

## Solid State Pressure Sensor

ANALOG  
OUTPUT

### STX Series – Model 13A

#### FEATURES

- Fastening Mount
- Calibrated Span and Offset
- Multi-order Temperature compensation
- 0.5V/4.5V or optional
- 3V or 5V Supply
- Customized Configuration upon request



#### DESCRIPTION

The Series STX Model 13A is a smart pressure sensor with calibrated and amplified output. The ceramic hybrid package performs excellent isolation to external stress during operation. Digital compensation of sensor offset, sensitivity, temperature drift and nonlinearity is accomplished in factory via an internal DSP running a correction algorithm with calibration coefficients stored in on-chip EEPROM.

A variety of output configuration, including resolution, sampling rate, output interface are available to provide simple and ready-to-use solution for a wide range of application.

The Series STX 13A is available for pressure range from 0.15 psi to 100 psi. Please contact factory for detail.

# Ordering Information

Series STX 13 Analog

**13A L - XXX G - X 0 X X**

**Series**

**Supply Voltage**

Blank = 4.75 to 5.25 V  
L = 2.75 to 3.33 V

**Type of Pressure**

**G:** Gage (Port B only)  
**H:** Gage (Dual Port)  
**A:** Absolute (Port A only)  
**D:** Differential (Dual Port)

**Option**

**10:** No special request  
**97:** Compensated Temp 0~85 degC

Other options available upon request.

**Pressure range**

**005** = 0 ~ 5 psi  
**007** = 0 ~ 7 psi  
**015** = 0 ~ 15 psi  
**030** = 0 ~ 30 psi  
**050** = 0 ~ 50 psi  
**100** = 0 ~ 100 psi

(below are Low-Pressure)

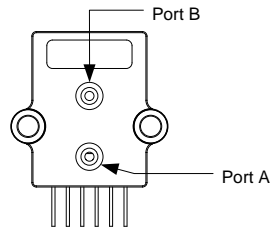
**L15** = 0 ~ 0.15 psi  
**L30** = 0 ~ 0.3 psi  
**L50** = 0 ~ 0.5 psi  
**L70** = 0 ~ 0.7 psi  
**001** = 0 ~ 1 psi  
**002** = 0 ~ 2 psi  
**003** = 0 ~ 3 psi

Notes:

Custom ranges and units are available upon request. Please contact factory.

**Leading Direction**

**0** = same side



1. Port B is used for positive differential
2. Port A is used for absolute
3. Port B is used for gage

**Type of Output**

**0** = 1-wire P  
**1** = 1-wire P+T  
**2** = 0.5 to 4.5 V  
**3** = 0.2 to 4.8 V  
**4** = N/A  
**5** = 0 to 1 V  
**6** = 0.2 to 4.7 V  
**7** = N/A  
**8** = I<sup>2</sup>C  
**9** = SPI  
**S** = Special

NOTES:

1. Specifying differential pressure means a  $\pm$  pressure range.
2. Differential pressure can be specified to a maximum of +/- 100 psi.
3. Custom output, pressure range and temperature compensated range are available.
4. Negative gage normally has offset (0.5V) at 0 psi and full scale output (4.5V). Reverse is also applicable.
5. Accuracy may vary on pressure range
6. Minimum absolute pressure that can be specified is 100 psia
7. Medium is available for clean air. For other medium please contact factory.

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### Characteristics

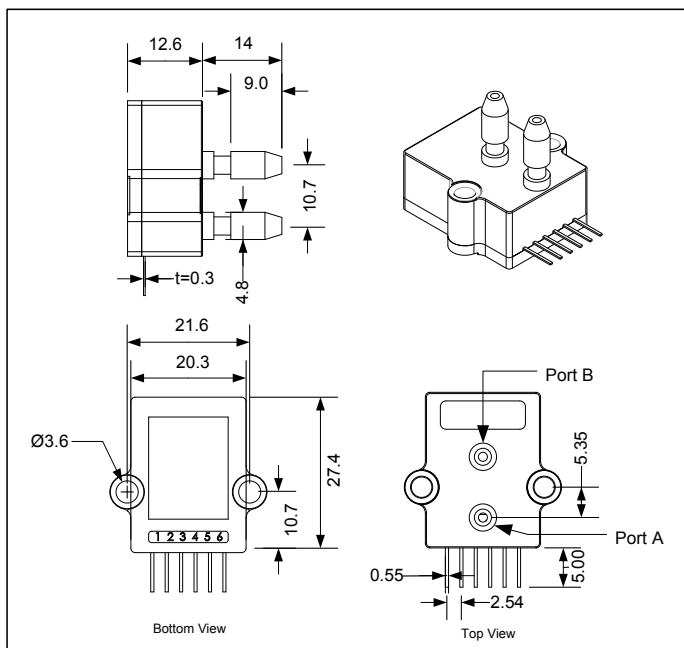
Unless otherwise specified, all parameters are measured at 3/5V, 25 °C and 60% RH

Parameters	Min	Typ	Max	Unit
Supply Voltage <sup>1</sup>	2.75		5.25	V
Supply Current <sup>1</sup>		2.5		mA
Pressure Range <sup>2</sup>	5		100	PSI
Zero Output <sup>4</sup>	0.428	0.50	0.572	V
Span Output <sup>4</sup>		4.00		V
Accuracy <sup>3</sup>			1.8	%FS
Linearity <sup>3</sup>	-0.5		+0.5	%FS
Thermal Hysteresis <sup>3</sup>	-0.15		+0.15	%FS
Response Time		1	2	ms
Over Pressure <sup>5</sup>			3X	Rated Pressure
Temp - Compensating	0		+50	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C

**NOTES:**

- 1. Supply 3V or 5V must be ordered separately.
- 2. Smaller range and other units are also available for ordering
- 3. Accuracy includes NOL, hysteresis, TCS and TCO over 0/50°C, BFSL definition
- 4. For differential, offset = 2.50V, Span = ±2.00V
- 5. Wetted material: PA, RTV, Epoxy, ceramic, Au, nickel and silicon
- 6. Output is ratiometric to supply voltage
- 7. Output load resistance to Vss or Vdd: 2.5KΩ (min), 10KΩ (typ)

### Dimension



- NOTE:**
- 1. Port B is used for positive differential
  - 2. Port A is used for absolute
  - 3. Port B is used for gage
  - 4. All dimensions are mm

Pin #	Description
1	V <sub>SS</sub>
2	N.C.
3	N.C.
4	N.C.
5	V <sub>DD</sub>
6	SIG

- NOTES:**
- N.C. pins must be left floating
  - A 0.1µf capacitor must be connected between V<sub>DD</sub> and V<sub>SS</sub>
  - \* Pin out configuration may vary, refer to individual data sheet
  - Soldering reflow: 250 °C for 5 sec max.

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### Characteristics

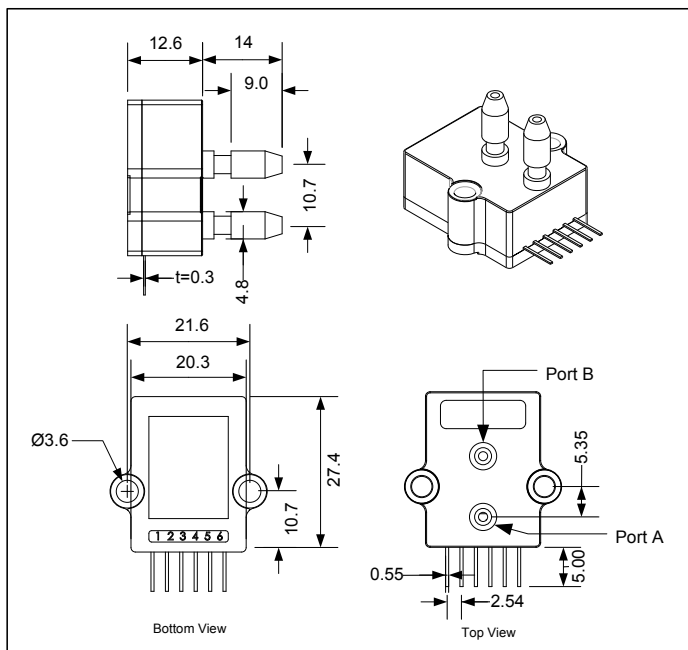
Unless otherwise specified, all parameters are measured at 3/5V, 25 °C and 60% RH

Parameters	Min	Typ	Max	Unit
Supply Voltage <sup>1</sup>	2.75		5.25	V
Supply Current <sup>1</sup>		2.5		mA
Pressure Range <sup>2</sup>	0.15		3	PSI
Zero Output <sup>4</sup>	0.412	0.50	0.588	V
Span Output <sup>4</sup>		4.00		V
Accuracy <sup>3</sup>			2.2	%FS
Linearity <sup>3</sup>	-0.5		+0.5	%FS
Thermal Hysteresis <sup>3</sup>	-0.15		+0.15	%FS
Response Time		1	2	ms
Over Pressure <sup>5</sup>			3X	Rated Pressure
Temp - Compensating	0		+50	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C

**NOTES:**

- 1. Supply 3V or 5V must be ordered separately.
- 2. Smaller range and other units are also available for ordering
- 3. Accuracy includes NOL, hysteresis, TCS and TCO over 0/50°C, BFSL definition
- 4. For differential, offset = 2.50V, Span = ±2.00V
- 5. Over-pressure will vary on different range
- 6. Wetted material: PA, RTV, Epoxy, ceramic, Au, nickel and silicon
- 7. Output is ratiometric to supply voltage
- 8. Output load resistance to Vss or Vdd: 2.5KΩ (min), 10KΩ (typ)
- 9. Zeroing at installation is required

### Dimension



**NOTE:**

- 1. Port B is used for positive differential
- 2. Port A is used for absolute
- 3. Port B is used for gage
- 4. All dimensions are mm

Pin #	Description
1	V <sub>SS</sub>
2	N.C.
3	N.C.
4	N.C.
5	V <sub>DD</sub>
6	SIG

**NOTES:**

- N.C. pins must be left floating
- A 0.1µf capacitor must be connected between V<sub>DD</sub> and V<sub>SS</sub>
- \* Pin out configuration may vary, refer to individual data sheet
- Soldering reflow: 250 °C for 5 sec max.

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### Characteristics

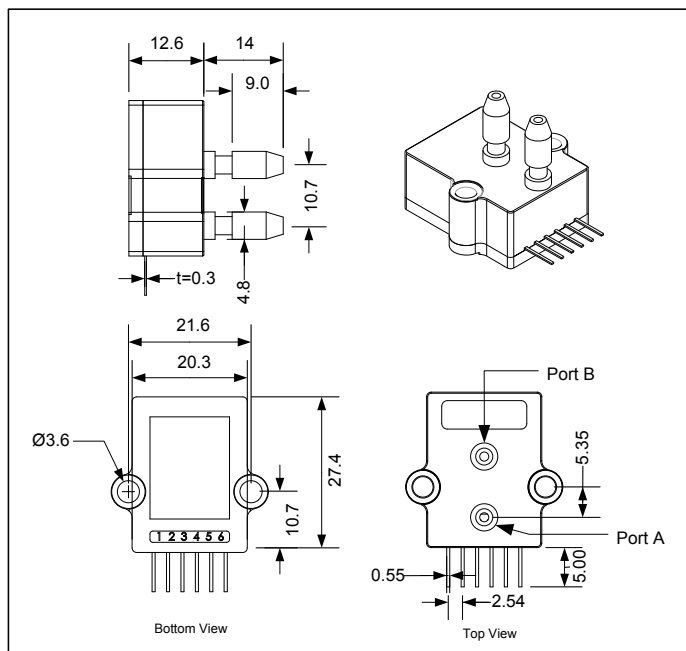
Unless otherwise specified, all parameters are measured at 3/5V, 25 °C and 60% RH

Parameters	Min	Typ	Max	Unit
Supply Voltage <sup>1</sup>	2.75		5.25	V
Supply Current <sup>1</sup>		2.5		mA
Pressure Range <sup>2</sup>	5		100	PSI
Zero Output <sup>4</sup>	0.428	0.50	0.572	V
Span Output <sup>4</sup>		4.00		V
Accuracy <sup>3</sup>			1.8	%FS
Linearity <sup>3</sup>	-0.5		+0.5	%FS
Thermal Hysteresis <sup>3</sup>	-0.15		+0.15	%FS
Response Time		1	2	ms
Over Pressure <sup>5</sup>			3X	Rated Pressure
Temp - Compensating	0		+85	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C

**NOTES:**

- 1. Supply 3V or 5V must be ordered separately.
- 2. Smaller range and other units are also available for ordering
- 3. Accuracy includes NOL, hysteresis, TCS and TCO over 0/50°C, BFSL definition
- 4. For differential, offset = 2.50V, Span = ±2.00V
- 5. Wetted material: PA, RTV, Epoxy, ceramic, Au, nickel and silicon
- 6. Output is ratiometric to supply voltage
- 7. Output load resistance to Vss or Vdd: 2.5KΩ (min), 10KΩ (typ)

### Dimension



**NOTE:**

- 1. Port B is used for positive differential
- 2. Port A is used for absolute
- 3. Port B is used for gage
- 4. All dimensions are mm

Pin #	Description
1	V <sub>SS</sub>
2	N.C.
3	N.C.
4	N.C.
5	V <sub>DD</sub>
6	SIG

**NOTES:**

- N.C. pins must be left floating
- A 0.1µf capacitor must be connected between V<sub>DD</sub> and V<sub>SS</sub>
- \* Pin out configuration may vary, refer to individual data sheet
- Soldering reflow: 250 °C for 5 sec max.

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## Solid State Pressure Sensor

DIGITAL  
OUTPUT

### STX Series – Model 13D

#### FEATURES

- Fastening Mount
- Calibrated Span and Offset
- Multi-order Temperature compensation
- OWI, I2C or SPI Interface
- 3V or 5V Supply
- Customized Configuration upon request



#### DESCRIPTION

The Series CCD Model 13D is a smart pressure transducer with digital output via 1-wire serial, I<sup>2</sup>C or SPI interface. Digital compensation of sensor offset, sensitivity, temperature drift and nonlinearity is accomplished in factory via an internal DSP running a correction algorithm with calibration coefficients stored in on-chip EEPROM.

A variety of output configuration, including resolution, sampling rate, output interface are available to provide simple and ready-to-use solution for a wide range of application.

The Series STX 13D is available for pressure range from 0.15 psi to 100 psi. Please contact factory for detail.

## Ordering Information

Series CCD 13 Digital

**13D L - XXX G - X 0 X X**

### Series

### Supply Voltage

Blank = 4.75 to 5.25 V  
L = 2.75 to 3.33 V

### Type of Pressure

**G:** Gage (Port B only)  
**H:** Gage (Dual Port)  
**A:** Absolute (Port A only)  
**D:** Differential (Dual Port)

### Option

**0:** No special request

### Sampling Rate

**0** = 1 kHz  
**1** = 200 Hz  
**2** = 40 Hz  
**3** = 8 Hz

### Pressure range

**005** = 0 ~ 5 psi  
**007** = 0 ~ 7 psi  
**015** = 0 ~ 15 psi  
**030** = 0 ~ 30 psi  
**050** = 0 ~ 50 psi  
**100** = 0 ~ 100 psi

(below are Low-Pressure)

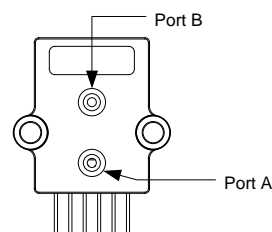
**L15** = 0 ~ 0.15 psi  
**L30** = 0 ~ 0.3 psi  
**L50** = 0 ~ 0.5 psi  
**L70** = 0 ~ 0.7 psi  
**001** = 0 ~ 1 psi  
**002** = 0 ~ 2 psi  
**003** = 0 ~ 3 psi

#### Notes:

Custom ranges and units are available upon request. Please contact factory.

### Leading Direction

**0** = same side



1. Port B is used for positive differential
2. Port A is used for absolute
3. Port B is used for gage

### Type of Output

**0** = 1-wire P  
**1** = 1-wire P+T  
**2** = 0.5 to 4.5 V  
**3** = 0.2 to 4.8 V  
**4** = N/A  
**5** = 0 to 1 V  
**6** = 0.2 to 4.7 V  
**7** = N/A  
**8** =  $I^2C$   
**9** = SPI  
**S** = Special

#### NOTES:

1. Specifying differential pressure means a  $\pm$  pressure range.
2. Differential pressure can be specified to a maximum of  $\pm$  100 psi.
3. Custom output, pressure range and temperature compensated range are available.
4. Negative gage normally has offset (0.5V) at 0 psi and full scale output (4.5V). Reverse is also applicable.
5. Accuracy may vary on pressure range
6. Minimum absolute pressure that can be specified is 100 psia
7. Medium is available for clean air. For other medium please contact factory.

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## Characteristics

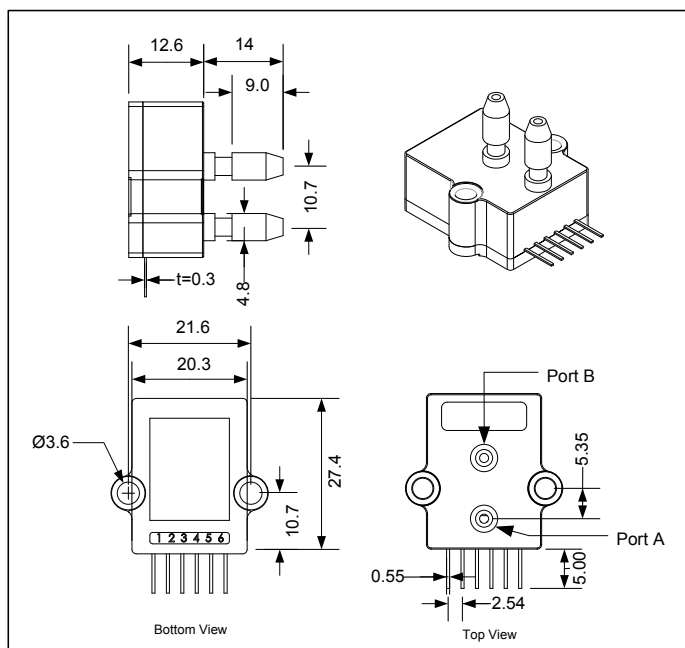
Unless otherwise specified, all parameters are measured at 3/5V, 25 °C and 60% RH

Parameters	Min	Typ	Max	Unit
Excitation <sup>1</sup>	2.75		5.25	V
Pressure range <sup>2</sup>	5		100	PSI
Resolution <sup>3</sup>		14		Bit
Accuracy <sup>3</sup>		±1.8		%FS, +1LSB
Zero Output <sup>4</sup>		0666		Hex
Full Scale Output <sup>4</sup>		3999		Hex
Warm-up Time		1	2	ms
Start-up Time			10	ms
Sampling Rate	8		1000	Hz
Temp - Compensating	0		50	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C
Over Pressure <sup>5</sup>			3X	Rated Pressure

### NOTES:

- Supply 3V or 5V must be ordered separately.
- Smaller range and other units are also available for ordering
- Accuracy includes NOL, hysteresis, TCS and TCO over 0/50°C, BFSL definition
- For differential pressure, offset = 2000 hex, FS = 666/3999
- Wetted material: PA, RTV, Epoxy, ceramic, Au, nickel and silicon
- Output is ratiometric to supply voltage
- Output load resistance to Vss or Vdd: 2.5KΩ (min), 10KΩ (typ)

## Dimension



### NOTE:

- Port B is used for positive differential
- Port A is used for absolute
- Port B is used for gage
- All dimensions are mm

Pin #	Description
1	V <sub>SS</sub>
2	N.C.
3	N.C.
4	N.C.
5	V <sub>DD</sub>
6	SIG

### NOTES:

- N.C. pins must be left floating  
 A 0.1µf capacitor must be connected between V<sub>DD</sub> and V<sub>SS</sub>  
 \* Pin out configuration may vary, refer to individual data sheet  
 Soldering reflow: 250 °C for 5 sec max.

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## Characteristics

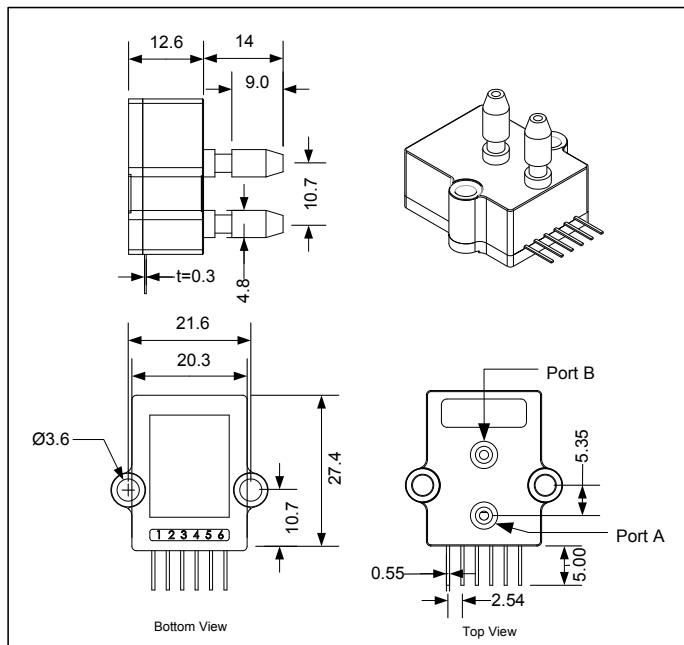
Unless otherwise specified, all parameters are measured at 3/5V, 25 °C and 60% RH

Parameters	Min	Typ	Max	Unit
Excitation <sup>1</sup>	2.75		5.25	V
Pressure range <sup>2</sup>	0.15		3	PSI
Resolution <sup>3</sup>	12			Bit
Accuracy <sup>3</sup>		±2.2		%FS, +1LSB
Zero Output <sup>4</sup>		0666		Hex
Full Scale Output <sup>4</sup>		3999		Hex
Warm-up Time		1	2	ms
Start-up Time			10	ms
Sampling Rate	8		1000	Hz
Temp - Compensating	0		50	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C
Over Pressure <sup>5</sup>			3X	Rated Pressure

### NOTES:

- Supply 3V or 5V must be ordered separately.
- Smaller range and other units are also available for ordering
- Accuracy includes NOL, hysteresis, TCS and TCO over 0/50°C, BFSL definition
- For differential pressure, offset = 2000 hex, FS = 666/3999
- Over-pressure will vary on different range
- Wetted material: PA, RTV, Epoxy, ceramic, Au, nickel and silicon
- Output load resistance to Vss or Vdd: 2.5KΩ (min), 10KΩ (typ)
- Zeroing at installation is required

## Dimension



### NOTE:

- Port B is used for positive differential
- Port A is used for absolute
- Port B is used for gage
- All dimensions are mm

Pin #	Description
1	V <sub>SS</sub>
2	N.C.
3	N.C.
4	N.C.
5	V <sub>DD</sub>
6	SIG

### NOTES:

- N.C. pins must be left floating  
 A 0.1µf capacitor must be connected between V<sub>DD</sub> and V<sub>SS</sub>  
 \* Pin out configuration may vary, refer to individual data sheet  
 Soldering reflow: 250 °C for 5 sec max.

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### Characteristics

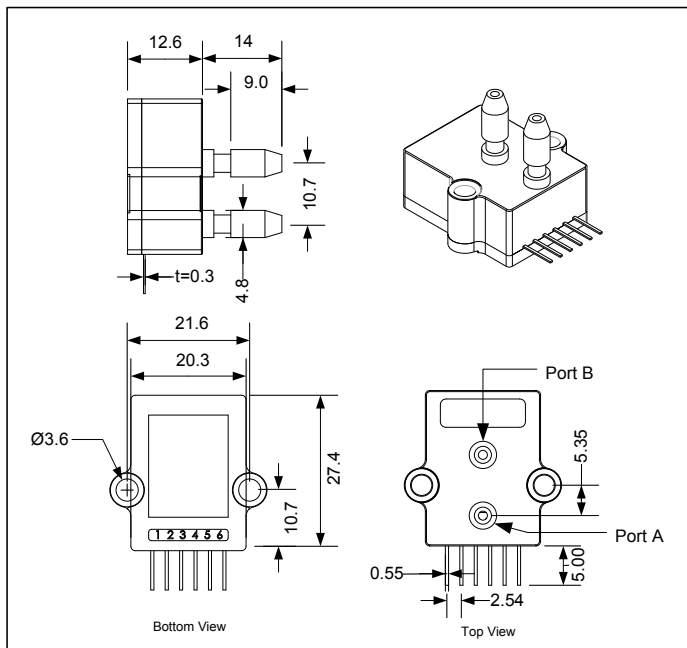
Unless otherwise specified, all parameters are measured at 3/5V, 25 °C and 60% RH

Parameters	Min	Typ	Max	Unit
Excitation <sup>1</sup>	2.75		5.25	
Pressure range <sup>2</sup>	5		100	PSI
Resolution <sup>3</sup>		12		Bit
Accuracy <sup>3</sup>		1.8		%FS, +1LSB
Zero Output <sup>4</sup>		0666		Hex
Full Scale Output <sup>4</sup>		3999		Hex
Voltage Low Level		0	0.2	V <sub>DD</sub>
Voltage High Level	0.8	1		V <sub>DD</sub>
Output Lo-Level			0.1	V <sub>DDA</sub>
SCL clocking	100		400	KHZ
System Freq		1		MHZ
Update Rate	1		125	ms
Temp - Compensating	0		50	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C
Over Pressure <sup>6</sup>			3X	Rated Pressure

**NOTES:**

- 1. Supply 3V or 5V must be ordered separately.
- 2. Smaller range and other units are also available for ordering
- 3. Accuracy includes NOL, hysteresis, TCS and TCO over 0/50°C, BFSL definition
- 4. For differential pressure, offset = 2000 hex, FS = 666/3999
- 5. Minimum pull-up on SDA and SCL is 1KΩ
- 6. 1X for 100
- 7. The factory setting for I2C slave address is 0x28
- 8. Wetted material: PA, RTV, Epoxy, ceramic, Au, nickel and silicon

### Dimension



- NOTE:**
- 1. Port B is used for positive differential
  - 2. Port A is used for absolute
  - 3. Port B is used for gage
  - 4. All dimensions are mm

Pin #	Description
1	GND
2	SDA
3	SCL
4	N.C.
5	SUP
6	N.C.

- NOTES:**
- N.C. pins must be left floating
  - A 0.1µf capacitor must be connected between V<sub>DD</sub> and V<sub>SS</sub>
  - \* Pin out configuration may vary, refer to individual data sheet
  - Soldering reflow: 250 °C for 5 sec max.

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## We are here for you. Addresses and Contacts.

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### Headquarter Switzerland:

Angst+Pfister Sensors and Power AG  
Thurgauerstrasse 66  
CH-8050 Zurich  
Phone +41 44 877 35 00  
sensorsandpower@angst-pfister.com

### Office Germany:

Angst+Pfister Sensors and Power Deutschland GmbH  
Edisonstraße 16  
D-85716 Unterschleißheim  
Phone +49 89 374 288 87 00  
sensorsandpower.de@angst-pfister.com

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### Headquarter Switzerland:

Angst+Pfister Sensors and Power AG  
Thurgauerstrasse 66  
CH-8050 Zurich  
Phone +41 44 877 35 00  
[sensorsandpower@angst-pfister.com](mailto:sensorsandpower@angst-pfister.com)

### Office Germany:

Angst+Pfister Sensors and Power Deutschland GmbH  
Edisonstraße 16  
D-85716 Unterschleißheim  
Phone +49 89 374 288 87 00  
[sensorsandpower.de@angst-pfister.com](mailto:sensorsandpower.de@angst-pfister.com)

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