

CTM External Battery Pack

Version 4.0

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Designed and made by Inyong Kim (kim.inyong@mayo.edu), MSEL lab, Mayo Clinic, 2018.
Author of the document: Vaclav Kremens, 2019.

This document describes individual components of external battery pack for Medtronic RC+S CTM module and its assembly. Sharing of this document is allowed with sincere permissions of Dr. Worrell research group within Open Mind RC+S group.

If you are using this in your research, please, consider acknowledge our publications (Kremens et al., 2018).

In case of any questions, contact:

Vaclav Kremens at Kremens.Vaclav@mayo.edu

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Contributors: Kim Inyong, Gregory Worrell.

FULL Assembly:



1. Battery cradle - **Battery Pack Cradle Case Charging Port Bank OEM for Samsung Galaxy s4 Mini**

https://www.ebay.com/item/Battery-Pack-Cradle-Case-Charging-Port-Bank-OEM-for-Samsung-Galaxy-s4-Mini/162841662061?epid=1523953758&hash=item25ea1e926d:g:HkQAAOSwYGFUzoe_m



2. Batteries - **Acevan Galaxy S4 Battery 2900mAh Li-ion Battery Replacement for Samsung Galaxy S4, AT&T I337, Verizon I545, Sprint L720, T-Mobile M919, R970, I9500, I9505, Galaxy S4 LTE I9506 [3 Year Warranty]**

https://www.amazon.com/Acevan-Galaxy-S4-Replacement-Warranty/dp/B0742MJXFM/ref=sr_1_4?keywords=S4+battery&qid=1557172339&s=gateway&sr=8-4



3. External charger - **YN4L Wall Home AC Desktop Dock Battery Charger For Samsung Galaxy S III S3 i9300; i535; L710; T999; i747; Samsung Galaxy S4 Active i537; i337 AT&T; L720 Sprint; M919 T-Mobile; R970 US Cellular; i545 Verizon; Samsung Galaxy Stellar SCH-i200**

https://www.amazon.com/Desktop-Battery-T-Mobile-Cellular-SCH-i200/dp/B00O3MLQ72/ref=sr_1_5?keywords=S4+battery+charger&qid=1557172371&s=gateway&sr=8-5



4. AAA battery connector (as a part) - **Everlasting Glow 93976 AAA Battery Convertor Christmas 5InL x 2InW x 7.5InH Black**

We disassembled it and use a AAA Battery Convertor with flat cable only (red oval in picture).

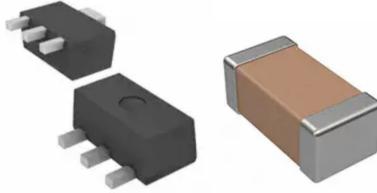
https://www.amazon.com/Everlasting-Glow-93976-Convertor-Christmas/dp/B076MZQ42P/ref=sr_1_4?keywords=AAA+battery+converter&qid=1557172208&s=gateway&sr=8-4



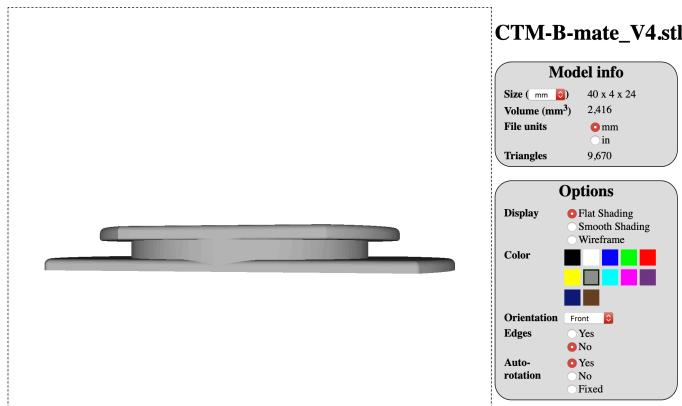
5. Voltage converter and capacitor – Linear Voltage Regulator IC Positive Fixed 1 Output 600mA SOT-89-3, and KEMET C1206C105K9RAC7800 1 μ F ±10% 6.3V Ceramic Capacitor X7R 1206 (3216 Metric)

<https://www.digikey.com/product-detail/en/diodes-incorporated/AP7215-33YG-13/AP7215-33YG-13DICT-ND/2179740>

<https://www.digikey.com/product-detail/en/kemet/C1206C105K9RAC7800/399-14648-1-ND/7103940>



6. To connect the cradle with CTM we use a twist lock that is glued by epoxy to the cradle and twists in to Medtronic CTM twist lock docking. Attached CTM-B-mate_V4.stl can be opened in any CAD software to be 3D printed.



References:

Kremen, V., Brinkmann, B. H., Kim, I., Guragain, H., Nasseri, M., Magee, A. L., ... Worrell, G. A. (2018). Integrating Brain Implants With Local and Distributed Computing Devices: A Next Generation Epilepsy Management System. *IEEE Journal of Translational Engineering in Health and Medicine*, 6, 1–12. <https://doi.org/10.1109/JTEHM.2018.2869398>