

LEFT BRAIN TINKERING

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Saturday, April 1, 2017

Martian Notifier Teardown

I bought a **Martian Notifier** watch new from Amazon for \$33. This seemed to be the perfect 'smart' watch for me, it has only one line of text and has a battery life (for the 'smart' portion) of about five days. The 'watch' portion uses a quartz movement and separate battery that will give you the time with real hands for about three years. Although it is now on the market for more than 3 years, the liquidation price was attractive to me.



My Martian Notifier (with aftermarket nylon band)

I like the look of a nylon band (seems military-ish) so I bought [this one](#) originally for my Moto 360 (a pile of garbage that I returned after a week). I still had this band and the 22mm size was a match for the Notifier, so on it goes:



Aftermarket 22mm nylon band on the Notifier

(Thinking about) Hacking the Notifier

I've been wearing the Notifier for a week now, and I like it. However, as with any tech there are things I wish it did differently.

I can't find any evidence that anyone has tried to hack the Notifier's firmware yet. So far I've been able to capture a firmware flash of the watch, but I've not tried to reflash it yet. Martian created a Windows or Mac based Firmware upgrade tool that downloads the firmware and updates the watch.

I've got USB captures of this tool asking the watch for the firmware version as well as the entire upgrade process.

Before bricking my new watch, I wanted to know what kind of hardware was inside it, so I purchased a broken one on eBay for \$5. The broken watch was in perfect shape, so I charged it overnight to be sure it was dead. The watch showed some signs of life, with the notification LED blinking red (solid red is normal for charging) but the watch never fully booting. I took the watch apart and found that it had terminal water damage. It was a good teardown candidate.

Notifier Teardown

Surprisingly, it seems no one has done a public teardown of this watch yet. I did find this [commercially available teardown report](#) but to you have to buy it to read it.

Here's my ten-cent teardown.

Photo album of terrible photos [here](#).

Martian Notifier Watch

- **Watch movement:** Miyota 2025 2 hand quartz movement
 - Same movement used in Citizen quartz watches
 - 3 year battery life
 - **Specifications**
 - **Drawing:**
 - **Video** of movement appearance
- **Watch battery:** 377 / SR626SW

Popular Posts

USB to Serial (Prolific 2303) Device Cannot Start (Code 10) in Windows

8/8.1/10

Is this a rare situation where a piece of legacy hardware works fine in Linux and is broken in Windows?? The Prolific 2303 works perfectly...

It works!

Installing kanboard onto a Raspberry Pi

I wanted to try running the open source software "kanboard" on my Raspberry Pi. The installation was pretty simple. First, ge...



Martian Notifier Teardown

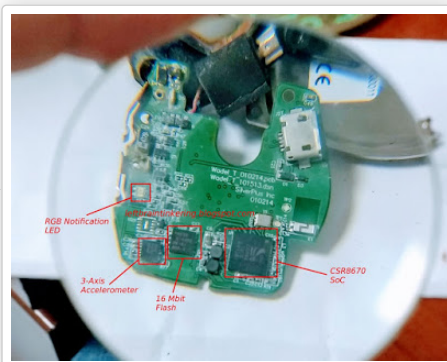
I bought a Martian Notifier watch new from

Amazon for \$33. This seemed to be the perfect 'smart' watch for me, it has only one l...



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If you have the following symptoms with the power liftgate: With liftgate closed, try to open it with the liftgate buttons or the keyfob...



Martian Notifier Layout

Martian Notifier Connected Device Hardware Details

- **Battery:** AE292025P -- marked as containing lead -- LiPoly?
 - 3.7V (?), 0.44Wh
 - Can't find a hit for the 292025 part number, but [302025](#) looks very similar.
- **Display:** PG-9616TSWD
 - 96x16 OLED
 - I2C interface
 - [This one](#) is similar
- **Microprocessor:** CSR 8670CG
 - Has a lot of capabilities, including onboard DSP and audio output
 - Not much info about programming this device in the public domain
- **3-Axis Accelerometer:** 263 8451 3EAF
 - Comes from NXP. Datasheet [here](#).
 - Probably Martian was intending to use this accelerometer for fitness tracking, but maybe due to the hit to battery life decided against it. The watch software and phone companion app makes no use of this hardware that I can tell.
- **Flash memory:** MX25U1635E (3R181 000-X)
 - Macronix serial flash, 1.8V, 16 MBit
 - Not clear what the purpose of this flash storage is. The 8670 micro has 16 Mbit of flash onboard already.
 - Guess: this flash storage is possibly used for holding an updated version of the device firmware, rather than reprogramming the flash storage on the micro?

If I get any farther hacking the watch, I'll have another post about it.

Posted by [William Skellenger](#) at [2:05 PM](#)

7 comments:



Unknown May 10, 2017 at 11:29 AM

this was very very helpful thank you sir so much i got my watch and found the analog battery dead and i was thinking of change it my self the return is pain in the ass

[Reply](#)



Samuel June 27, 2017 at 3:27 PM

Hi! Did you have any progress about hacking it: I'm very very very interested! Please contact me if you need help testing/ideas. Thanks!

[Reply](#)



Unknown July 30, 2017 at 5:53 PM

This comment has been removed by a blog administrator.

[Reply](#)



Nevermind November 15, 2017 at 2:51 AM

Thank you for the pictures of the disassembly,would you say that its possible to change the battery that is running the hands without removing the motherboard.


[Reply](#)




Unknown December 29, 2017 at 1:35 PM

Please continue to look into hacking the Notifier. I love the thing but I want more functionality out of it. The firmware software packs the .sys file for the watch but I am unfamiliar with decompilers. I've tried to use PEBrowser but I can't discern much of what is going on. Let me know if there is any way to hack the watch!

[Reply](#)

 **Unknown** September 24, 2018 at 8:28 AM
Como recargo la batería para la parte inteligente
[Reply](#)

 **WJL** April 4, 2019 at 6:25 PM
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