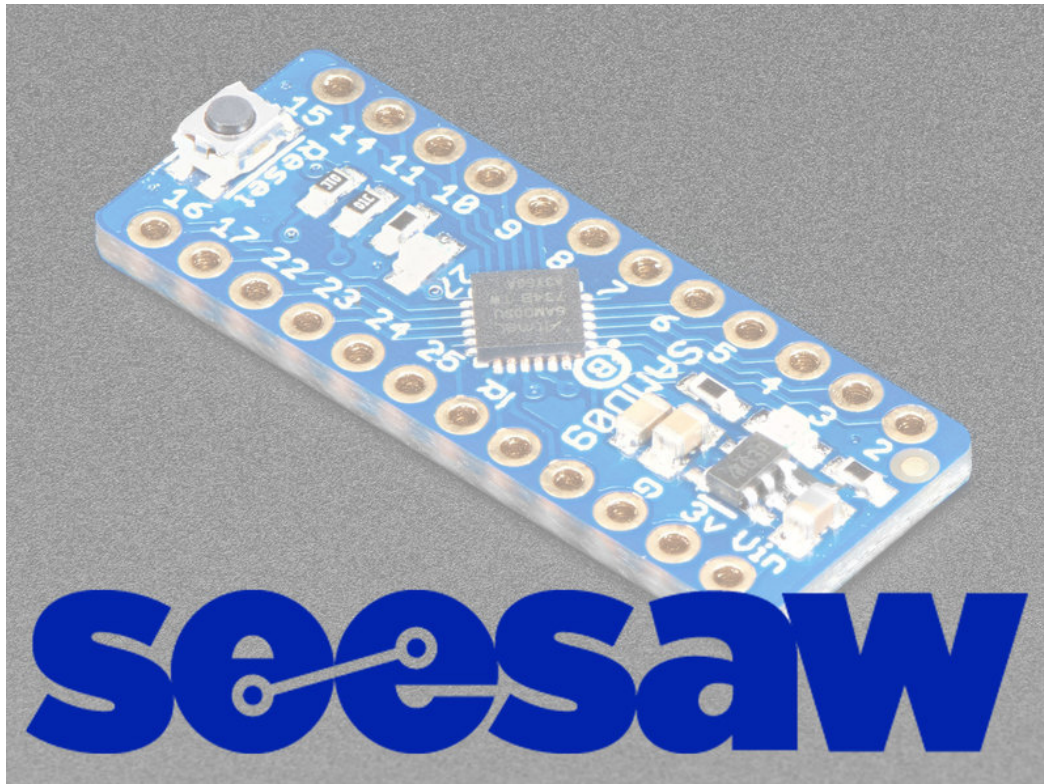




# Adafruit seesaw

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<https://learn.adafruit.com/adafruit-seesaw-atsamd09-breakout>

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0x00 - 0x7E	General purpose EEPROM	8 bits each	Read/write
0x7F	I2C Address	8 bits	Read/write

## NeoPixel

The seesaw has built in NeoPixel support for up to 170 RGB or 127 RGBW pixels. The output pin as well as the communication protocol frequency are configurable. Note: older firmware is limited to 63 pixels max.

The module base register address for the NeoPixel module is **0x0E**.

## Function Registers

Register Address	Register Name	Register Size	Notes
0x01	PIN	8 bits	Write Only
0x02	SPEED	8 bits	Write Only
0x03	BUF_LENGTH	16 bits	Write Only
0x04	BUF	32 bytes	Write Only
0x05	SHOW	none	Write Only

## PIN (0x01, 8bits, Write Only)

This register sets the pin number (PORTA) that is used for the NeoPixel output.

## SPEED (0x02, 8bits, Write Only)

The protocol speed.

0x00 = 400khz

0x01 = 800khz (default)

## BUF\_LENGTH (0x03, 16bits LE, Write Only)

the number of bytes currently used for the pixel array. This is dependent on when the pixels you are using are RGB or RGBW. 2 Bytes, little endian order

## BUF (0x04, 32 bytes, Write Only)

The data buffer. The first 2 bytes are the start address, and the data to write follows. Data should be written in blocks of maximum size 30 bytes at a time.

Bytes 0 - 1	Bytes 2 - 32
Start address	Data

## SHOW (0x05, no args, Write Only)

Sending the SHOW command will cause the output to update. There's no arguments/ data after the command

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## Encoder

0x11	Base Register Address
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This module provides incremental encoder support.

## Function Register Summary

Register Address	Register Name	Register Size	Access
0x00	Status	?	?
0x10	Interrupt Set	1 byte	W
0x20	Interrupt Clear	1 byte	W
0x30	Position	4 bytes	R/W
0x40	Delta	4 bytes	R

More than one encoder can be supported. The upper 4 bits of the function register address specifies the function (summarized in table above) while the lower 4 bits indicates the encoder number, starting with 0 for the 1st encoder. For example, to read the position (0x30) of the 2nd encoder (0x01), the resulting function register address would be 0x31 (0x30 | 0x01).

## Function Register Description

### 0x00 - Status

Currently unused.

### 0x10 - Interrupt Set

Writing a 1 to any bit in this register will enable the interrupt for the specified encoder. The interrupt will fire when the encoder changes position.

## 0x20 - Interrupt Clear

Writing a 1 to any bit in this register will disable the interrupt for the specified encoder.

## 0x30 - Position

Byte 0	Byte 1	Byte 2	Byte 4
Position MSB	...	...	Position LSB

Reading this register returns the current encoder position. Writing to this register sets the current position to the specified value. The position value is a signed 32 bit integer.

## 0x40 - Delta

Byte 0	Byte 1	Byte 2	Byte 3
Delta MSB	...	...	Delta LSB

Reading this register returns the change (delta) in position, as a signed 32 bit integer value, since the last read. The delta will also be reset to zero.

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## Downloads

## Documents

- [Seesaw Arduino Driver \(https://adafru.it/BrV\)](https://adafru.it/BrV)
- [Seesaw CircuitPython Driver \(https://adafru.it/BrW\)](https://adafru.it/BrW)
- [Fritzing object in the Adafruit Fritzing library \(https://adafru.it/aP3\)](https://adafru.it/aP3)
- [SAM D09 breakout PCB files \(EAGLE format\) \(https://adafru.it/BrX\)](https://adafru.it/BrX)
- [SAM D09 datasheet \(https://adafru.it/BrY\)](https://adafru.it/BrY)