TRUPin Hardware Specification
Rev 1.0

Revision history

Rev.	Date	Author	Changes
1.0	2023/07/13		Initial Release

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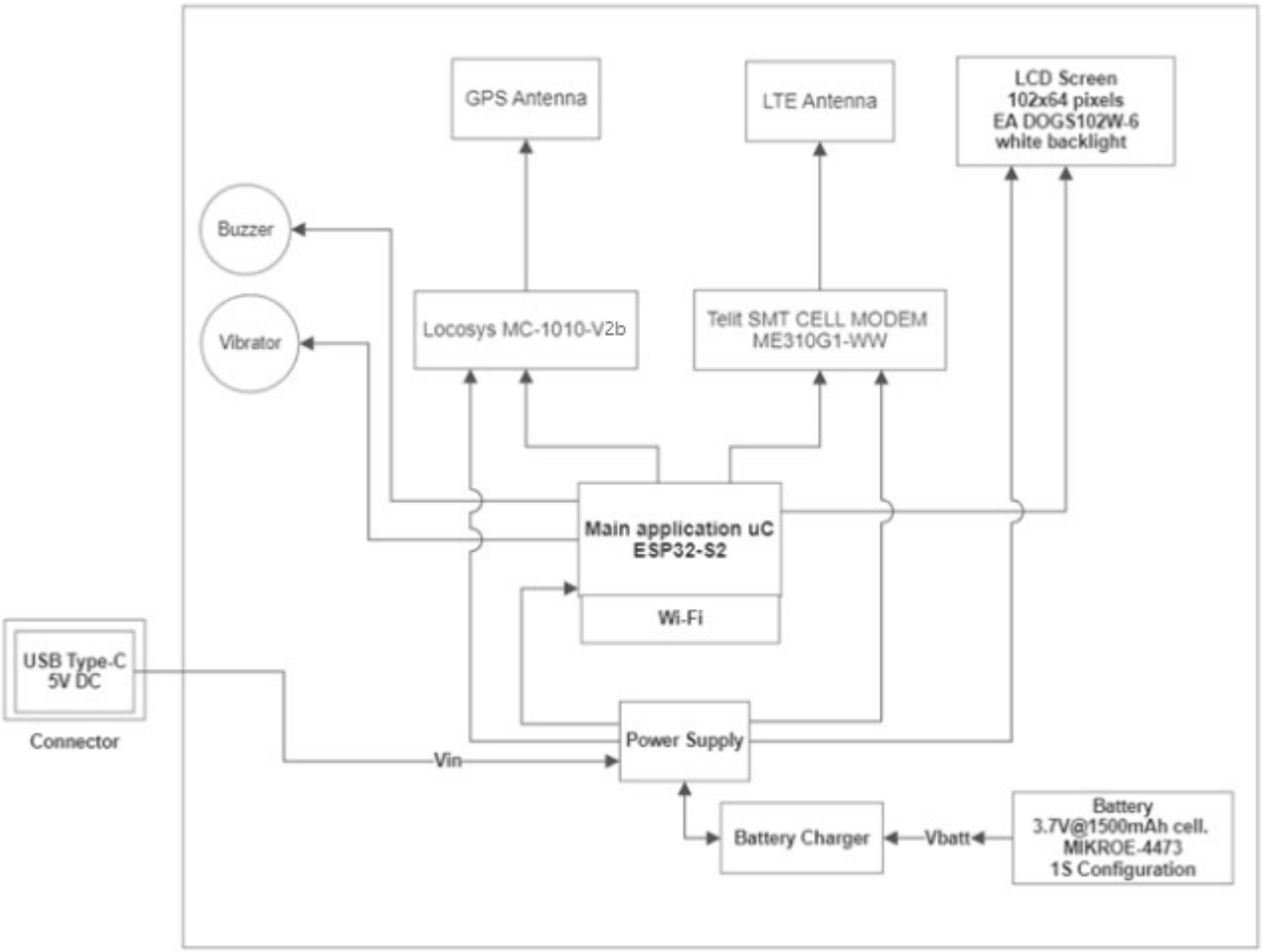
1 Overview

This document describes the hardware specifications for a device dedicated to golf course operations.

Block Diagram



2 Features Summary

Features	Description
OS	Real-time embedded OS
Processor	ESP32-S2 embedded, Xtensa® single-core 32-bit LX7 microprocessor, up to 240 MHz: Detailed Specification sheet.
Memory	128 KB ROM + 320 KB SRAM + 16 KB SRAM in RTC + 4 MB Flash Internal
LTE Cellular Modem	Telit SMT CELL MODEM - CAT-M1 ME310G1-WW LTE UE Cat M1, 3G and 2G global fallback frequency support – 15x18mm Requires SIM holder
GPS	Locosys MC-1010-V2b
Wi-Fi / Bluetooth	Espressif ESP32 S2 WROOM module (datasheet)
Antennas	GNSS: Taoglas One Stage GPS-GLONASS-GALILEO-BeiDou Embedded Active Patch Antenna Module with Front-End SAW Filter AGVB.25A.07.0060A;patch antenna (uFL connected); Wi-Fi – PCB antennas on the main board; LTE – Internal ceramic antenna SR4L034-L
Battery	1S configuration; Lithium Polymer chemistry. – default configuration 1500mAh cell. MIKROE-4473
Vibration	DC Motor VC1030B028F
Sound	Piezo Buzzer CMT-1032-85-SMT-TR
LED	Low current Red/Green APBD3224LSURKZGKC
LCD	102x64 pixels (EA DOGS102W-6) with white backlight (EA LED39X41-W)

3 System Details

3.1 Operating System

The board runs a customized version of an embedded OS featuring multi-tasking libraries, device drivers, and other components required to operate the hardware platform.

3.2 Application Processor

ESP32-S2 embedded, Xtensa® single-core 32-bit LX7 microprocessor, up to 240 MHz

3.3 LTE Modem

Telit ME310G1-WW modem with internal antenna (Antenova SR4L034-L) and SIM holder.

3.4 Wi-Fi/Bluetooth

Espressif ESP32 S2 WROOM module

3.5 GNSS / GPS

Integrated receiver Locosys MC-1010-V2b module with Taoglas AGVB.25A.07.0060A internal patch antenna.

3.6 Battery

The base configuration contains 1500mAh@3.7V Lithium Polymer (LiPo) cells.

3.7 Vibration

The device contains vibration for feedback.

3.8 Display

LCD use SPI interface

3.9 Charging

2W Wired USB-C

3.10 Sound

The device features a piezoelectric buzzer.

4 Connectors

- USB-C 2.0

5 Environmental Conditions

- Operating Temps
  - -4°F to 140°F
- Storage Temps
  - 23°F to 113°F
- Test IP67
  - Water
    - 30 minutes submerged no deeper than 40 inches
  - Dust