digital microphone with active noise cancelation Speaker: internal 90dB loudspeaker
Camera	16MP 4-axis optical image stabilization(PDAF with LED flashlight) Video: Up to 1080p @30fps
Included Accessories	Battery Wall Charger, USB Type-C Charging Cable

Benchmark results

Now for the most important part of the review: the benchmark.

Since the SoC is the Snapdragon 625(MSM8953), the processor is the 8-core ARM Cortex A53 CPU. This is a mid-class SoC which is found in smartphones such as the ZenFone 3 and HUAWEI nova.

Benchmarking was performed using Geekbench 4.

	CPU
Single-Core Score: 794	Crypt Score: 626
	Integer Score: 891
	Floating Score: 556
	Memory Score: 972
Multi-Core Score: 2697	Crypt Score:2481
	Integer Score:3030
	Floating Score:3155
	Memory Score:1315

	Compute
SenderScript Score	2851

	Battery
Battery Score Estimate	2568

What do you think?

For reference, here are the CPU scores of the ZenFone 3: Single-Core Score = 860, Multi-Core Score = 4000. The Multi-Core Score does not appear to be making the cut. It also appears that the memory score is lagging behind.

In practice, the usage is not so bad, and compared to other companies' products, it has a quick and responsive feel.

The battery score of 2568 pulls about the same numbers as the iPhoneX. A capacity of 51% after three hours of usage can be said to be a passable result.

So, what do you think?

With this benchmark, I hope you understand what the HMT-1 is capable of.

Next time, I will be reviewing the finer details; so do look forward to it!