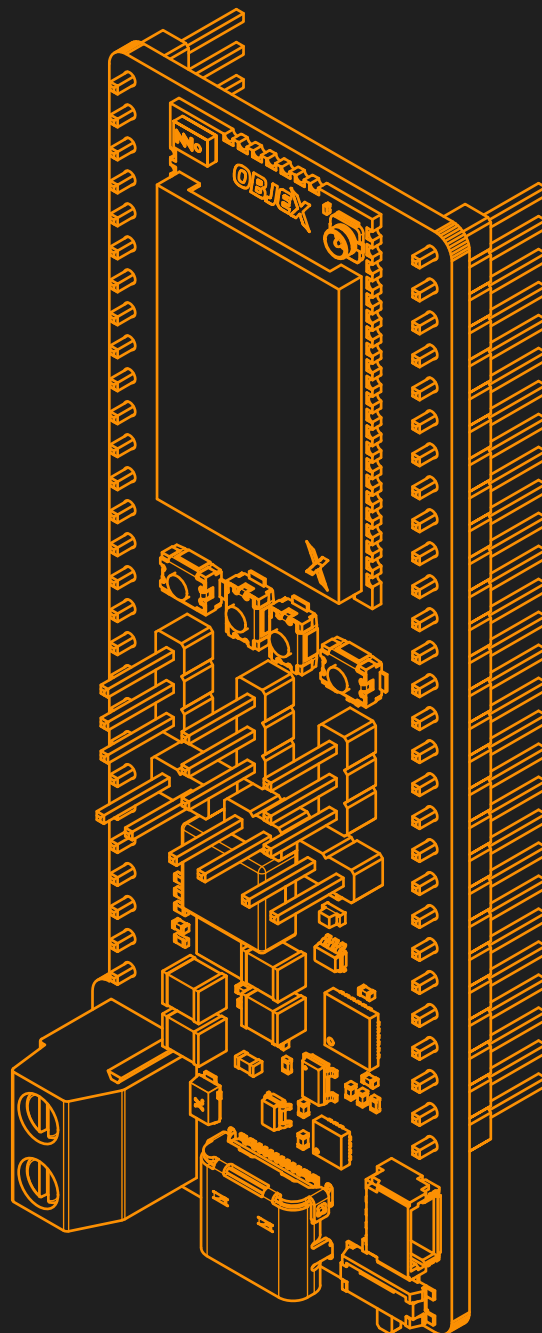




OBJEX Link S3LW

Development board for ELPM-S3LW

v1.0-PD



1 | Overview

The OBJEX Link S3LW is a development board based on ELPM-S3LW. It is specifically designed to meet a wide range of project power requirements. It empowers developers to create projects demanding both extreme low-power operation and high-power functionality, reaching up to 100W (USB-C PD 3.0 PPS). This versatility is achieved through the inclusion of six sets of header connectors on the board. These connectors offer granular control over the power supply delivered to individual components, both on the board itself and within the accompanying ELPM-S3LW module.

Beyond its flexible power management, the OBJEX Link S3LW excels in developing LoRa/LoRaWAN solutions. It boasts integrated functionalities, including 2.4 GHz, 802.11 b/g/n Wi-Fi, and Bluetooth 5 (LE) connectivity, providing a comprehensive suite of communication options with long-range capabilities.

The devkit provides full access to all 48 input/output (I/O) ports and interfaces through dedicated connectors. OBJEX Link S3LW is compatible with ESP-IDF, Arduino, PlatformIO and MicroPython.

Features

ELPM-S3LW v1.1

- > Based on ESP32-S3FN8 (32-bit 240MHz)
- > Memory Size: 8MB Flash
- > WiFi - IEEE 802.11 b/g/n-compliant
- > Bluetooth LE: Bluetooth 5, Bluetooth mesh
- > Wi-Fi and Bluetooth share the same antenna
- > Cryptographic hardware acceleration
- > External PSRAM can be installed
- > Interfaces: I²C, I²S, SPI, UART, USB
- > Ceramic antenna (WiFi/BLE)
- > LoRa based on SX1262
 - Frequency bands: 862MHz to 928MHz
 - Signal power: 22dBm
 - Transmission distance: 10km
 - 50 Ohm U.FL
 - Full compatibility with LoRa and LoRaWAN
- > USB-C Type 2.0
- > Terminal block for Vbus (USBC PD)
- > DC/DC synchronous step-down
- > USB to UART Bridge
- > Power switch
- > STEMMA 4 Pin - I2C connector

Deep Stop Mode (Extreme low power)

An effective alternative to the deep sleep mode of the ESP32-S3FN8. Deep Stop mode consists of a power latch and RTC combined with an smart power management system that controls the ESP32-S3FN8, SX1262, and all loads connected to the 3V3 path. By controlling the power supply to all connected loads, it is possible to minimize power consumption, thus increasing the life of the battery. In addition, an external mosfet can be driven (gate pin) to control multiple loads.

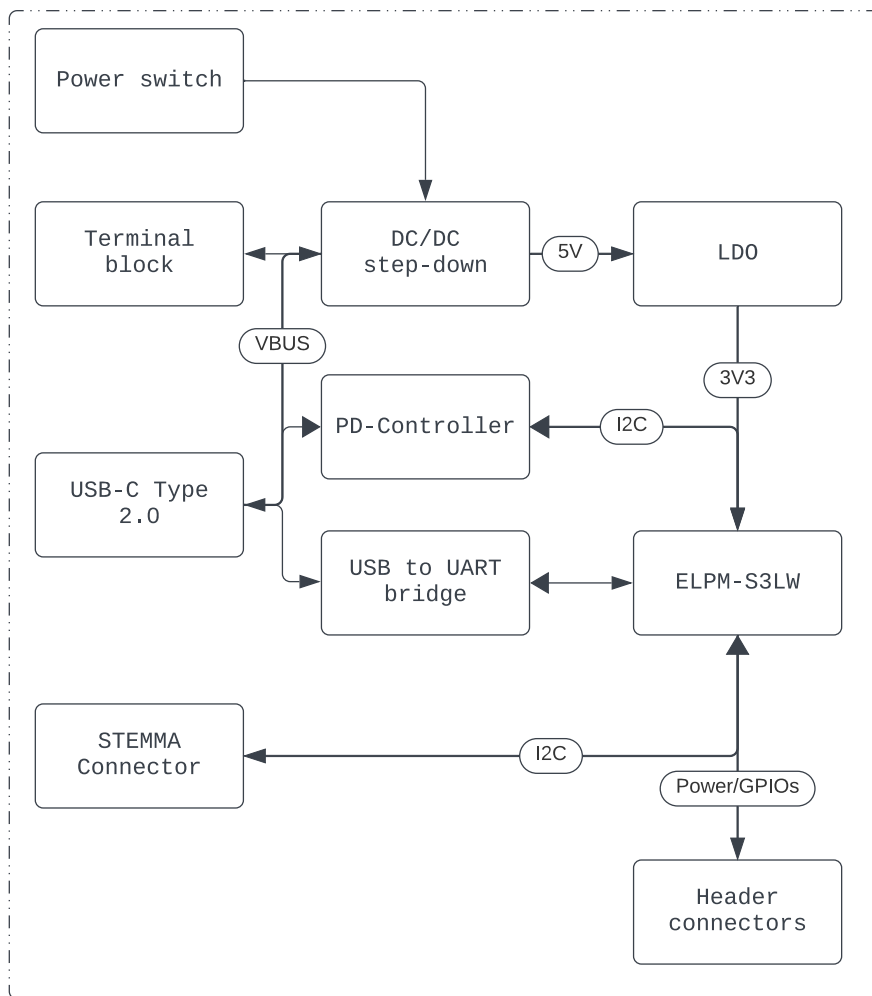
Power Delivery 3.0 PPS

Charging standard that allows USB-C devices to receive more power than the standard USB limit of 5 watts. PD 3.0 can deliver up to 100 watts of power.

The Programmable Power Supply (PPS), an optional feature within the USB Power Delivery (PD) 3.0 and 3.1 specifications, enables more granular control over voltage and current delivery compared to the standard USB PD. This allows compatible devices to negotiate and request specific voltage and current combinations max(20V 5A). However, it is crucial to note that while PPS is part of the aforementioned USB PD specifications, it is not universally supported by all USB-C chargers with USB PD functionality. Therefore, verification of both the charger and device's compatibility with PPS is recommended for users seeking to leverage this enhanced charging capability.

2 | Block diagram

OBJEX Link S3LW - v1.0 PD



Power switch: Switch to turn DC/DC on/off - remove power from the 5V and 3V3 paths.

Terminal block: This connector is mainly designed to draw power from the VBUS of the USB-C PD (MAX: 100W). But it is also possible to feed in an external voltage of up to 24V (TO DO SO MUST DISCONNECT USB-C).

USB-C Type 2.0: To power up to 100W and program the ELPM-S3LW module.

STEMMA Connector: I2C BUS, designed to allow for easy and reliable connection between boards and sensors or other devices.

DC/DC step-down: To adjust the VBUS(max 20V) to 5V@2A

PD-Controller: The PD controller acts as a mediator between a power source (charger) and a power sink (device being charged). It negotiates the optimal voltage and current levels based on pre-defined protocols like USB Power Delivery (PD).

USB to UART bridge: IC with an auto-reset circuit, for programming the module via USB-C.

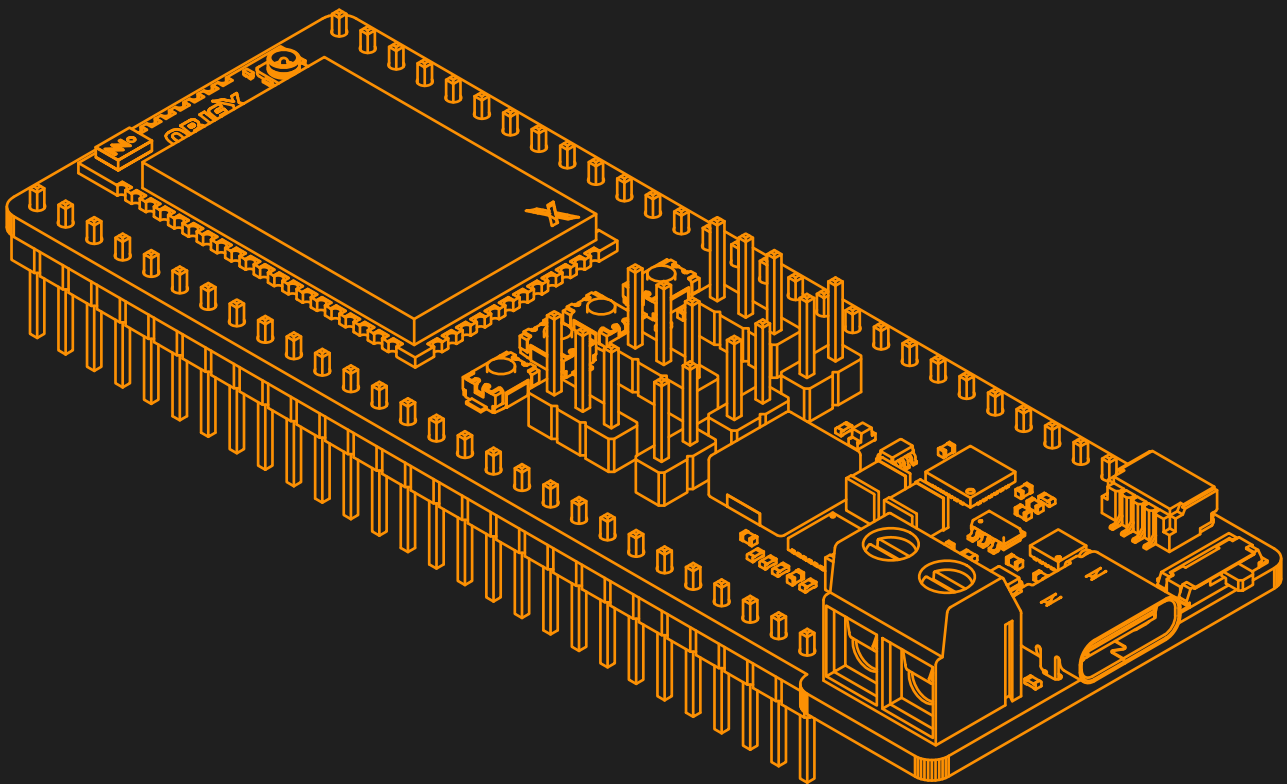
LDO: Linear voltage regulator (5V to 3V3@600mA).

ELPM-S3LW: The core of the board.

Header connectors: The board incorporates multiple header connectors with 2.54mm pitch. These connectors are specifically designed to facilitate interface functionality with various onboard components, including power supplies and general-purpose input/output (GPIO) pins.



BEHIND EVERY REVOLUTION



Full Datasheet not yet available

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