User's Guide - Neonode Prototyping Board

The Neonode Prototyping Board is an Arduino-compatible microcontroller, based on the SAMD21 MCU. The board allows the user to directly connect a Neonode Touch Sensor Module (previously referred to as zForce AIR) through the onboard sensor port, with all 8 connector pads exposed. The prototyping board is only intended for development and prototyping. Meaning, it is not created to withstand challenging environments or demanding use-cases.

The prototyping board can also be configured using an Arduino development environment, for example the Arduino IDE. For easier configuration and implementation, include our zForce Arduino Library to your project.

Figure 1 - Pinout Diagram of Neonode Prototyping Board

Overview

Compatible Development Environment

- Arduino IDE
- zForce Arduino Library

Board Components

Pinouts

- USB D+
- USB D-
- Reset (RST)
- Power supplies,
    - 2x Ground (GND)
    - 5V
    - 3.3V
    - USB VBUS
- Data Ready (DR)
- I2C SCL
- I2C SDA
- Debugging interface,
    - Reset (RESET)
    - SBW clock (SWC)
    - SBW data (SWD)
- Not Connected (NC)
- Digital Pin, GPIO (PA22)

Programmable Components

- Green System LED
- RGB Neopixel LED
- 1x Digital Pin, GPIO (PA22)

MCU Specification

- ATSAMD21E18A 32-bit Cortex M0+ with 256KB Flash and 32 KB RAM
- 3.3V logic, 48 MHz, 32 bit processor

Resistor Bridge

- 0-ohm resistor (R3) that bridges between VBUS and +5V.

Mechanical features

Pin Holes

- 2x M2 mounting holes

- 2 rows of 8x 2.54mm (0.1") pitch pin header holes, with a special design to accept friction fixing for connecting a pin header to a breadboard or other interface boards.

Dimensions

- Width: 16mm
- Length: 37mm
- Height: 4.25mm

Environmental Requirements

- Temperature: 0-40°C
- Non-humid and dry.

Pinout Description

Please refer to Electrical integration for further information about the sensor module's connector pads.

Pinouts - Left Hand Side*					
Pin Name	**Pin Description**	**MCU Pin No.**	**Arduino Pin No.**	**Connected to onboard MCU**	**Connected to Sensor Module**
5V	5V Power input for the sensor module				x
D+	USB D+ input connected to sensor module				x
D-	USB D- input connected to sensor module				x
RST	Resets sensor module to initial state. Active low.	PA7	0	x	x
DR	Data Ready - Indicates that there is data available for the host to read	PA6	1	x	x
SDA	Serial Data Line	PA8	2	x	x
SCL	Serial Clock Line	PA9	3	x	x
GND	Ground				x
Pinouts - Right Hand Side*					
Pin Name	**Pin Description**	**MCU Pin No.**	**Arduino Pin No.**	**Connected to onboard MCU**	**Connected to Sensor Module**
VBUS	5V - USB bus voltage			x	
NC	Not connected			x	
3.3	Power 3.3V connected to the board's MCU			x	
SWD	Debug Data (of onboard MCU)	PA31		x	
GND	Ground			x	
SWC	Debug Clock (of onboard MCU)	PA30		x	
RESET	Reset MCU			x	
PA22	GPIO, Digital Pin	PA22	4	x	

**The Prototyping Board is positioned according to Figure 1, with the sensor port at the top of the board, and the Micro USB port at the bottom.*

Internal Pins

Internal Pin Component	**Component Description**	**MCU Pin No.**	**Arduino Pin No.**
Green System LED	Programmable System LED	PA16	13
RGB LED	RGB Neopixel LED	PA5	14
USB D-	Onboard	PA24	
USB D+	Onboard	PA25	

Reset Button

Reset Button Action	Action Description
Single Click	Reset, and run the application firmware
Double Click	Reset, and run the bootloader

Read More

- User's Guide - Neonode Prototyping Board
- Get Started with Neonode Prototyping Board
- Legal Notice