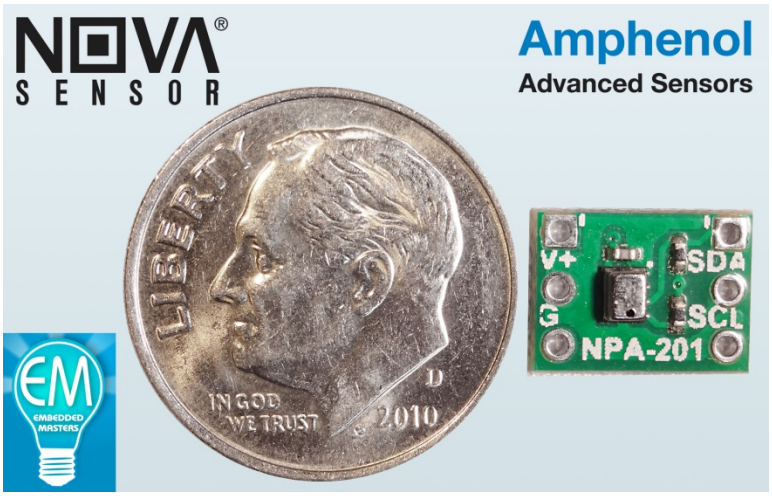
# Embedded Masters

# NPA-201-EV: World's Smallest I2C Pressure Sensor Evaluation Board (0.4"x0.29")




## Description:

The NPA-201-EV is the world's smallest and easiest to use I2C Pressure Sensor evaluation board measuring a mere 0.4"x0.29" and has standard 0.1"/2.54mm headers for easy use with a bread-board and is small enough to put right into an application. It is based on the NovaSensor NPA-201 which comes in a 2.0x2.5x1.0 HCLGA style package. The NPA-201 can measure 260-1260 mBar absolute pressure range with 16bits of Resolution. Temperature measurement is included. The NPA-201 is operational from 1.7-3.6V and can operate across a -40°C to +85°C temperature range. The NPA-201 offers an ULTRA-LOW power SLEEP mode of ~20nA Typical and ACTIVE current is 35uA Typical.

The NPA-201 utilizes a **ULTRA SIMPLE 3 Command I2C interface**(Command Request, Read Status, and Read Data). There is **NO REGISTER INITIALIZATION** needed. Upon Power Up the NPA-201 is ready to go as it is initialized internally.

The NPA-201-EV is compatible with the ***Embedded Masters Rapid Prototyping Wireless Sensor Kit***, ***EMSENSR-WSP***(Wireless Sensor Plugin) and ***EMRF-WSB***(Wireless Sensor Base). The EMSENSR-WSP provides a Sensor Plugin platform that all EMSENSR's can be plugged into. The WSP can be directly connected to all of the Silicon Labs EFM32 Starter Kits on one side. The other side allows the EMSENSR-WSB to be connected to provide a BTLE connection using Broadcom based BTLE solutions.

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*Custom Embedded PCB/Software, Wireless/Mobile Applications, and general design services can be provided by Embedded Masters for your own application.* Contact sales@embeddedmasters.com

*Want a breakout board that Embedded Masters doesn't currently offer please let us know!!*

## NPA201 Full Datasheet link:

http://www.amphenol-sensors.com/en/products/pressure-mems/mems-sensors/3236-npa-201

## BUY IT NOW!!

**Gerber files and PCB Footprints are available upon request.**

**Features:**

- **ULTRA SIMPLE 3 Command I2C Interface.**
- **NO HARDWARE REGISTER INITIALIZATION.**
- VDD Supply voltage 1.7-3.6V
- 260 – 1260mBar absolute pressure range
- ACTIVE Current (Typical @ 3V) = 35uA
- SLEEP Current (Typical @ 3V) < 20nA Typ
- On-board 16bit Temperature Sensor: <0.003K/LSB
- +/-1 °C Absolute Temperature Accuracy
- 2ms Wake-up time to Active Analog operation
- Fully Calibrated and Compensated
- Up to 3.4MHz I2C Operation
- Internal 18bit DSP running correction algorithm
- 0.4”x0.29” Breakout board with .1”/2.54mm header spacing that can be directly soldered into a prototype or used with breadboard. Headers are spaced 400mil apart.
- -40°C to +85°C Temperature Range

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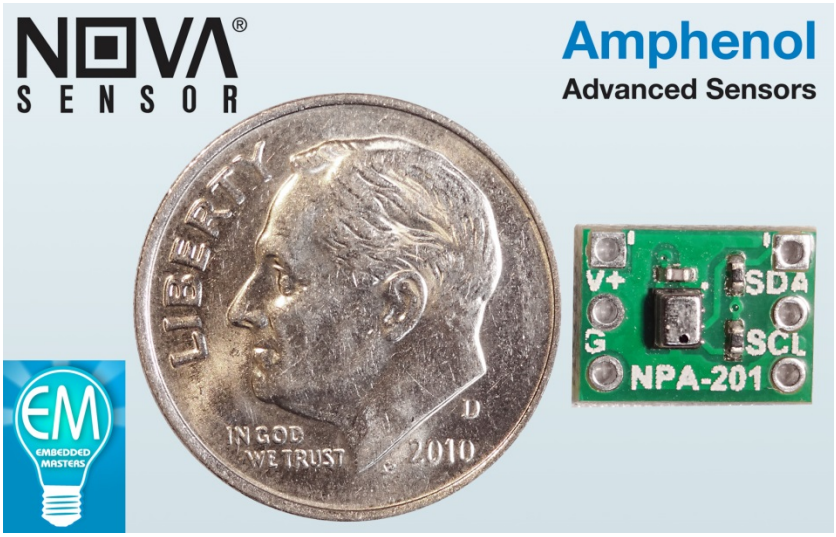



## Contents

## I2C Commands:

The NPA-201 utilizes and internal ASIC that initializes and calibrates the pressure sensor upon power-up. This allows for a ULTRA-SIMPLE I2C Command Set and avoids having to have the user initialize internal hardware registers on the NPA-201.

The I2C Command Set makes use of only 3 commands and are shown below. Each Command is started as shown in Figure 3. After the execution of a command(busy = 0) the expected data can be read as illustrated in Figure 5, or if not data is returned by the command the next command can be sent. The Status can be read at any time as described in Figure 4.

1. **Command Request**

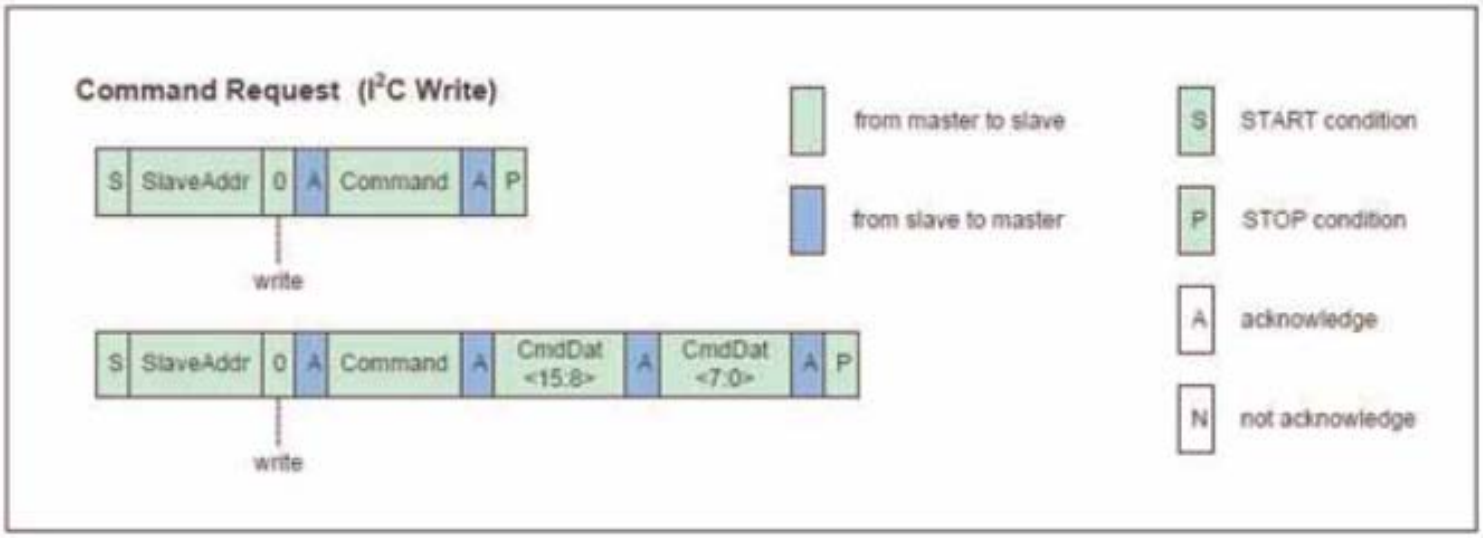



Figure 3 - I²C Command Request

2. **Read Status**


Figure 4 - I²C Read Status

## 3. Read Data

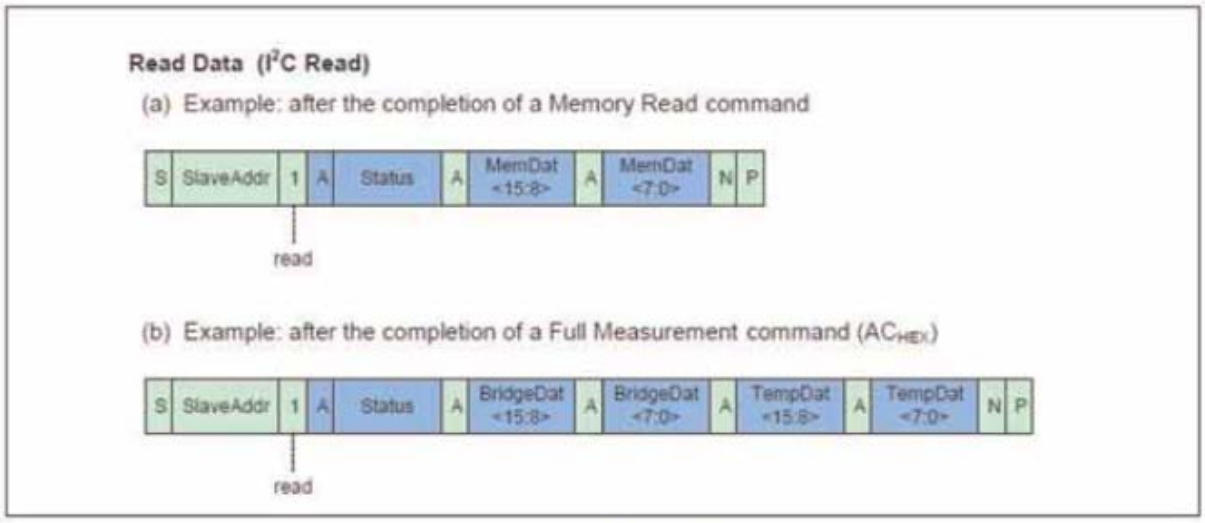
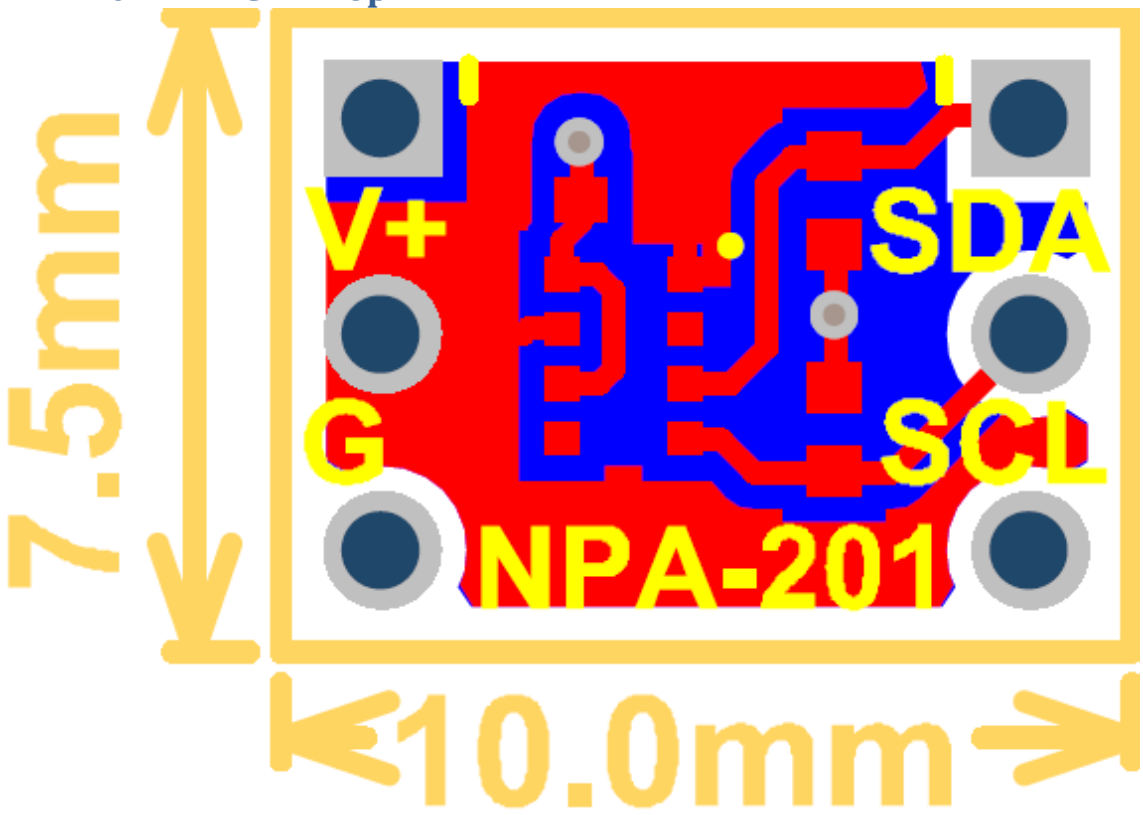


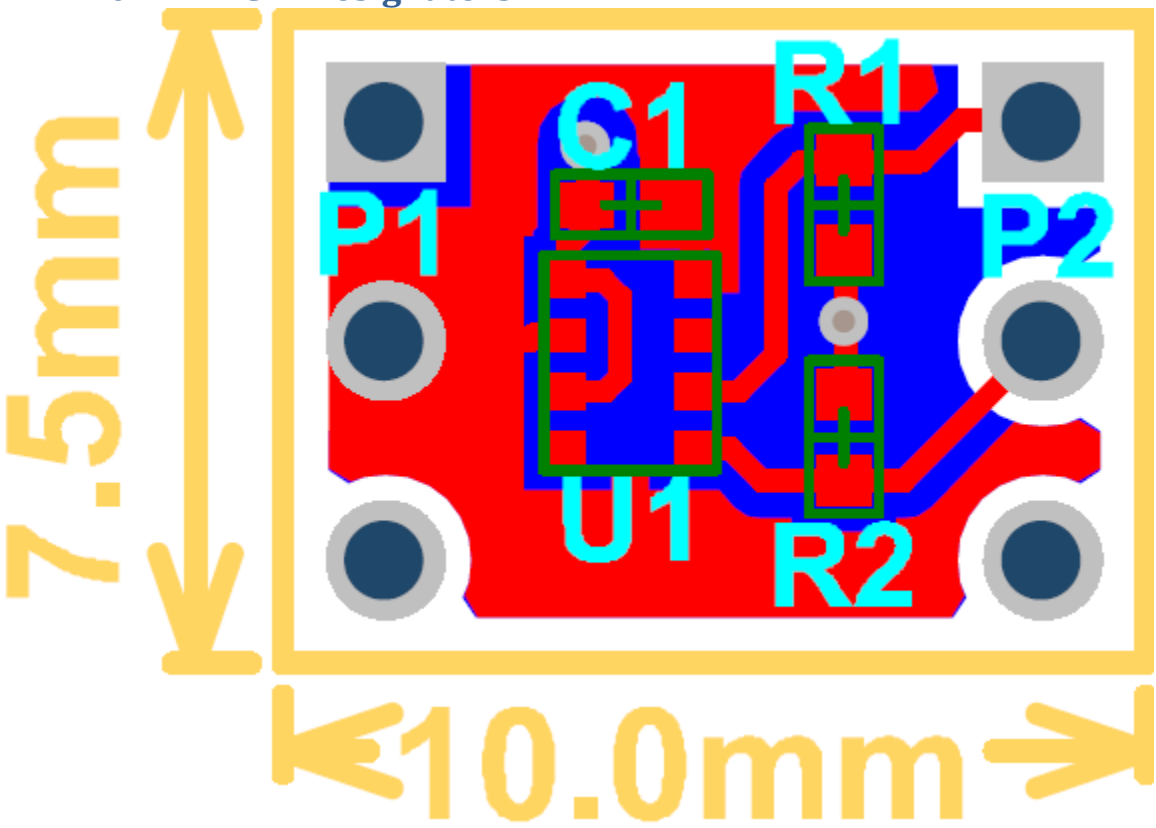

Figure 5 - I²C Read Data

## NPA-201-EV Schematic

## NPA-201-EV PCB – Top




## NPA-201-EV PCB- Designators



## NPA-201-EV 3D PCB