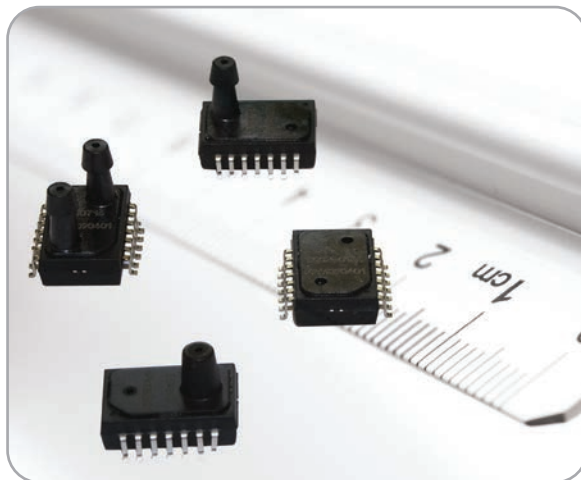


# NPA

## Low Pressure

### Surface-Mount Pressure Sensor Series



The NPA product series is provided in a miniature size as a cost effective solution for applications that require calibrated performance. Packaged in a SOIC14 pin surface mount, the NPA-Low Pressure Series is available in Gauge or Differential pressure ranges with either amplified analog or digital outputs. The sensor is intended for printed circuit board mounting and delivered in tape and reel form to simplify manufacturing handling.

### Features

- Surface Mountable
- Differential, Gauge, Low Pressure
- 2" and 5" H<sub>2</sub>O Full Scale
- Output Options: Amplified Analog, Digital Serial (14bit), Digital I<sup>2</sup>C
- On chip temperature sensor in digital mode
- Operating temperature range of -40 to 125°C
- Total Error Band:
  - +/-1.5% Span at 5"H<sub>2</sub>O full scale
  - +/-2.5% Span at 2"H<sub>2</sub>O full scale

# Low Pressure NPA Specifications

Parameter	Value	Units	Notes	
Pressure Range	2 or 5	In H <sub>2</sub> O	498 or 1245 Pa	
Maximum Overpressure	140	In H <sub>2</sub> O	400 in H <sub>2</sub> O Package Overpressure	
Electrical @ 25°C (77°F) unless otherwise stated				
Input Excitation	3.3 or 5.0	VDC		
Environmental				
Temperature Range				
Operating	-40 to +125	°C	-40 to +257°F	
Compensated	0 to +60	°C	+32 to +140°F	
Storage	-40 to +125	°C	-40 to +257°F	
Mechanical/Package				
Weight	~1	grams		
Media Compatibility				
Positive differential and gage ports	Media compatible with thermoset plastic, silicon, epoxy, RTV, Pyrex, and silicone gel			
Negative differential ports	Dry gasses only			
Performance Parameters	Units	Minimum	Maximum	Notes
Total Error Band (TEB)	% Span	-1.5	1.5	5”H <sub>2</sub> O Full Scale
		-2.5	2.5	2”H <sub>2</sub> O Full Scale
Response Time	ms		2	0.5 ms Typical
Offset Long Term Drift	% Span/year	±0.12		Typical
Current Consumption	mA	1.2		Typical

**Notes:**

1. Total Error Band including all errors by offset, span, non-linearity, hysteresis, repeatability, thermal effect etc.
2. Offset Long Term Drift based on HTOL testing.

Series	Excitation Voltage	Min (V)	Max (V)	Notes
NPA-300	3.3V	3.28	3.32	NPA amplified analog
NPA-500	5.0V	4.97	5.03	NPA amplified analog
NPA-730	3.3V	3.28	3.32	NPA digital I2C
NPA-700	5.0V	4.97	5.03	NPA digital I2C

# Output Option: Amplified Analog

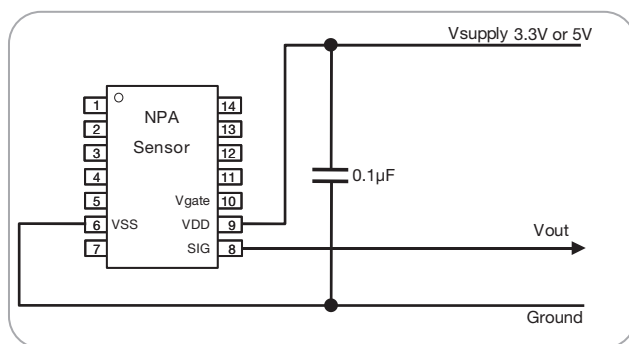
Analog Performance Parameters 5 volt Excitation

Parameter	Units	2 inH2O		5 inH2O	
		Min	Max	Min	Max
Offset	Volts	0.40	0.60	0.44	0.56
Span	Volts	4		4	

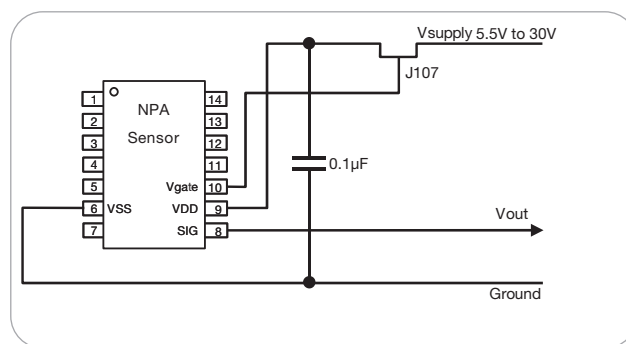
Analog Performance Parameters 3.3 volt Excitation

Parameter	Units	2 inH2O		5 inH2O	
		Min	Max	Min	Max
Offset	Volts	0.44	0.56	0.46	0.54
Span	Volts	2.5		2.5	

## Typical Analog Circuits - Circuit layout same as “Ratiometric Voltage Output”



Ratiometric Voltage Output - Standard NPA



Ratiometric Voltage Output with Over-Voltage Protection - Request Required

## NPA Amplified Output Pinout

Pin #	Amplified Analog	Function Notes
1	--	
2	--	
3	NC	Do Not Connect
4	NC	Do Not Connect
5	--	
6	VSS	Ground Supply
7	--	
8	SIG	Analog Out, Calibration Interface
9	VDD	Supply Voltage
10	--	
11	NC	Do Not Connect
12	NC	Do Not Connect
13	--	
14	--	

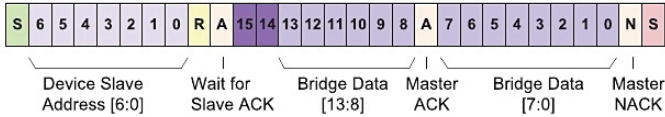
## Output Option: Digital I<sup>2</sup>C

Parameter	Units	Min	Typ	Max	Notes
<b>Digital Performance</b>					
Resolution (ADC)	bit		14		16383 steps
I <sup>2</sup> C Slave Address			0x28		
Sampling Rate	kHz		2		
I <sup>2</sup> C Bit Rate	kbits/s	100		400	
I <sup>2</sup> C Mode			Update		

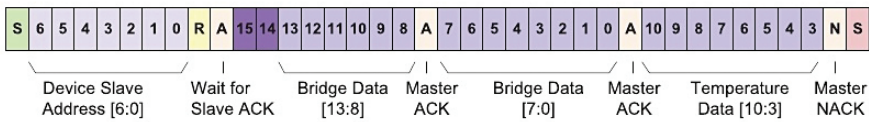
Digital Performance Parameters 3.3 and 5 volt Excitation					
		2 inH <sub>2</sub> O		5 inH <sub>2</sub> O	
Parameter	Units	Min	Max	Min	Max
Offset	Counts	1311	1966	1442	1835
Span	Counts	13106		13106	

# Digital I2C Update Mode Output Options

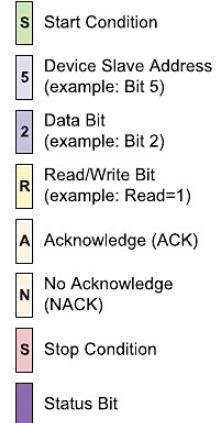
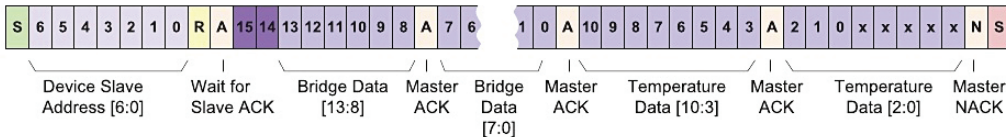
## Read\_DF2: Data Fetch 2 Bytes



## Read\_DF3: Data Fetch 3 Bytes

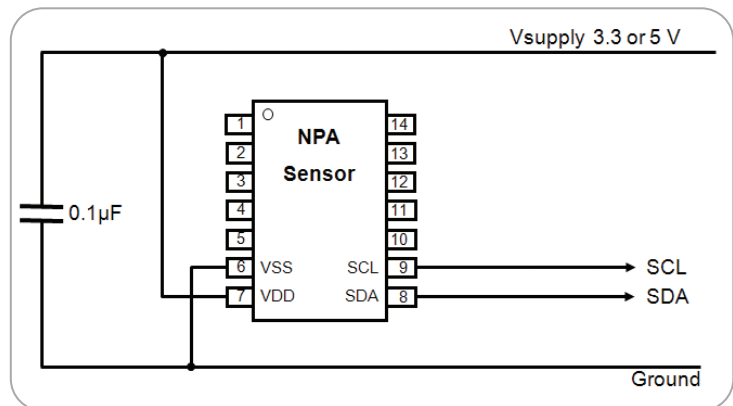


## Read\_DF4: Data Fetch 4 Bytes



## NPA I<sup>2</sup>C Pinout

Pin #	Digital I <sup>2</sup> C	Function Notes
1	--	
2	--	
3	NC	Do Not Connect
4	NC	Do Not Connect
5	--	
6	VSS	Ground Supply
7	VDD	Supply Voltage
8	SDA	Serial Data, Calibration Interface
9	SCL	Serial Clock, Calibration Interface
10	--	
11	NC	Do Not Connect
12	NC	Do Not Connect
13	--	
14	--	



Recommended tubing size of 3/32" ID, 7/32" OD, 1/16" wall thickness (All measurements given in mm)



## Ordering Information

Model NPA	Code	Description
	300	Analog Amplified Output, 3.3Vdc Excitation, Calibrated sensor
	500	Analog Amplified Output, 5Vdc Excitation, Calibrated sensor
	700	I <sup>2</sup> C - Digital output, Calibrated Sensor, 2 byte, 5Vdc Excitation
	730	I <sup>2</sup> C - Digital output, Calibrated Sensor, 2 byte, 3.3Vdc Excitation
		<b>Code Port Type</b>
	B	2 barbed ports for Gauge and Differential pressure types
		<b>Code Pressure Range</b>
	02W	2"H2O (0.5 KPa)
	05W	5"H2O (1.24 KPa)
		<b>Code Pressure Type</b>
	G	Gauge
	D	Differential

NPA	-	700	B	-	02W	D	EXAMPLE
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- Contact NovaSensor for custom port options.
- Refer to application guide 910-289 for more information.
- Product is RoHS:2010 compliant.
- For standard pressure version see datasheet AAS-920-477J

## Warranty

NovaSensor warrants its products against defects in material and workmanship for 12 months from the date of shipment. Products not subjected to misuse will be repaired or replaced. NovaSensor reserves the right to make changes without further notice to any products herein. NovaSensor makes no warranty, representation or guarantee regarding the suitability of its products for any particular application. NovaSensor does not assume any liability arising out of the application or use of any product or circuit and specifically disclaims, and all liability, without limitation consequential or incidental damages. The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. No implied statutory warranty or merchantability or fitness for particular purpose shall apply.

