Hardware specifications

1. **Microcontroller**

Officially known as STM32L4Rxxx or STM32L4Sxxx, the STM32L4+ components also include a new Chrom-GRC engine and a MIPI DSI controller for displays, which explains why the new architecture targets smartwatches and other wearables, among many other devices.



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| --- | --- |
| Supply Voltage min | 1.71 v |
| Supply voltage max | 3.6 v |
| core | Arm cortex -m4 |
| Memory | 2048 kbytes Flash |

Data Sheet: https://www.st.com/resource/en/errata\_sheet/es0393-stm32l4rxxx-and-stm32l4sxxx-device-errata-stmicroelectronics.pdf

1. **Sensor**

The MAX30102 is an integrated pulse oximetry and heart-rate monitor biosensor module. It includes internal LEDs, photodetectors, optical elements, and low-noise electronics with ambient light rejection. The MAX30102 is an integrated pulse oximetry and heart-rate monitor biosensor module. It includes internal LEDs, photodetectors, optical elements, and low-noise electronics.

A close-up of a computer chip

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| --- | --- |
| ISUPPLY (µA) (typ) | 600 |
| Dimension | 5.6mm\*3.3mm\*1.55mm |
| Model | 14-pin optical Module |
| Shutdown ModeSupplyCurrent (µA) (typ) | 0.7 |
| VSUPPLY (V) (min) | 1.7 |
| VSUPPLY (V) (max) | 2 |
| Resolution (bits) (ADC) | 16 |

1. **Battery**

Lithium-ion polymer batteries are thin, light, and powerful. The output ranges from 4.2V when completely charged to 3.7V. This battery has a capacity of 350mAh for a total of about 1.3 Wh.

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| --- | --- |
| Dimensions | approx. 37mm \*20.8mm \*5.8mm |
| Weight | 12g |
| Capacity | 350mAh |
| Voltage | 3.7V |
| Type | Li-Po |

1. **Charging Plate**

Qi is an open interface standard that defines wireless power transfer using inductive charging over distances of up to 4 cm. It is developed by the Wireless Power Consortium. The system uses a charging pad and a compatible device, which is placed on top of the pad, charging via resonant inductive coupling.

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| Antenna size | 32\*48mm |
| Circuit Board Size | 30\*42mm |
| Connecting ware length | 20mm |
| Charge current | 200-600mAh |
| Transmitter Distance | 1-4mm |

1. **Fabric**

Medical textiles are an important part of the large variety of technical textile products, ranging from high-volume disposable products for baby diapers, feminine hygiene, and adult incontinence through to extremely specialized and high-value textile products for use in blood filtration, surgical sutures, prostheses, and most recently, scaffolds for new tissue growth.

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|  |  |
| --- | --- |
| Material | cotton |
| Extensibility lengthwise | 85% |
| Extensibility sidewise | 40% |
| Weight (GSM) | 310g |
| Colour | Multi colour |

*References*

1. <https://eckstein-shop.de/LiPoAkkuLithium-IonPolymerBatterie32C7V350mAhJST-PHConnector>
2. <https://www.maximintegrated.com/en/products/interface/sensor-interface/MAX30102.html/product-details/tabs-1>
3. <https://www.powerstream.com/T-Lithium.htm>
4. <https://www.sciencedirect.com/topics/engineering/medical-textile#:~:text=Medical%20textiles%20are%20an%20important,filtration%2C%20surgical%20sutures%2C%20prostheses%2C>
5. https://www.kob.de/en/bandages-fabrics/sports-medicine-orthopaedics/fabrics/023