Atlas Scientific™
Environmental Robotics

V 2.1

Revised 1/23

EZO-PRS™

Embedded Pressure Sensor

Reads	**Pressure (Gauge)**
	psi (0 - 74.000) Default
	atm (0 - 5.03)
	bar (0 - 5.102)
	kPa (0 - 510.212)
	inches of water (0 - 2,050.36”)
	cm of water (0 - 5,202.71 cm)
Response time	**1 reading per second**
Resolution	**0.001**
Accuracy	**+/- 2% (1 psi)**
Threaded connection	**1/4" NPT**
Cable	**1 meter / 5 lead**
Data protocol	**UART & I²C**
Default I²C address	**106 (0x6A)**
Data format	**ASCII**
Operating voltage	**3.3V – 5V**
Water resistant/dust proof	**IP67**

Written by Jordan Press
Designed by Noah Press

This is an evolving document, check back for updates.

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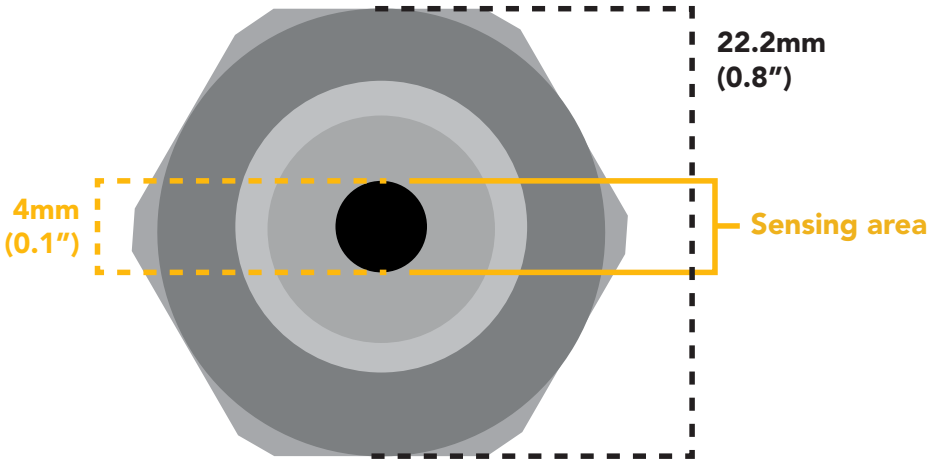
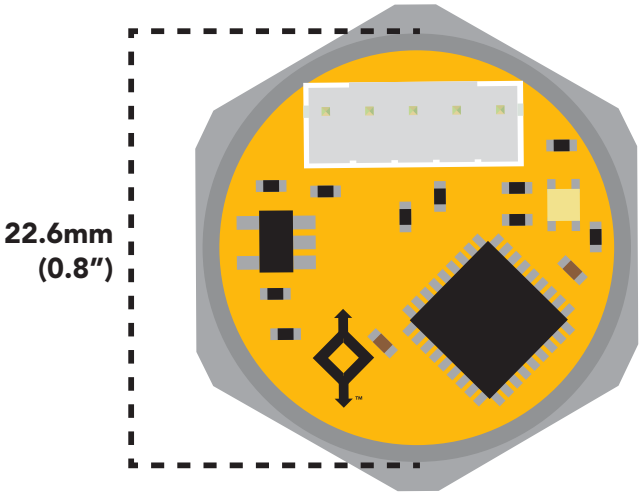
UART

I²C

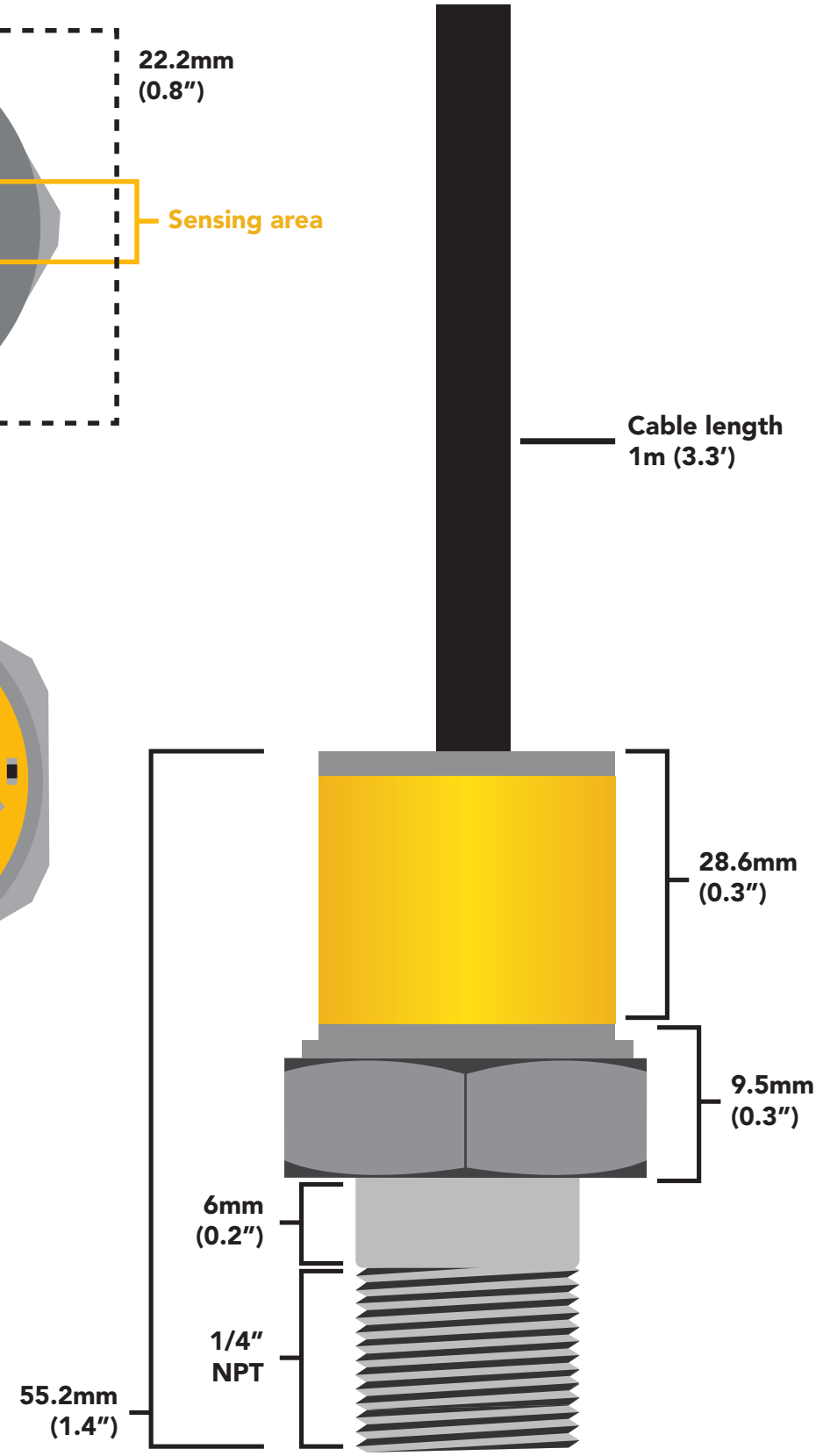
EZO-PRS™ dimensions



Front



Back



Weight 108g

Body 304L Stainless Steel

Durability IP67

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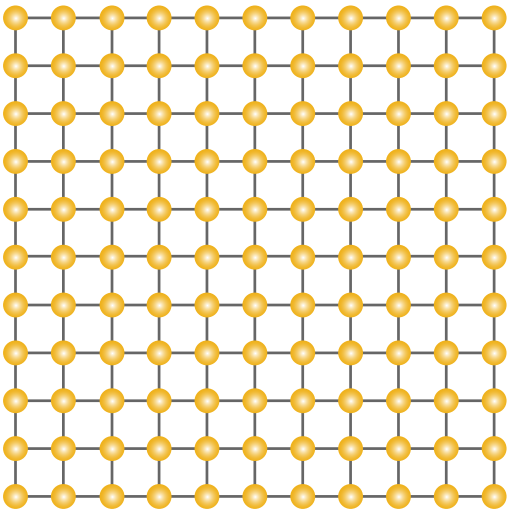
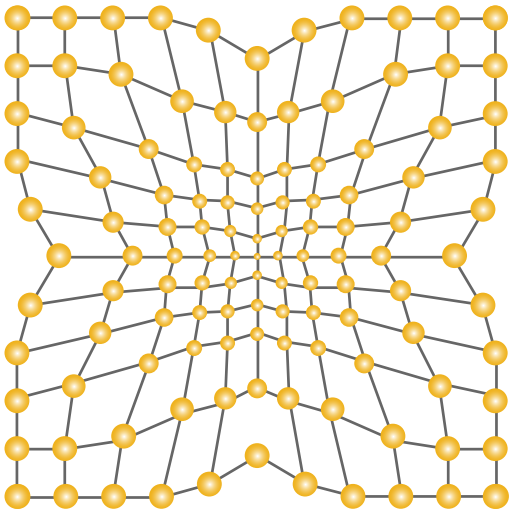
Operating principle

Internally the pressure sensor uses a piezoresistive semiconducting element. The semiconducting element *(a silicon wafer)* changes its resistance in proportion to pressure. As the pressure increases the atomic spacing of the silicon atoms decreases, this in turn lowers the resistance of the silicon wafer.



Atmospheric pressure



50 PSI

Chemical compatibly

Any gas, liquid or oil compatible with 304L Stainless Steel.

Power consumption

	LED	MAX	STANDBY	SLEEP
5V	ON	14.25 mA	14.25 mA	1.66 mA
	OFF	14.00 mA	14.00 mA	
3.3V	ON	13.21 mA	13.21 mA	0.85 mA
	OFF	12.95 mA	12.95 mA	

Absolute max ratings

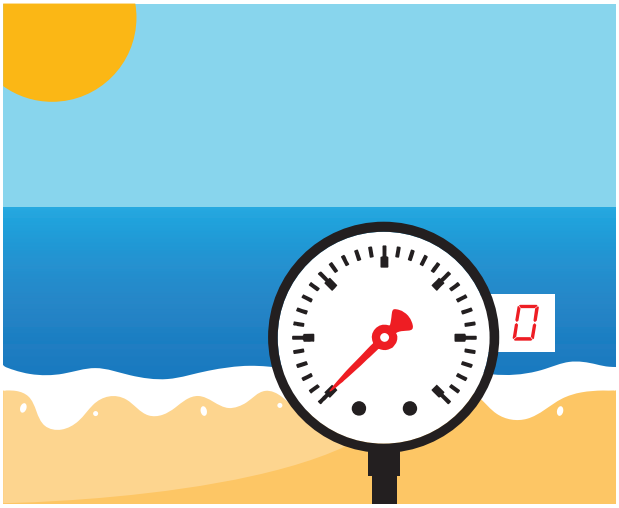
Parameter	MIN	TYP	MAX
Storage temperature (EZO-Pressure)	-65 °C		125 °C
Operational temperature (EZO-Pressure)	-40 °C	25 °C	105 °C
VCC	3.3V	5V	5.5V
Pressure limit (sensor damage)			~150 psi
Burst Pressure			7,500 psi

Gauge pressure vs Absolute pressure

The EZO-PRS™ reads ***gauge pressure*** only.

Gauge pressure

A gauge pressure sensor reads pressure relative to atmospheric pressure.

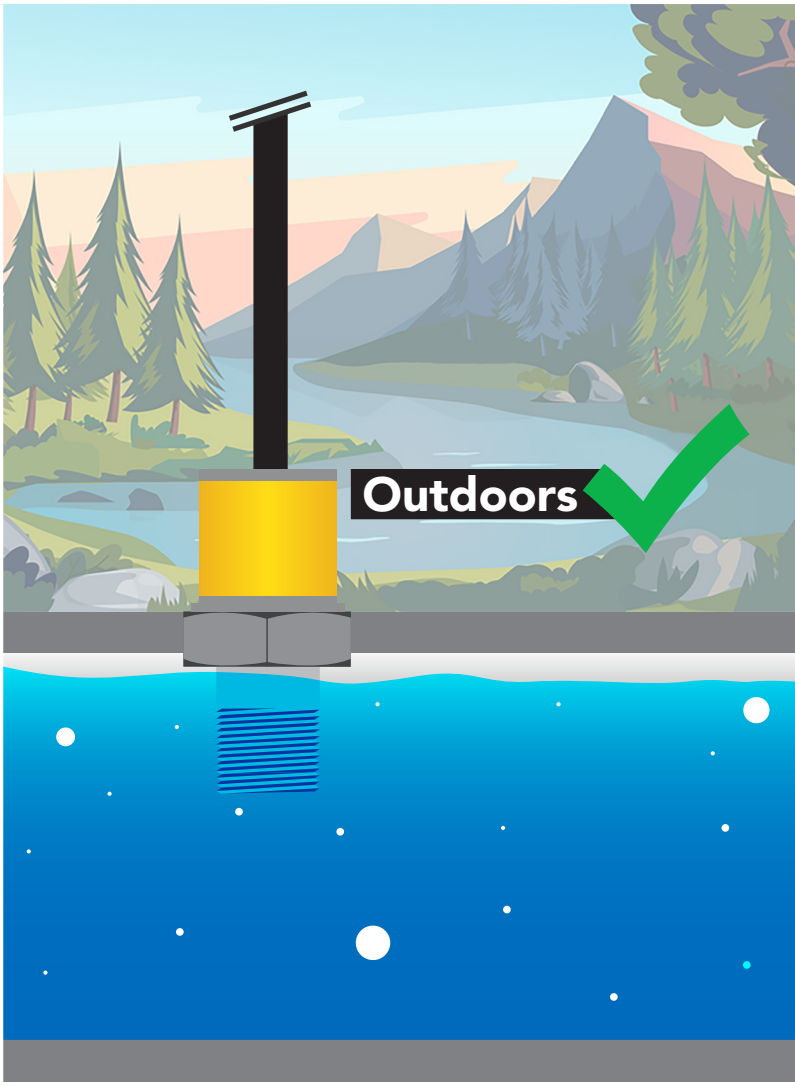


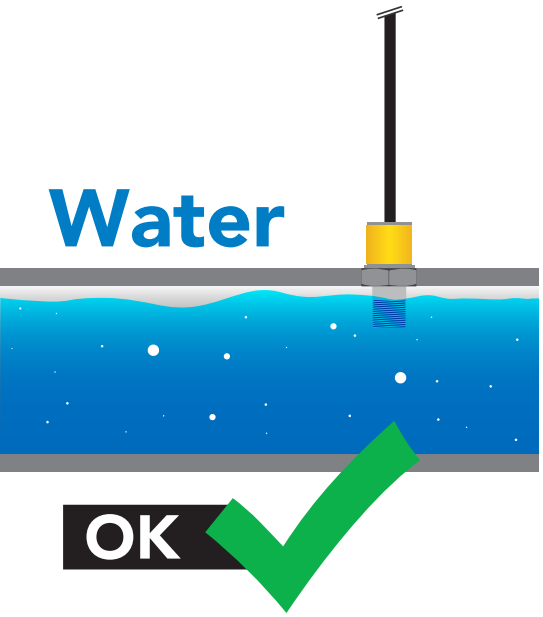
A gauge pressure sensor will always read atmospheric pressure as 0.

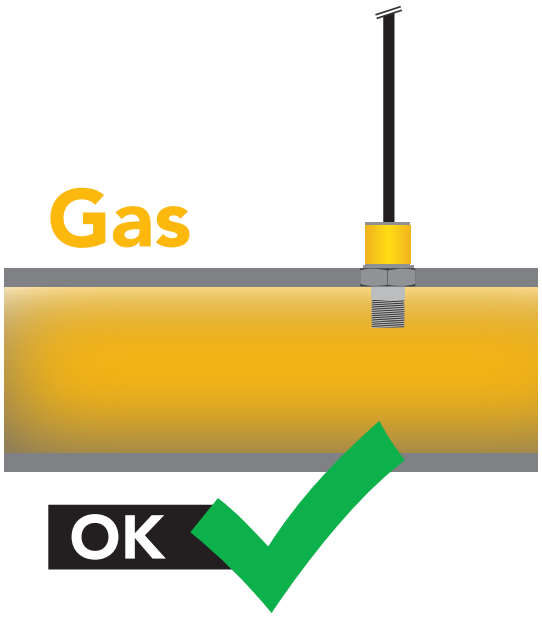
Absolute pressure

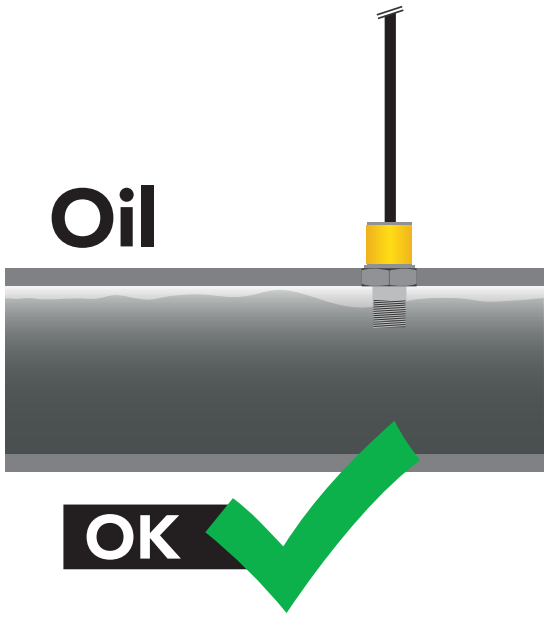
An absolute pressure sensor reads pressure relative to the vacuum of space.

Typical applications





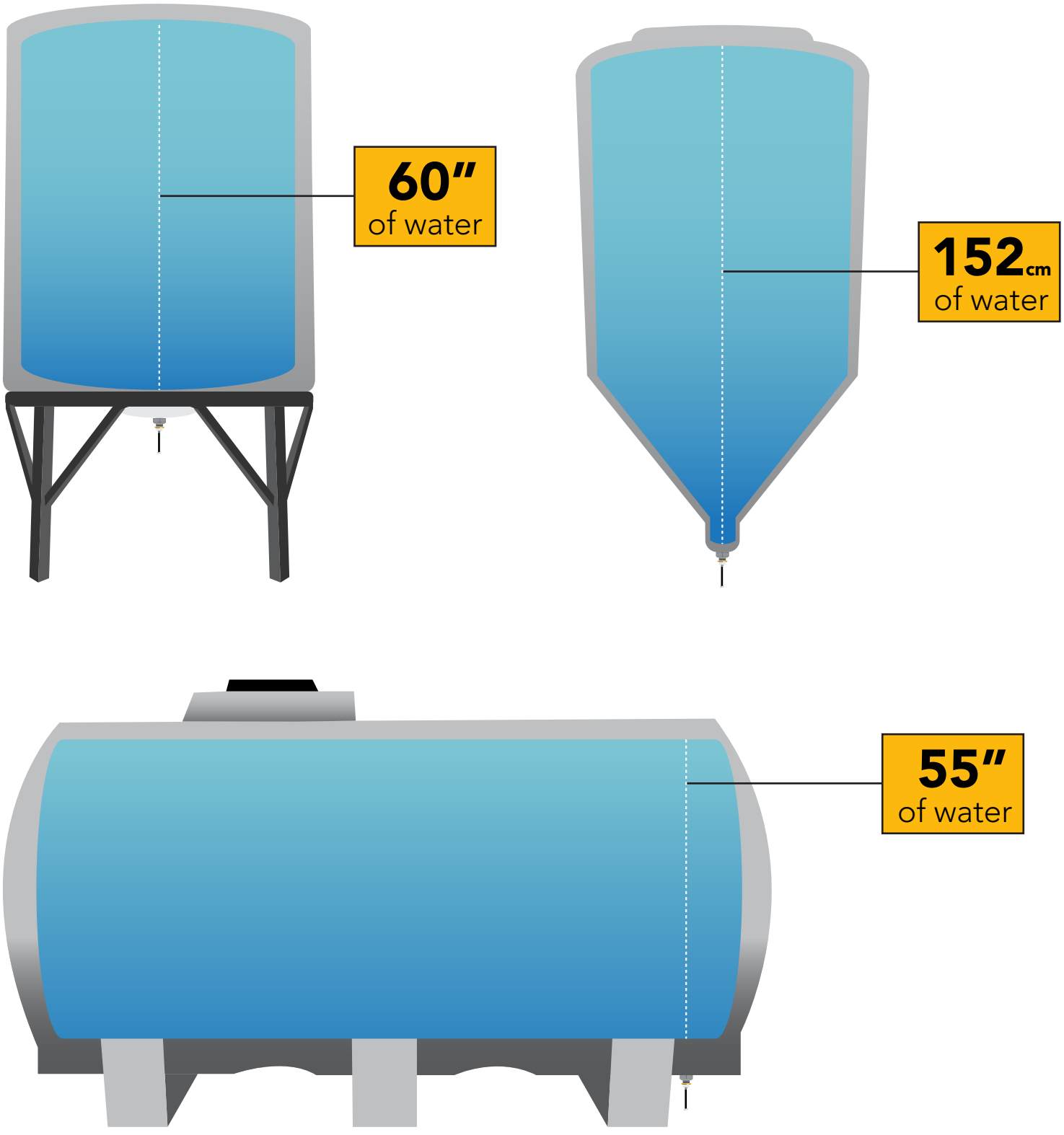




Typical applications

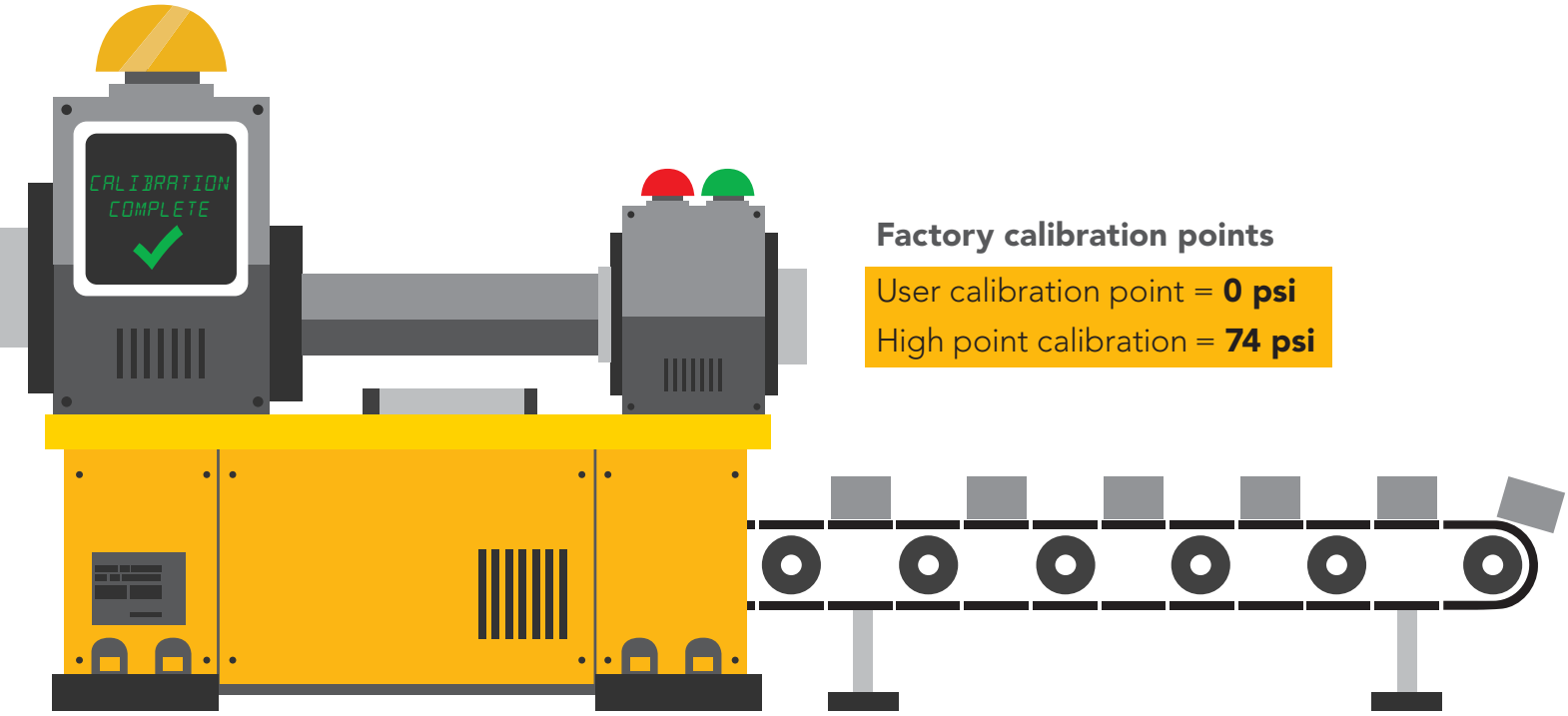
Measuring the water level in a tank

Setting the EZO-PRS™ to measure the hight of water is a great way to measure the volume of a tank. See page **24** or **48** for more info.



Calibration theory

The Atlas Scientific EZO-PRS™ Embedded Pressure Sensor comes half-calibrated. When using the sensor for the first time, it is common to see a small pressure reading even though it is not connected to a pressure source. Issue the "Cal,0" command to complete the calibration process.



Factory calibration points

User calibration point = **0 psi**

High point calibration = **74 psi**

Pin out

Data and power cable pinout

White	–	**RX/SCL**
Green	–	**TX/SDA**
Black	–	**GND**
Red	–	**VCC**
Blue	–	**ALM**

The interrupt pin will go high when a set pressure level has been crossed.

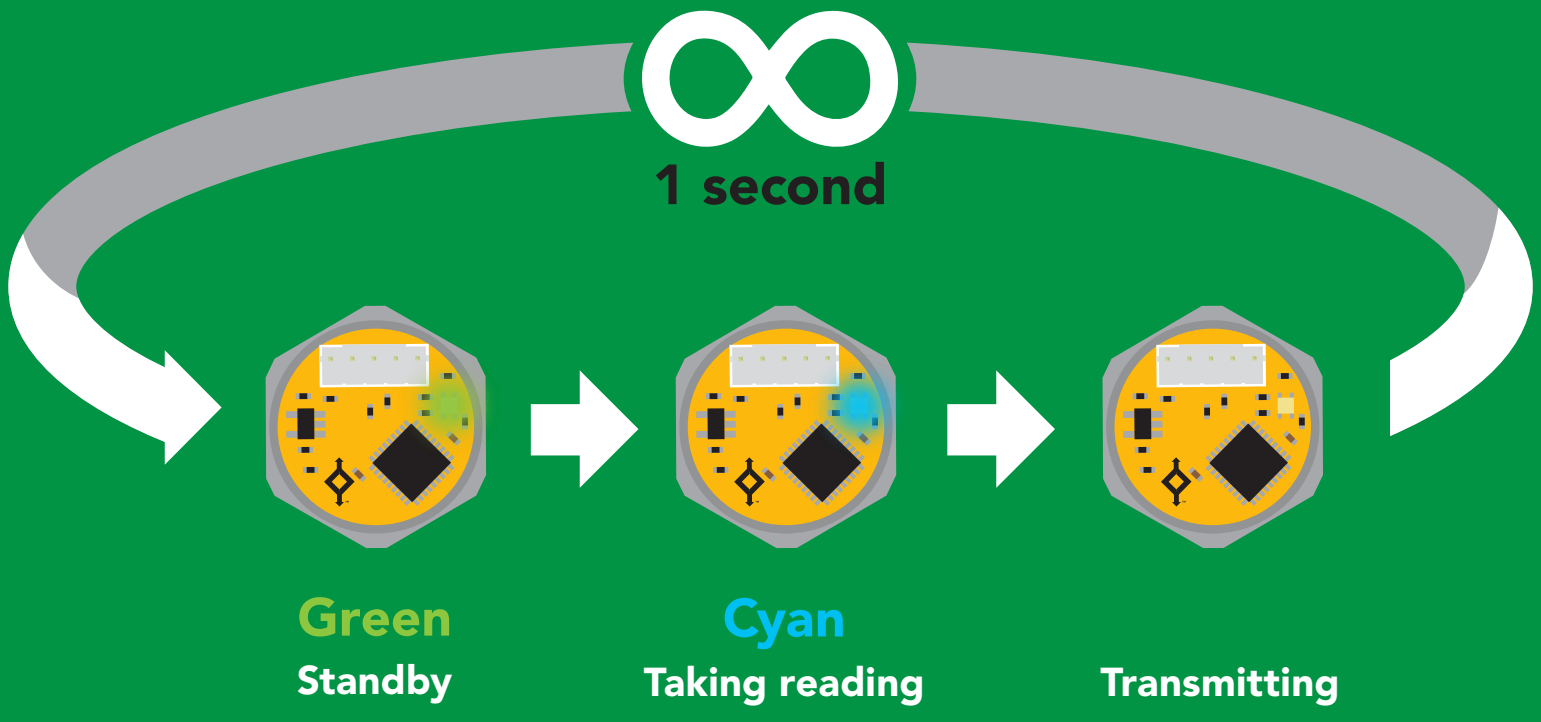
If unused leave **ALM** floating. Do not connect **ALM** to **VCC** or **GND**.

See page **21** or **45** to enable pressure level alarm.

Default state

UART mode

Baud	**9,600**
Readings	**continuous**
Units	**PSI**
Speed	**1 reading per second**
LED	**on**



✓ Available data protocols

UART

Default

I²C

X Unavailable data protocols

SPI

Analog

RS-485

Mod Bus

4–20mA

UART mode

Settings that are retained if power is cut

Baud rate
Calibration
Continuous mode
Custom calibration
Device name
Enable/disable response codes
Hardware switch to I^2C mode
LED control
Protocol lock
Software switch to I^2C mode

Settings that are *NOT* retained if power is cut

Find
Sleep mode

UART mode

8 data bits	no parity
1 stop bit	no flow control

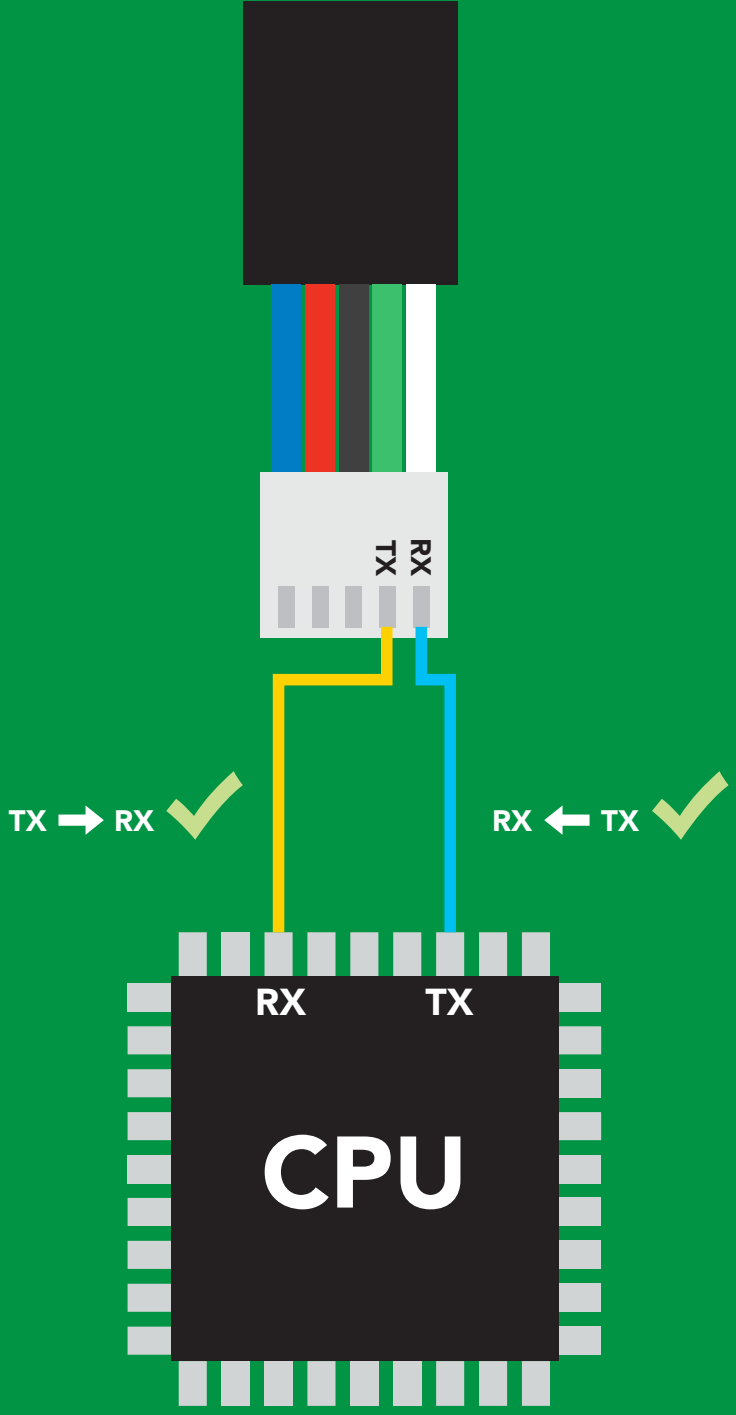
Baud

300
1,200
2,400
9,600 default
19,200
38,400
57,600
115,200

RX
Data in

TX
Data out

Vcc 3.3V – 5.5V



Data format

Output	pressure
Units	PSI **default** (ATM, kPa, bar, inch's of water cm of water)
Encoding	ASCII
Format	string
Terminator	carriage return
Data type	floating point
Decimal places	3
Smallest string	3 characters
Largest string	39 characters

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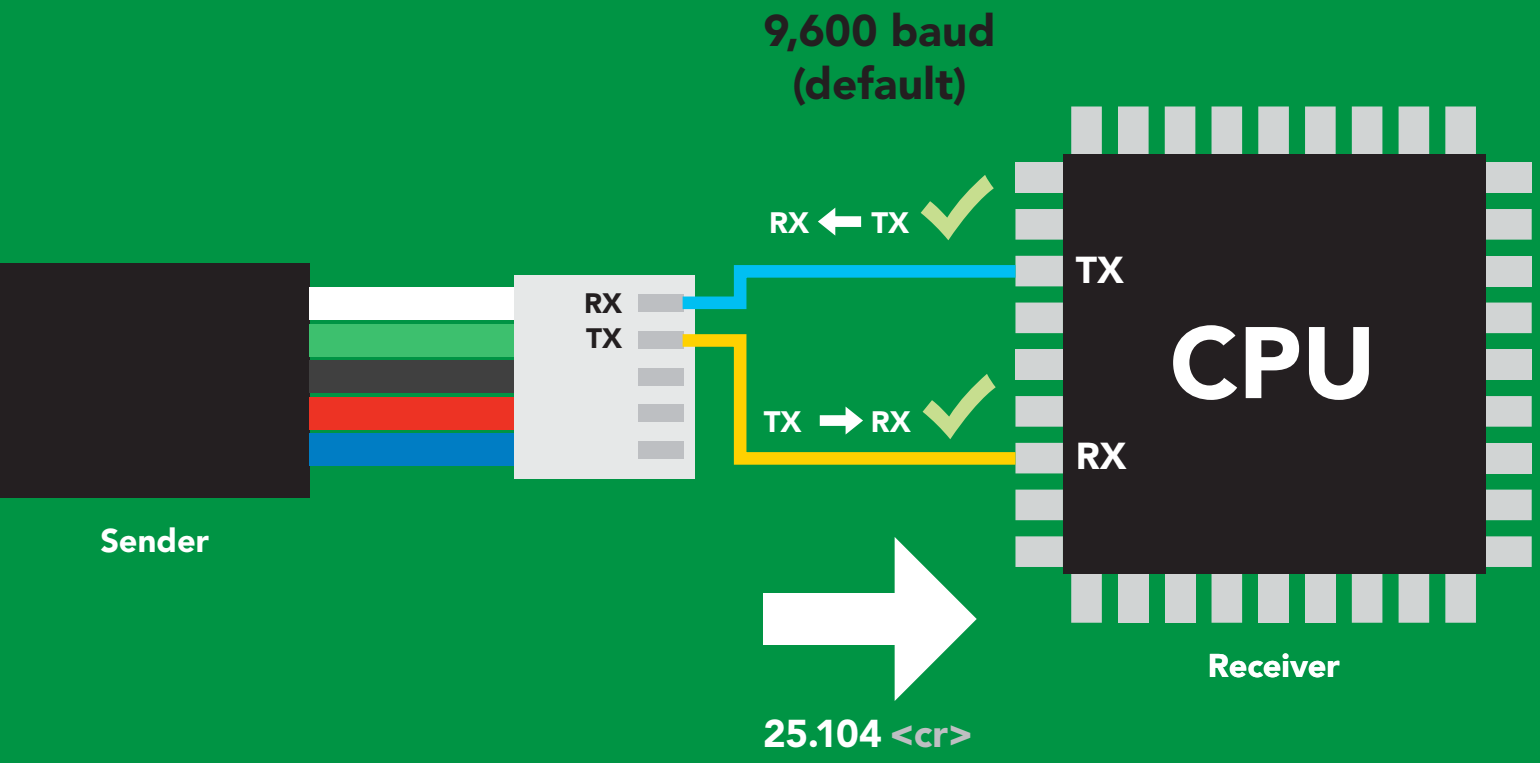
Receiving data from device

2 parts

ASCII data string
Command

Carriage return <cr>
Terminator



Advanced

ASCII:	2	5	.	1	0	4	<cr>
Hex:	32	35	2E	31	30	34	0D
Dec:	50	53	46	49	48	52	13

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Sending commands to device

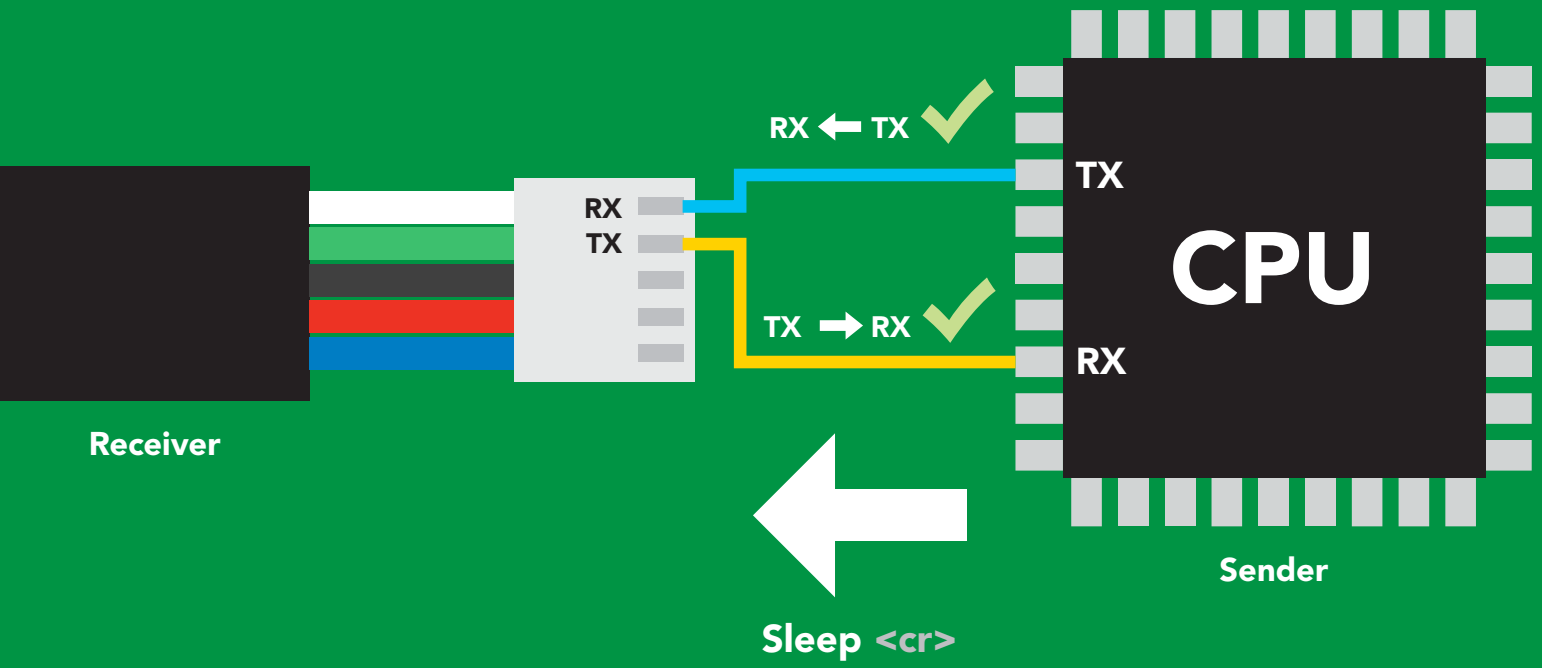
2 parts

Command (not case sensitive)

ASCII data string

Carriage return <cr>

Terminator



Advanced

ASCII:	S	l	e	e	p	<cr>
Hex:	53	6C	65	65	70	0D
Dec:	83	108	101	101	112	13

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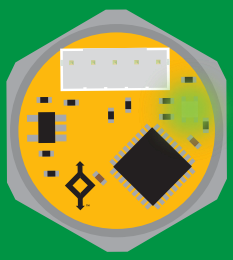
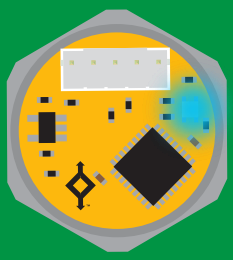
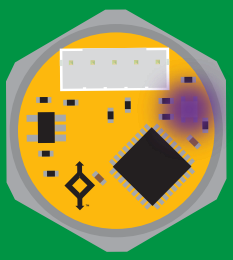
LED color definition



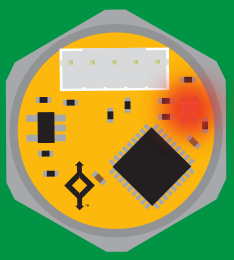
Green
UART standby



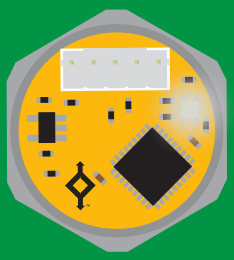
Cyan
Taking reading



Purple
Changing baud rate



Red
Command not understood



White
Find

5V	LED ON **+.25 mA**
3.3V	**+.26 mA**

UART mode
command quick reference

All commands are ASCII strings or single ASCII characters.

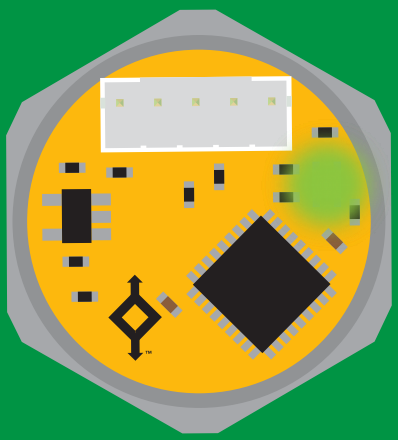
Command	Function		Default state
Alarm	enable/disable alarm	pg. 21	n/a
Baud	change baud rate	pg. 30	9,600
C	enable/disable continuous mode	pg. 19	enabled
Cal	performs custom calibration	pg. 22	n/a
Dec	add/remove decimal places	pg. 23	n/a
Factory	enable factory reset	pg. 32	n/a
Find	finds device with blinking white LED	pg. 18	n/a
i	device information	pg. 26	n/a
I2C	change to I²C mode	pg. 33	not set
L	enable/disable LED	pg. 17	enabled
Name	set/show name of device	pg. 25	not set
Plock	enable/disable protocol lock	pg. 31	disabled
R	returns a single reading	pg. 20	n/a
Sleep	enter sleep mode/low power	pg. 29	n/a
Status	retrieve status information	pg. 28	enable
U	pressure units	pg. 24	psi
*OK	enable/disable response codes	pg. 27	enable

LED control

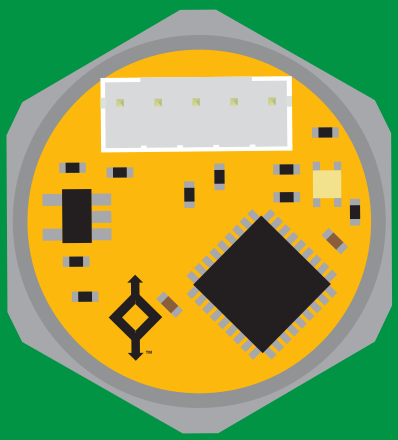
Command syntax

L,1 <cr> LED on **default**
L,0 <cr> LED off
L,? <cr> LED state on/off?

Example	Response
L,1 <cr>	*OK <cr>
L,0 <cr>	*OK <cr>
L,? <cr>	?L,1 <cr> or ?L,0 <cr> *OK <cr>



L,1



L,0

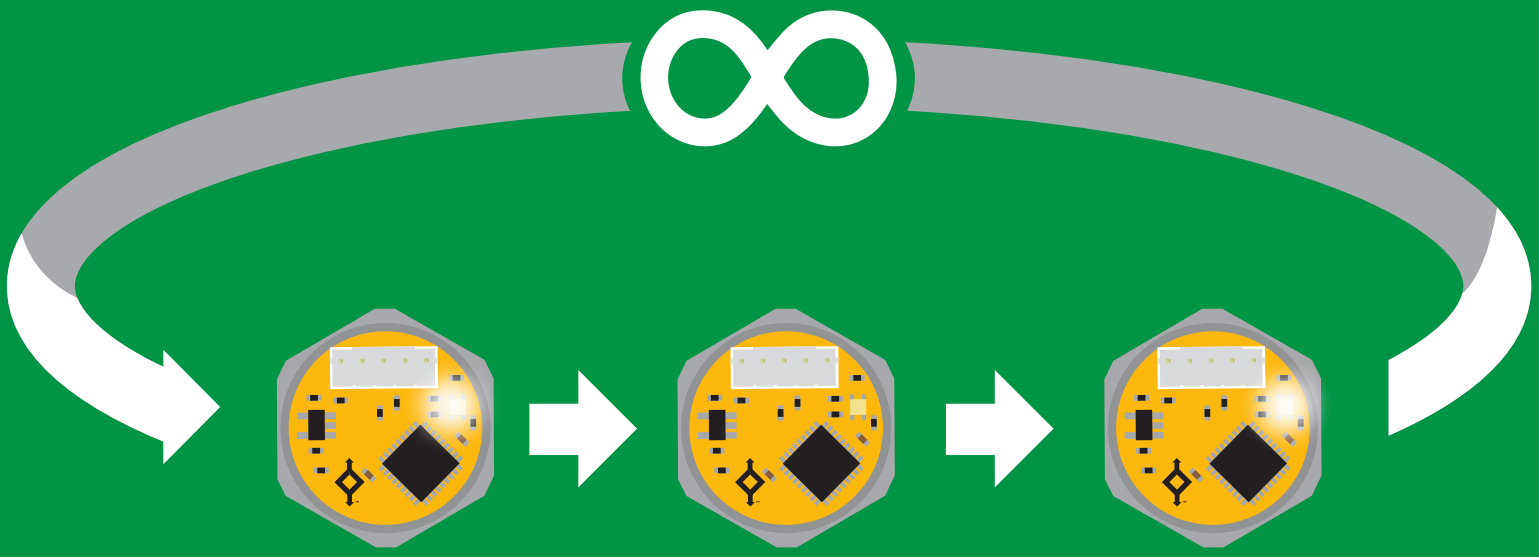
Find

Command syntax

This command will disable continuous mode
Send any character or command to terminate find.

Find <cr> **LED rapidly blinks white, used to help find device**

Example	Response
Find <cr>	***OK** <cr>



Continuous mode

Command syntax

C,1 <cr> enable continuous readings once per second **default**

C,n <cr> continuous readings every n seconds (n = 2 to 99 sec)

C,0 <cr> disable continuous readings

C,? <cr> continuous reading mode on/off?

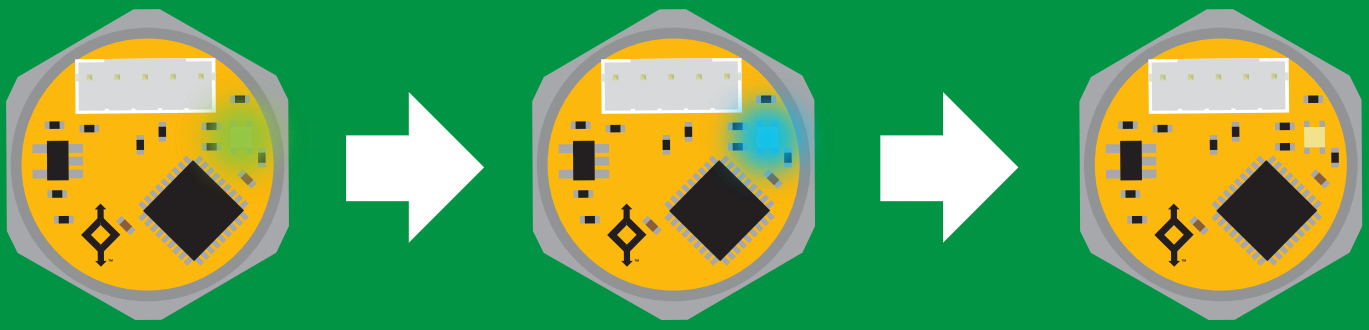
Example	Response
C,1 <cr>	*OK <cr> pressure (1 sec) <cr> pressure (2 sec) <cr> pressure (n sec) <cr>
C,30 <cr>	*OK <cr> pressure (30 sec) <cr> pressure (60 sec) <cr> pressure (90 sec) <cr>
C,0 <cr>	*OK <cr>
C,? <cr>	?C,1 <cr> or ?C,0 <cr> or ?C,30 <cr> *OK <cr>

Single reading mode

Command syntax

R <cr> takes single reading

Example	Response
R <cr>	38.462 <cr> *OK <cr>



Green
Standby

Cyan
Taking reading

Transmitting

1 second

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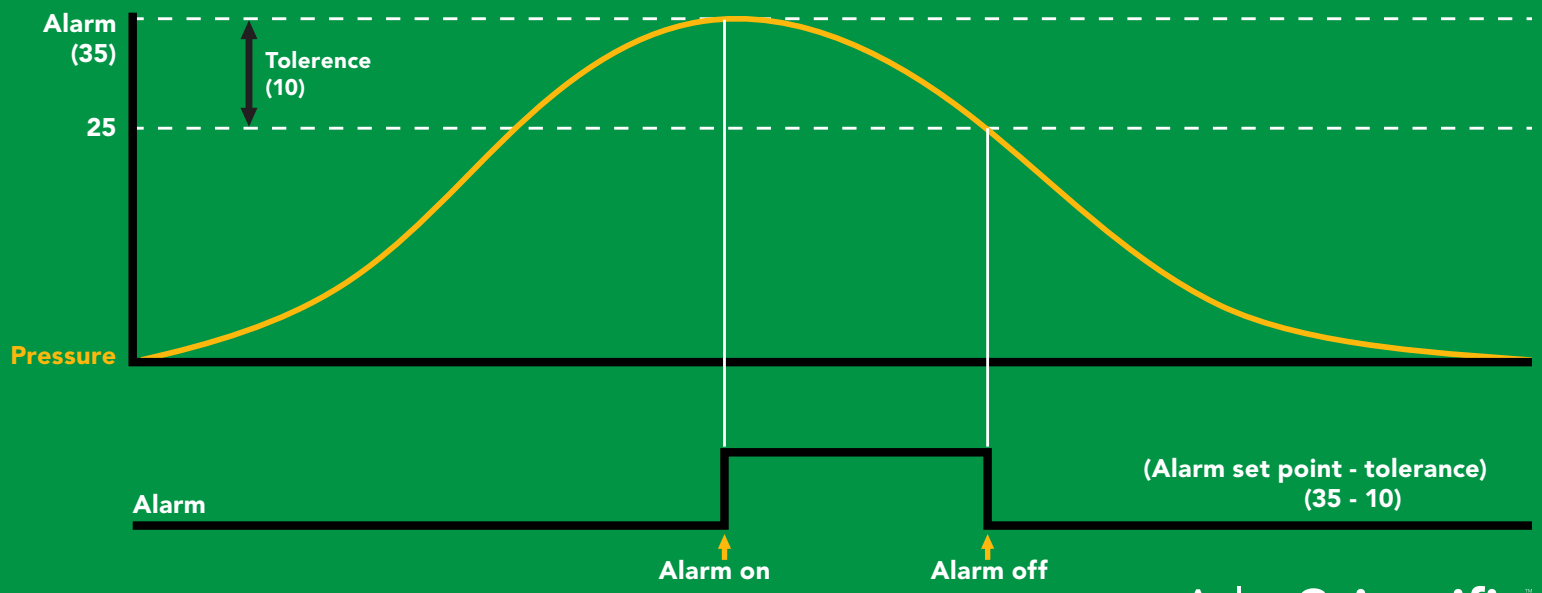
Alarm

Command syntax

The alarm pin will = 1 when pressure levels are > alarm set point. Alarm tolerance sets how far below the set point pressure levels need to drop before the pin will = 0 again.

Alarm,en,[1,0]	<cr>	enable / disable alarm
Alarm,n	<cr>	sets alarm
Alarm,tol,n	<cr>	sets alarm tolerance
Alarm,?	<cr>	alarm set?

Example	Response
Alarm,en,1 <cr>	*OK <cr> Enable alarm
Alarm,35 <cr>	*OK <cr>
Alarm,tol,10 <cr>	*OK <cr> Pressure level must fall 10 units below set point for alarm to reset.
Alarm,? <cr>	?,alarm,35,10,1 <cr> if all are enabled



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Custom calibration

Command syntax

Although calibration is not required, it may be necessary to adjust your 0 point or perform a custom calibration.

Cal,n	<cr>	calibrates the high point
Cal,0	<cr>	calibrates the zero point
Cal,clear	<cr>	restores calibration to factory settings
Cal,?	<cr>	device calibrated?

Example	Response
Cal,50 <cr>	*OK <cr> high point calibration in psi
Cal,0 <cr>	*OK <cr> low point calibration in psi
Cal,clear <cr>	*OK <cr>
Cal,? <cr>	?Cal,0 <cr> (no calibration) or ?Cal,1 <cr> (only zero point calibration) or ?Cal,2 <cr> (only high point calibration) or ?Cal,3 <cr> (zero and high point calibration) *OK <cr>

Calibration should be done using the pressure scale you have set the sensor to.

Example

Readings are set to bar.
High point calibration = 3.44
(3.44 bar = 50 psi)

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Add/remove decimal places

Command syntax

Change how many decimal points the reading outputs.

Dec,n <cr>	n = number of decimal points between 0 and 3
Dec,? <cr>	number of decimal points the output is set to

Example	Response
R <cr> Dec,1 <cr> R <cr>	38.462 <cr> *OK <cr> 38.4 <cr>
Dec,? <cr>	?Dec,1 <cr>

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Pressure units

(psi, atm, bar, kPa, inch's of water, cm of water)

Command syntax

U,[1/0]	<cr>	1 will add a unit identifier to the output	
U,psi	<cr>	output will be in psi **default**	
U,atm	<cr>	output will be in atm	
U,bar	<cr>	output will be in bar	
U,kPa	<cr>	output will be in kPa	
U,inh2o	<cr>	output will be in inches of water	(Resolution: 0.027")
U,cmh2o	<cr>	output will be in cm of water	(Resolution: 0.7mm)
U,?	<cr>	pressure units?	

Example	Response
U,bar <cr>	*OK <cr>
U,1 <cr>	*OK <cr> 1.228,bar <cr>
U,? <cr>	?U,bar <cr>

Naming device

Command syntax

Do not use spaces in the name

Name,n	<cr>	set name
Name,	<cr>	clears name
Name,?	<cr>	show name

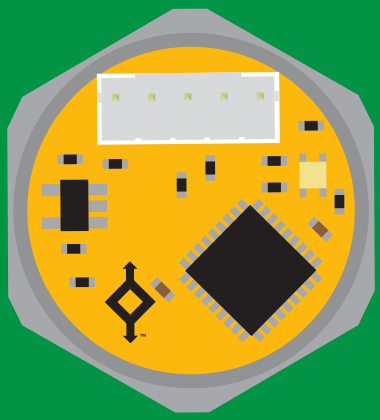
n =

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Up to 16 ASCII characters

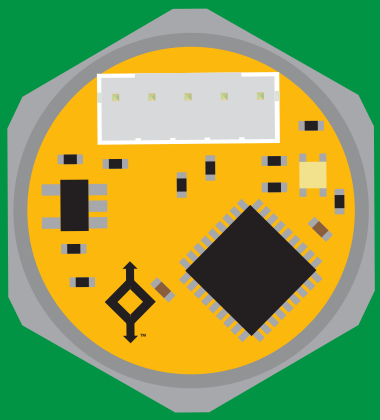
Example	Response
Name, <cr>	*OK <cr> name has been cleared
Name,zzt <cr>	*OK <cr>
Name,? <cr>	?Name,zzt <cr> *OK <cr>

Name,zzt



*OK <cr>

Name,?



?Name,zzt <cr>
*OK <cr>

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Device information

Command syntax

i <cr> **device information**

Example	Response
i <cr>	**?i,PRS,1.0** <cr> ***OK** <cr>

Response breakdown

?i,	PRS	1.0
	↑ Device	↑ Firmware

Response codes

Command syntax

*OK,1 <cr> enable response **default**
*OK,0 <cr> disable response
*OK,? <cr> response on/off?

Example	Response
R <cr>	38.462 <cr> *OK <cr>
*OK,0 <cr>	no response, *OK disabled
R <cr>	38.462 <cr> *OK disabled
*OK,? <cr>	?*OK,1 <cr> or ?*OK,0 <cr>

Other response codes

*ER	unknown command
*OV	over volt (VCC>=5.5V)
*UV	under volt (VCC<=3.1V)
*RS	reset
*RE	boot up complete, ready
*SL	entering sleep mode
*WA	wake up

These response codes cannot be disabled

Reading device status

Command syntax

Status <cr> **voltage at Vcc pin and reason for last restart**

Example	Response
Status <cr>	**?Status,P,5.038** <cr> ***OK** <cr>

Response breakdown

?Status, P, 5.038

- **P** — Reason for restart
- **5.038** — Voltage at Vcc

Restart codes

P	powered off
S	software reset
B	brown out
W	watchdog
U	unknown

Sleep mode/low power

Command syntax

Send any character or command to awaken device.

Sleep <cr> enter sleep mode/low power

Example	Response
Sleep <cr>	*OK <cr> *SL <cr>
Any command	*WA <cr> wakes up device

	STANDBY	SLEEP
5V	13.4 mA	0.415 mA
3.3V	12.4 mA	0.13 mA

Standby
13.4 mA

Sleep
0.415 mA

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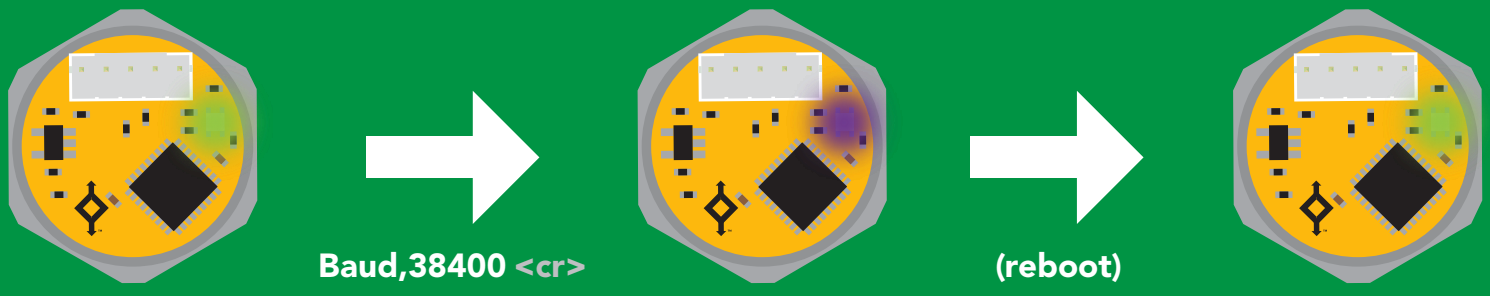
Change baud rate

Command syntax

Baud,n <cr> change baud rate

Example	Response
Baud,38400 <cr>	*OK <cr>
Baud,? <cr>	?Baud,38400 <cr> *OK <cr>

n =
- 300
- 1200
- 2400
- **9600 default**
- 19200
- 38400
- 57600
- 115200



Standby

Changing baud rate

*OK <cr>

Standby

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Protocol lock

Command syntax

Locks device to UART mode.

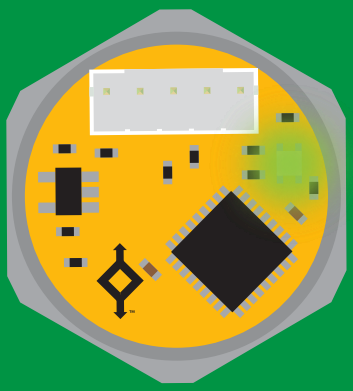
Plock,1 <cr> enable Plock

Plock,0 <cr> disable Plock **default**

Plock,? <cr> Plock on/off?

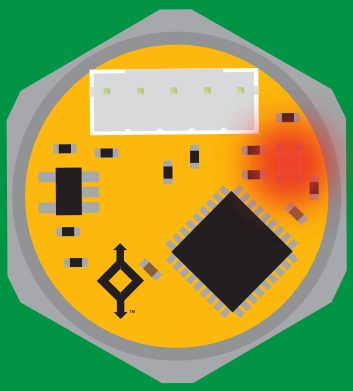
Example	Response
Plock,1 <cr>	*OK <cr>
Plock,0 <cr>	*OK <cr>
Plock,? <cr>	?Plock,1 <cr> or ?Plock,0 <cr>

Plock,1



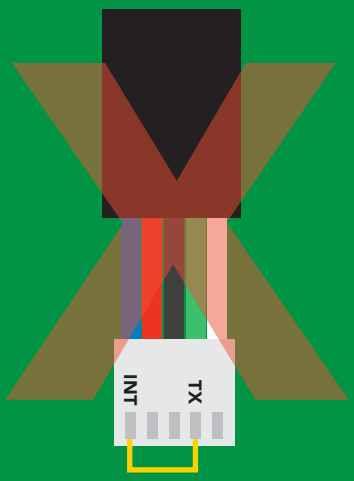
*OK <cr>

I2C,100



cannot change to I²C

*ER <cr>



cannot change to I²C

Factory reset

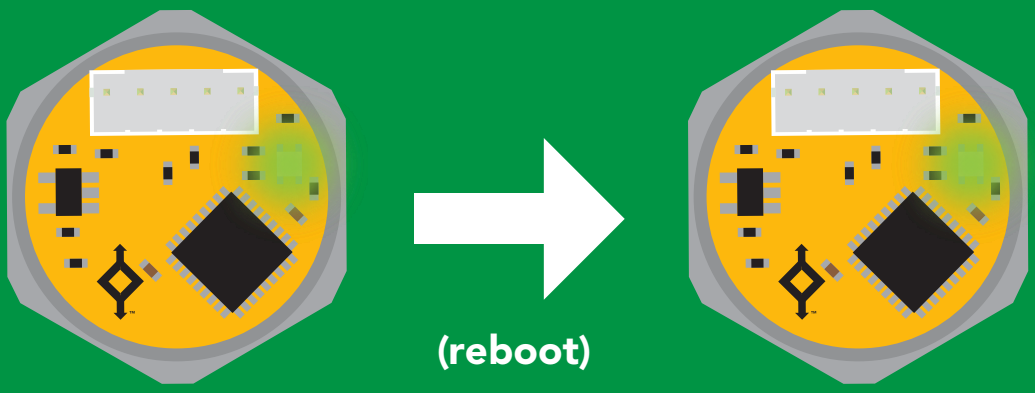
Command syntax

Clears calibration LED on "*OK" enabled

Factory <cr> enable factory reset

Example	Response
Factory <cr>	***OK** <cr>

Factory <cr>



(reboot)

***OK** <cr>

***RS** <cr>
***RE** <cr>

Baud rate will not change

Change to I²C mode

Command syntax

Default I²C address 106 (0x6A)

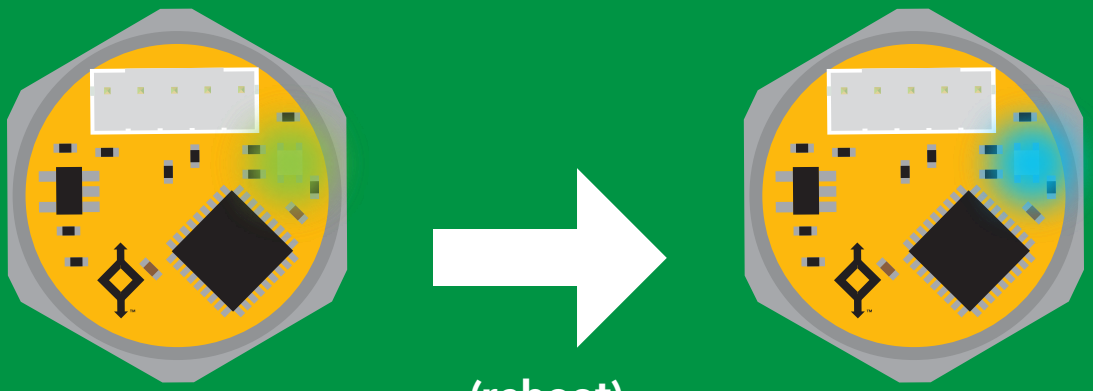
I2C,n <cr> sets I²C address and reboots into I²C mode

n = any number 1 – 127

Example	Response
I2C,100 <cr>	*OK (reboot in I²C mode)

Wrong example	Response
I2C,139 <cr> n ≯ 127	*ER <cr>

I2C,100



(reboot)

Green
*OK <cr>

Blue
now in I²C mode

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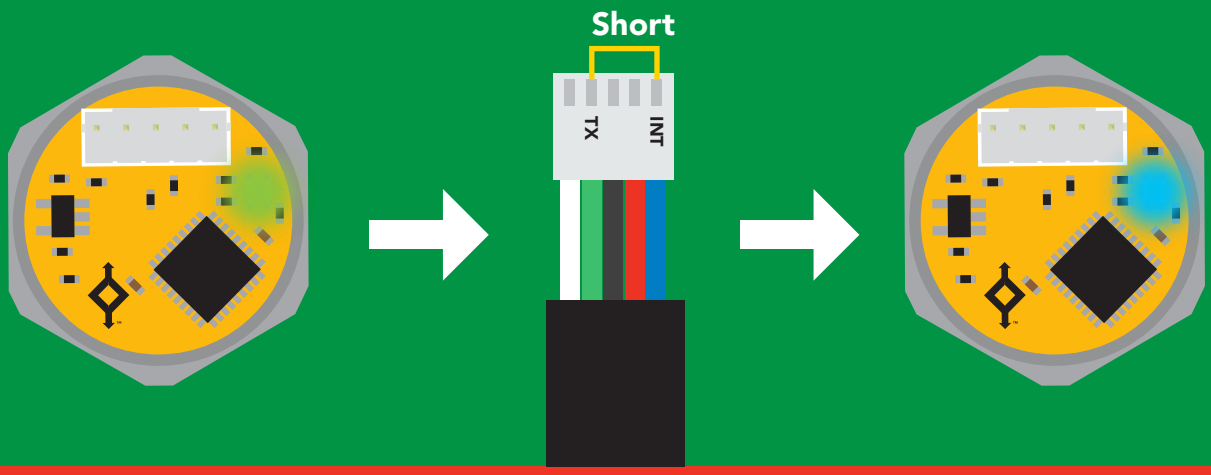
Manual switching to I²C

- Disconnect ground (power off)
- Disconnect TX and RX
- Connect TX to INT
- Confirm RX is disconnected
- Connect ground (power on)
- Wait for LED to change from
- Green to Blue
- Disconnect ground (power off)

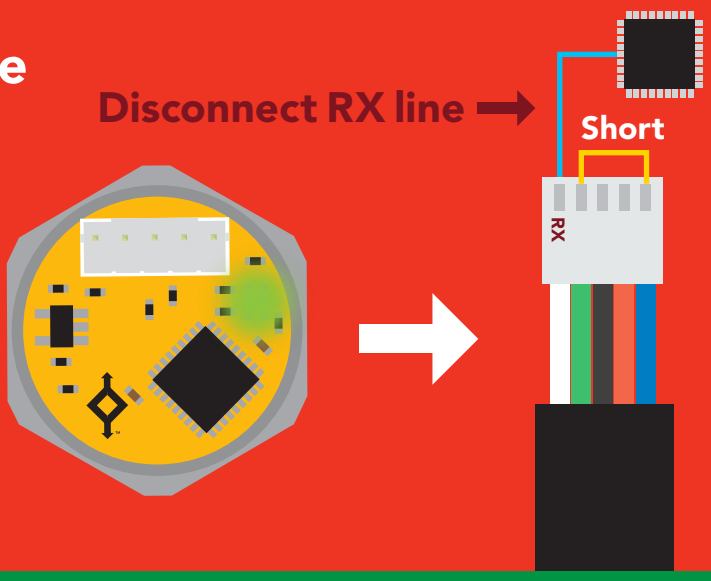
Reconnect all data and power

Manually switching to I²C will set the I²C address to 106 (0x6A)

Example



Wrong Example



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I²C mode

The I²C protocol is *considerably more complex* than the UART (RS–232) protocol. Atlas Scientific assumes the embedded systems engineer understands this protocol.

To set your EZO-PRS™ into I²C mode click here

Settings that are retained if power is cut

Calibration
Change I²C address
Custom calibration
Hardware switch to UART mode
LED control
Protocol lock
Software switch to UART mode

Settings that are *NOT* retained if power is cut

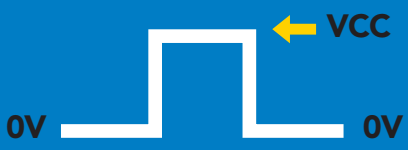
Find
Sleep mode

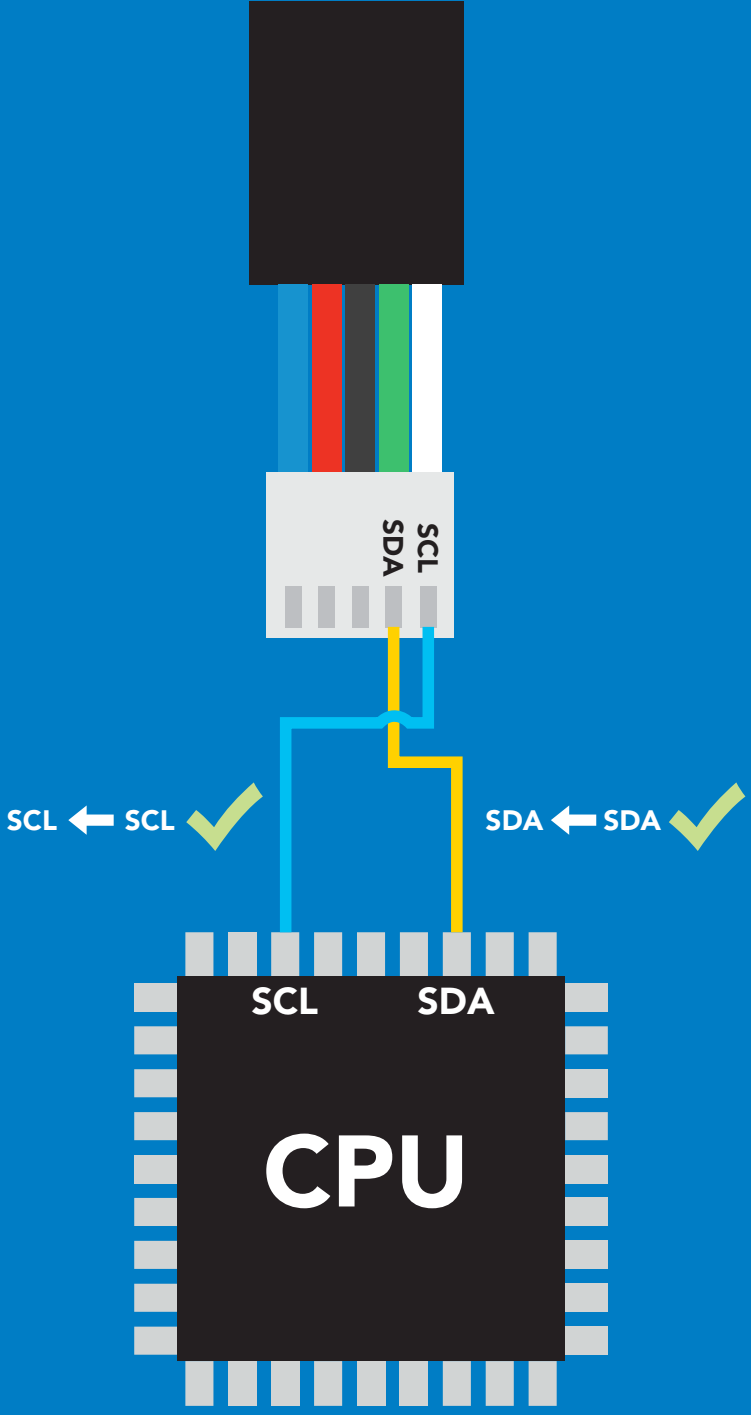
I²C mode

I²C address	(0x01 – 0x7F) 106 (0x6A) default
Vcc	3.3V – 5.5V
Clock speed	100 – 400 kHz

SDA

SCL





Data format

Output	pressure
Units	PSI default (ATM, kPa, bar, inch's of water cm of water)
Encoding	ASCII
Format	string

Data type	floating point
Decimal places	3
Smallest string	3 characters
Largest string	39 characters

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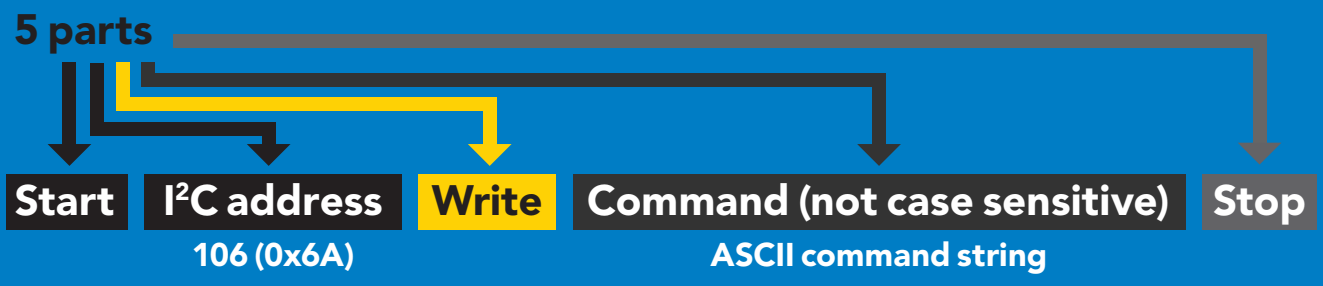
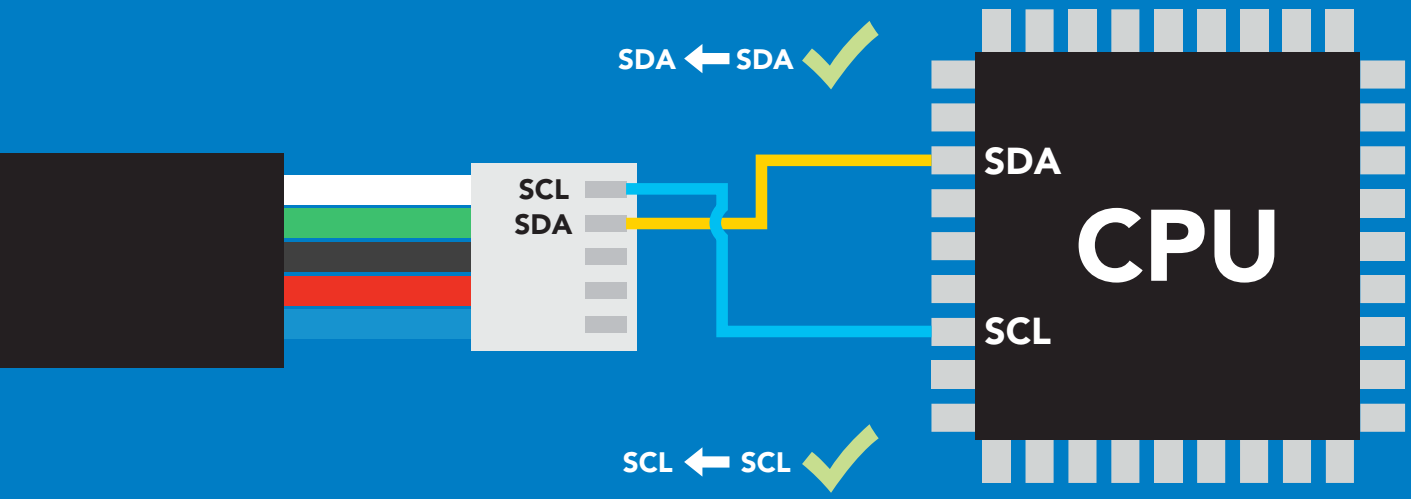
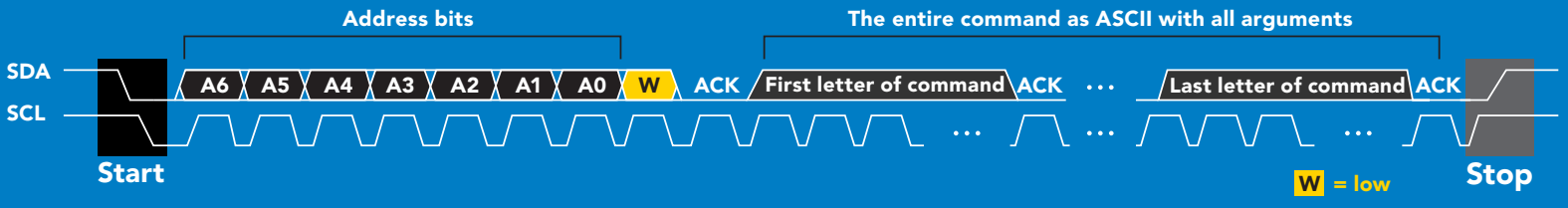
Sending commands to device



Example



Advanced



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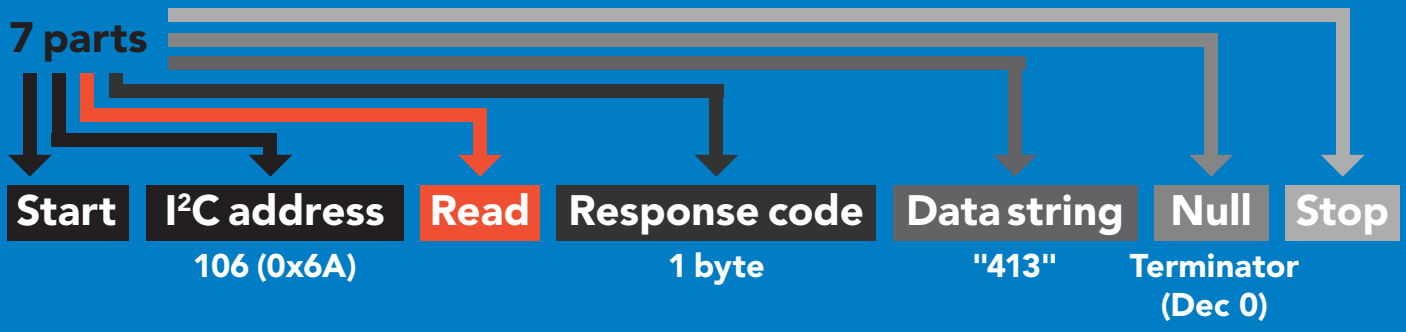
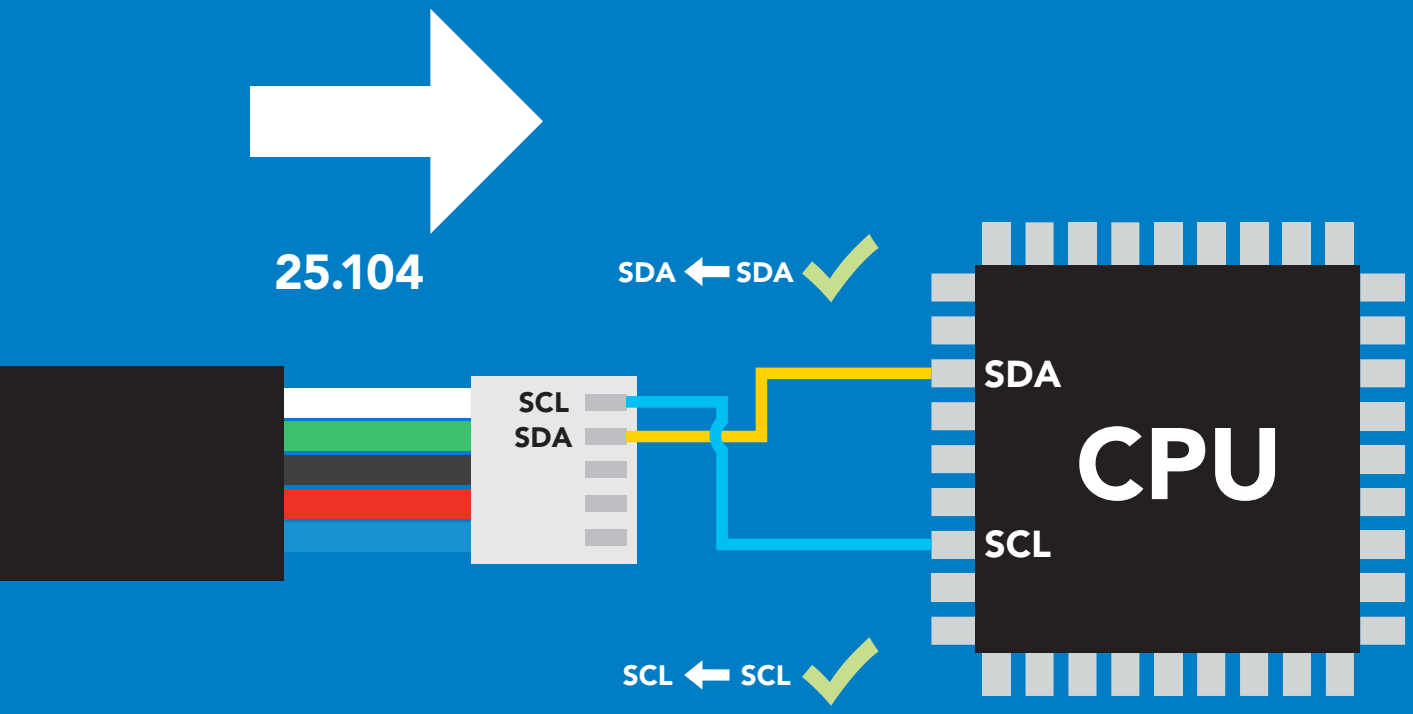
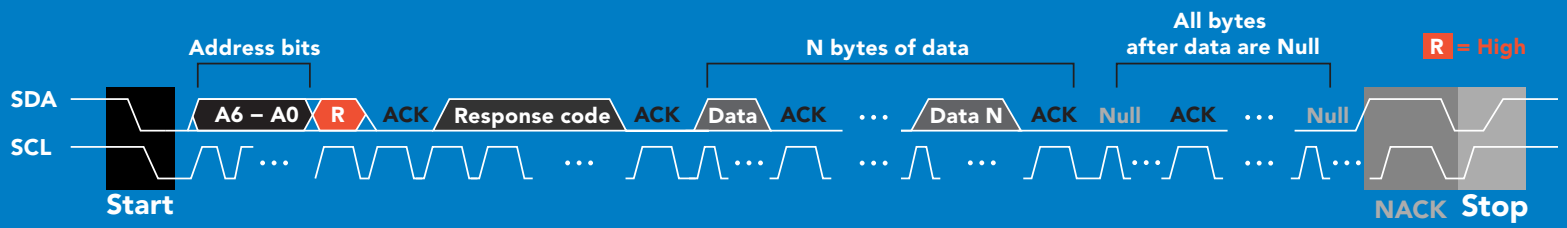
Requesting data from device





Advanced



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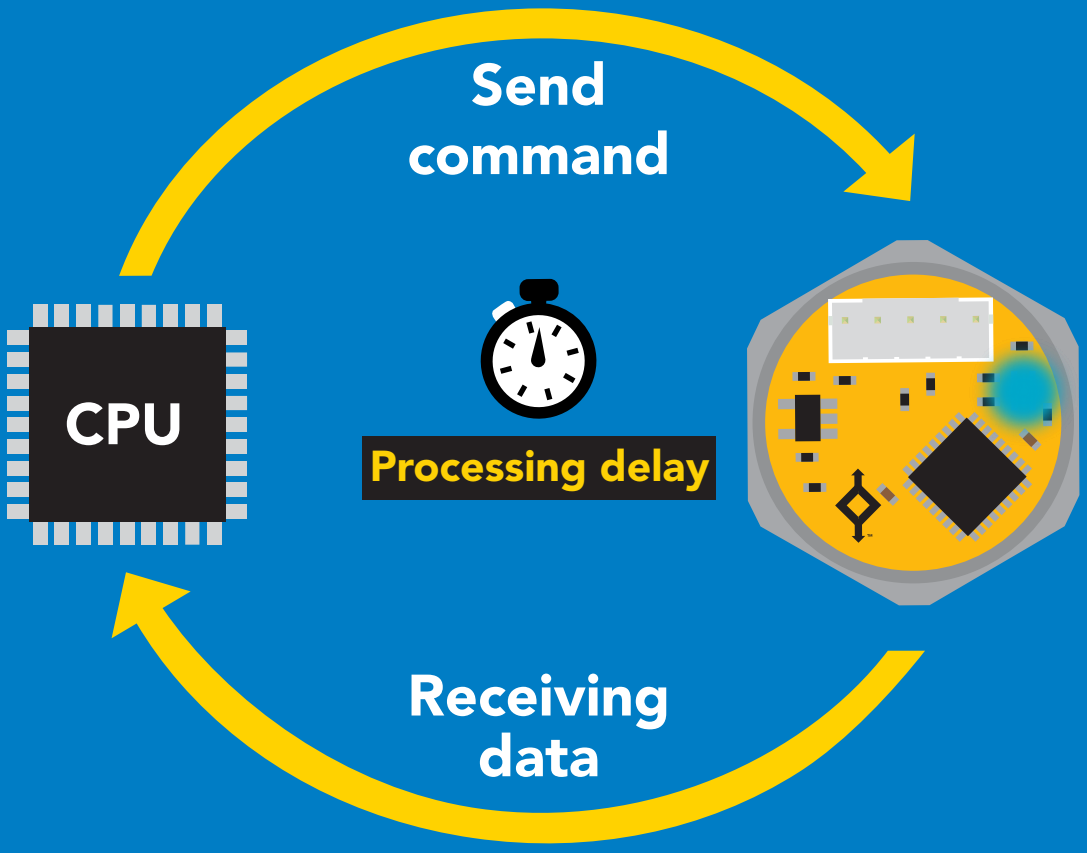
Response codes

After a command has been issued, a 1 byte response code can be read in order to confirm that the command was processed successfully.

Reading back the response code is completely optional, and is not required for normal operation.



Example

```
I2C_start;
I2C_address;
I2C_write(EZO_command);
I2C_stop;

delay(300);   Processing delay

I2C_start;
I2C_address;
Char[ ] = I2C_read;
I2C_stop;
```

If there is no processing delay or the processing delay is too short, the response code will always be 254.

Response codes

Single byte, not string

255	no data to send
254	still processing, not ready
2	syntax error
1	successful request

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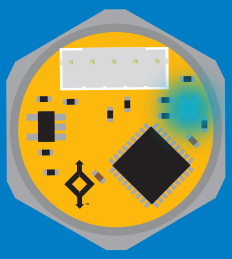
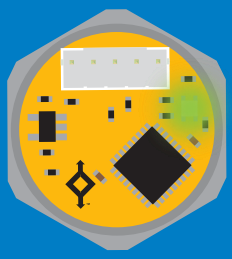
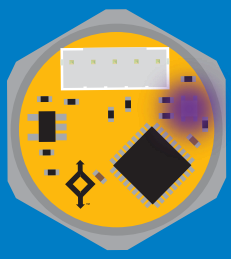
LED color definition



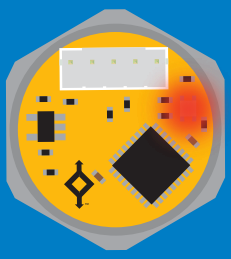
Blue
I²C standby



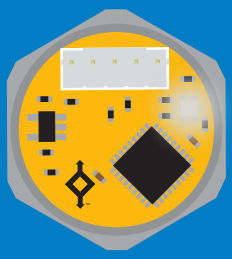
Green
Taking reading



Purple
Changing I²C address



Red
Command not understood



White
Find

	LED ON
5V	**+.25 mA**
3.3V	**+.26 mA**

I²C mode
command quick reference

All commands are ASCII strings or single ASCII characters.

Command	Function	
Alarm	enable/disable alarm	pg. 45
Baud	switch back to UART mode	pg. 56
Cal	performs custom calibration	pg. 46
Dec	add/remove decimal places	pg. 47
Factory	enable factory reset	pg. 55
Find	finds device with blinking white LED	pg. 43
i	device information	pg. 50
I2C	change I²C address	pg. 54
L	enable/disable LED	pg. 42
Name	set/show name of device	pg. 49
Plock	enable/disable protocol lock	pg. 53
R	returns a single reading	pg. 44
Sleep	enter sleep mode/low power	pg. 52
Status	retrieve status information	pg. 51
U	pressure units	pg. 48

LED control

Command syntax

300ms processing delay

L,1	LED on	default
L,0	LED off	
L,?	LED state on/off?	

Example Response

L,1

Wait 300ms

1	0
Dec	Null

L,0

Wait 300ms

1	0
Dec	Null

L,?

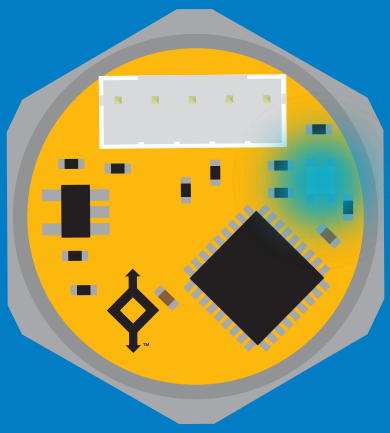
Wait 300ms

1	?L,1	0
Dec	ASCII	Null

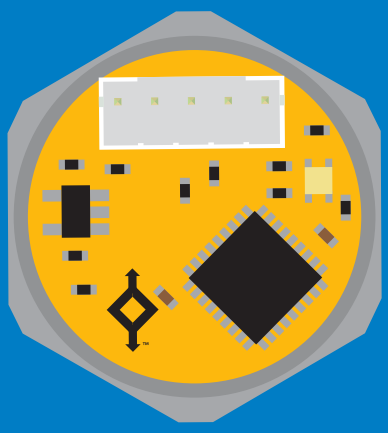
or

Wait 300ms

1	?L,0	0
Dec	ASCII	Null



L,1



L,0

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Find

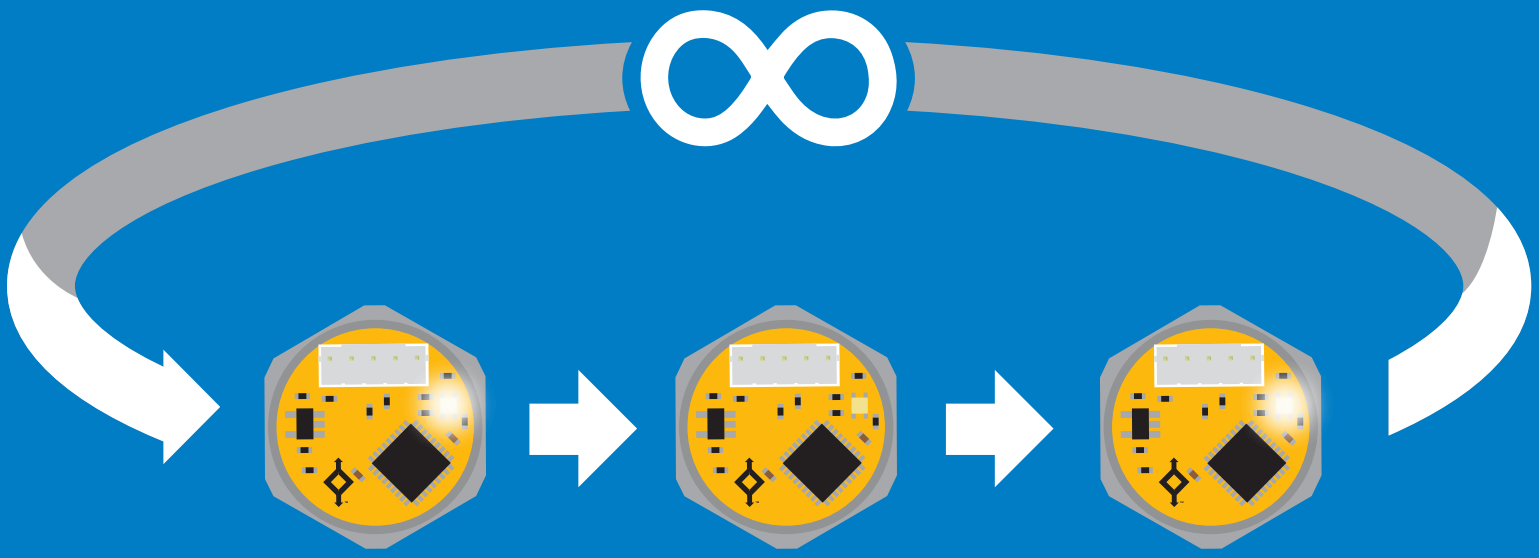
300ms processing delay

Command syntax

This command will disable continuous mode.
Send any character or command to terminate find.

Find LED rapidly blinks white, used to help find device

Example	Response
Find	Wait 300ms; 1 Dec; 0 Null



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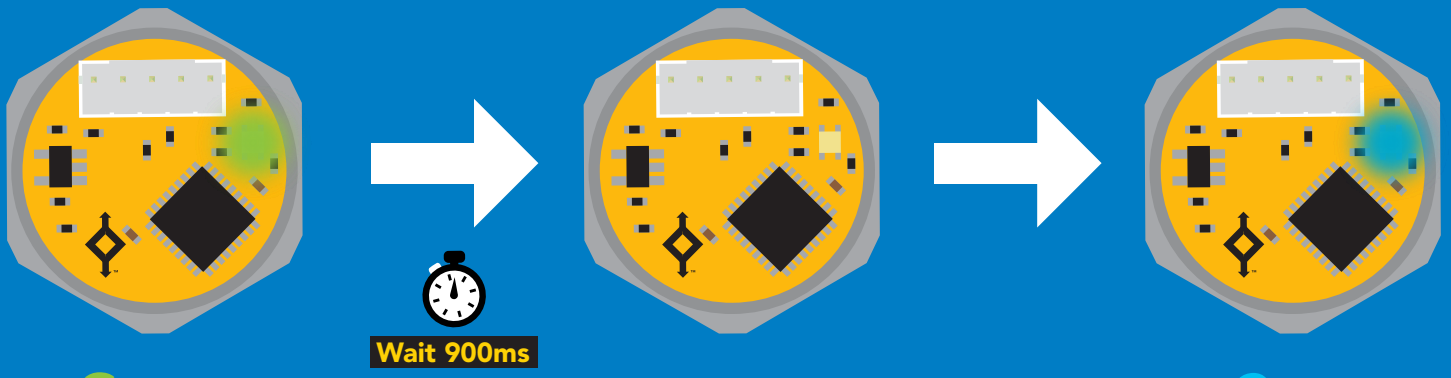
Taking reading

Command syntax

900ms processing delay

R return 1 reading

Example	Response
R	Wait 900ms · 1 Dec · 38.462 ASCII · 0 Null



Green
Taking reading

Transmitting

Cyan
Standby

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Alarm

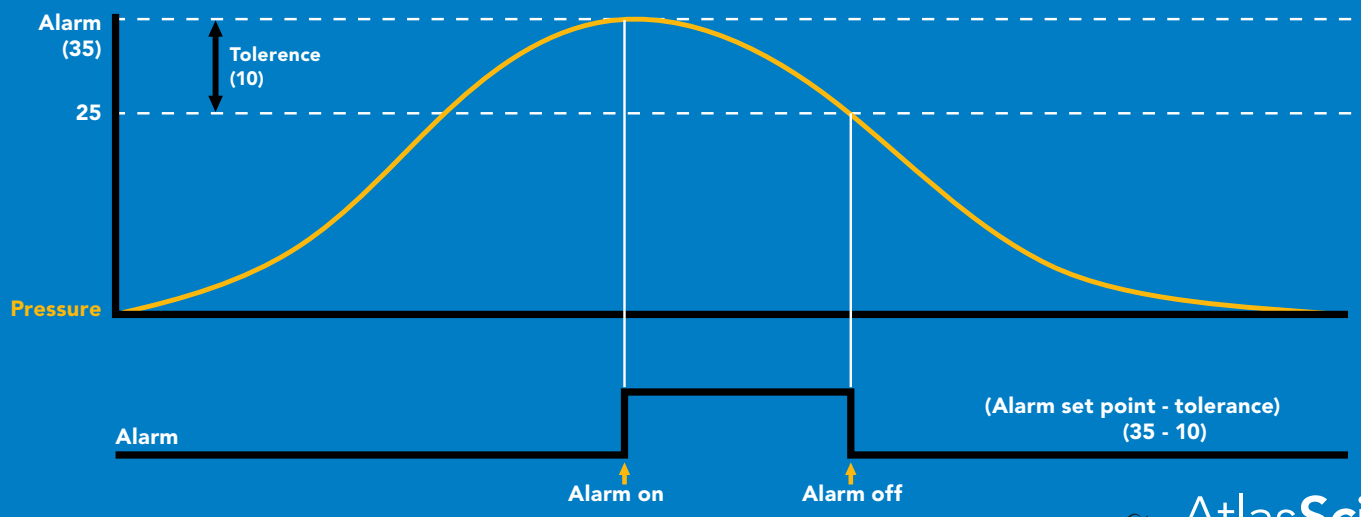
300ms processing delay

Command syntax

The alarm pin will = 1 when pressure levels are > alarm set point. Alarm tolerance sets how far below the set point pressure levels need to drop before the pin will = 0 again.

Alarm,en,[1,0]	enable / disable alarm
Alarm,n	sets alarm
Alarm,tol,n	sets alarm tolerance
Alarm,?	alarm set?

Example	Response
Alarm,en,1	Wait 300ms → 1 (Dec) 0 (Null) Enable alarm
Alarm,35	Wait 300ms → 1 (Dec) 0 (Null)
Alarm,tol,10	Wait 300ms → 1 (Dec) 0 (Null) Pressure level must fall 10 units below set point for alarm to reset.
Alarm,?	Wait 300ms → 1 (Dec) ?,alarm,35,10,1 (ASCII) 0 (Null) if all are enabled



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Custom calibration

900ms processing delay

Command syntax

Although calibration is not required, it may be necessary to adjust your 0 point or perform a custom calibration.

Cal,n	calibrates the high point
Cal,0	calibrates the zero point
Cal,clear	restores calibration to factory settings
Cal,?	device calibrated?

Example	Response
Cal,50	Wait 900ms → 1 (Dec) 0 (Null) high point calibration in psi
Cal,0	Wait 900ms → 1 (Dec) 0 (Null) low point calibration in psi
Cal,clear	Wait 300ms → 1 (Dec) 0 (Null)
Cal,?	Wait 300ms → 1 (Dec) ?Cal,0 (ASCII, no calibration) 0 (Null) or 1 (Dec) ?Cal,1 (ASCII, only zero point calibration) 0 (Null) or 1 (Dec) ?Cal,2 (ASCII, only high point calibration) 0 (Null) or 1 (Dec) ?Cal,3 (ASCII, zero and high point calibration) 0 (Null)

Calibration should be done using the pressure scale you have set the sensor to.

Example

Readings are set to bar.
High point calibration = 3.44
(3.44 bar = 50 psi)

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Add/remove decimal places

900ms processing delay

Command syntax

Change how many decimal points the reading outputs.

Dec,n	n = number of decimal points between 0 and 3
Dec,?	number of decimal points the output is set to

Example	Response
R	Wait 900ms — 1 (Dec) — 38.462 (ASCII) — 0 (Null)
Dec,1	Wait 900ms — 1 (Dec) — 0 (Null)
R	Wait 900ms — 1 (Dec) — 38.4 (ASCII) — 0 (Null)
Dec,?	Wait 900ms — 1 (Dec) — ?Dec,1 (ASCII) — 0 (Null)

Pressure units

(psi, atm, bar, kPa, inch's of water, cm of water)

Command syntax

U,[1/0]	1 will add a unit identifier to the output	
U,psi	output will be in psi	
U,atm	output will be in atm	
U,bar	output will be in bar	
U,kPa	output will be in kPa	
U,inh2o	output will be in inches of water	(Resolution: 0.027")
U,cmh2o	output will be in cm of water	(Resolution: 0.7mm)
U,?	pressure units?	

Example	Response
U,bar	 Wait 300ms — 1 Dec — 0 Null
U,1	 Wait 300ms — 1 Dec — 0 Null  Wait 300ms — 1 Dec — 1.228,bar ASCII — 0 Null
U,?	 Wait 300ms — 1 Dec — ?U,bar ASCII — 0 Null

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Naming device

300ms processing delay

Command syntax

Do not use spaces in the name

Name,n	set name
Name,	clears name
Name,?	show name

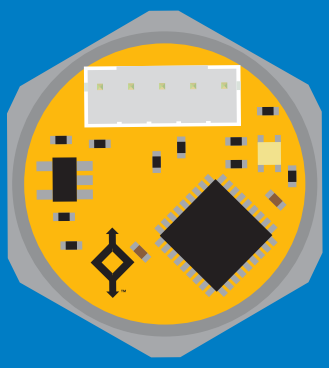
n = _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Up to 16 ASCII characters

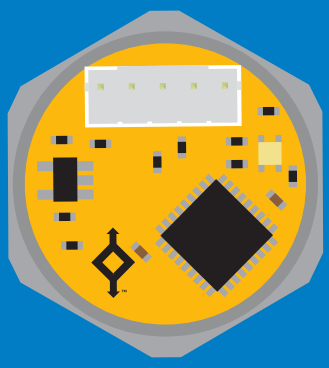
Example	Response
Name,	Wait 300ms — 1 Dec — 0 Null — name has been cleared
Name,zzt	Wait 300ms — 1 Dec — 0 Null
Name,?	Wait 300ms — 1 Dec — ?Name,zzt ASCII — 0 Null

Name,zzt



1 0

Name,?



1 ?Name,zzt 0

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Device information

Command syntax

300ms processing delay

i device information

Example

i

Response

1 Dec

?i,PRS, 1.0 ASCII

0 Null

Response breakdown

?i, PRS, 1.0

PRS: Device

1.0: Firmware

Reading device status

Command syntax

300ms processing delay

Status voltage at Vcc pin and reason for last restart

Example

Status

Response

1	?Status,P,5.038	0
Dec	ASCII	Null

Response breakdown

?Status, P, 5.038

- P: Reason for restart
- 5.038: Voltage at Vcc

Restart codes

P	powered off
S	software reset
B	brown out
W	watchdog
U	unknown

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Sleep mode/low power

Command syntax

Sleep	enter sleep mode/low power

Send any character or command to awaken device.

Example	Response
Sleep	no response
Any command	wakes up device

Do not read status byte after issuing sleep command.

	STANDBY	SLEEP
5V	13.4 mA	0.415 mA
3.3V	12.4 mA	0.13 mA

Standby

Sleep

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Protocol lock

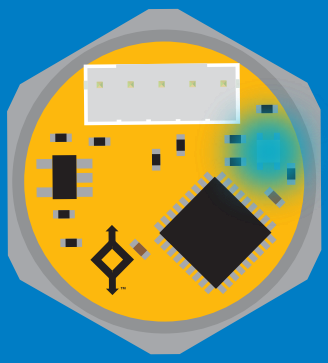
Command syntax

300ms processing delay

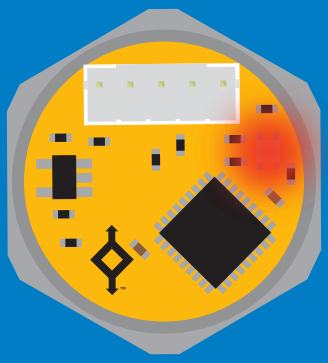
Plock,1	enable Plock	Locks device to I²C mode.
Plock,0	disable Plock	default
Plock,?	Plock on/off?	

Example	Response
Plock,1	Wait 300ms → 1 (Dec) 0 (Null)
Plock,0	Wait 300ms → 1 (Dec) 0 (Null)
Plock,?	Wait 300ms → 1 (Dec) ?Plock,1 (ASCII) 0 (Null)

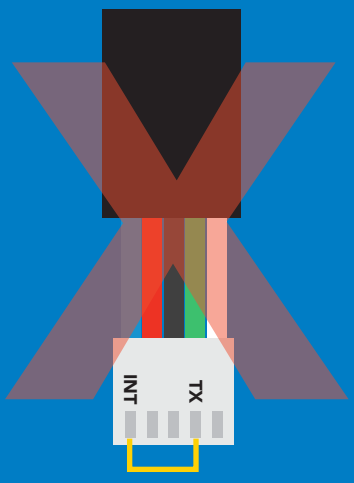
Plock,1



Baud, 9600



cannot change to UART



cannot change to UART

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I²C address change

Command syntax

300ms processing delay

I2C,n sets I²C address and reboots into I²C mode

Example	Response
I2C,101	device reboot (no response given)

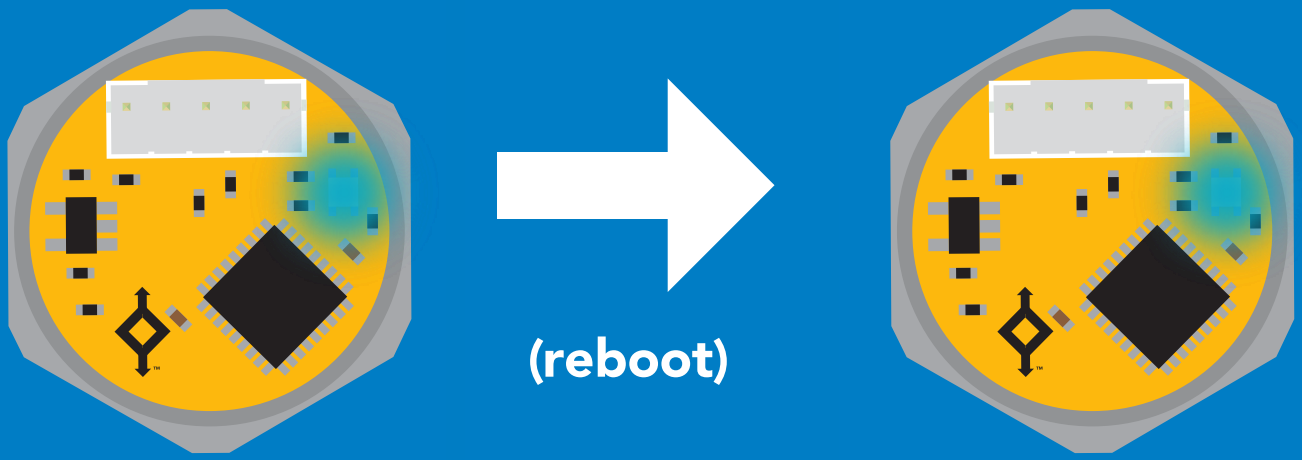
n = any number 1 – 127

Warning!

Changing the I²C address will prevent communication between the device and the CPU until the CPU is updated with the new I²C address.

Default I²C address is 106 (0x6A).

I2C,101



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Factory reset

Command syntax

Factory reset will not take the device out of I²C mode.

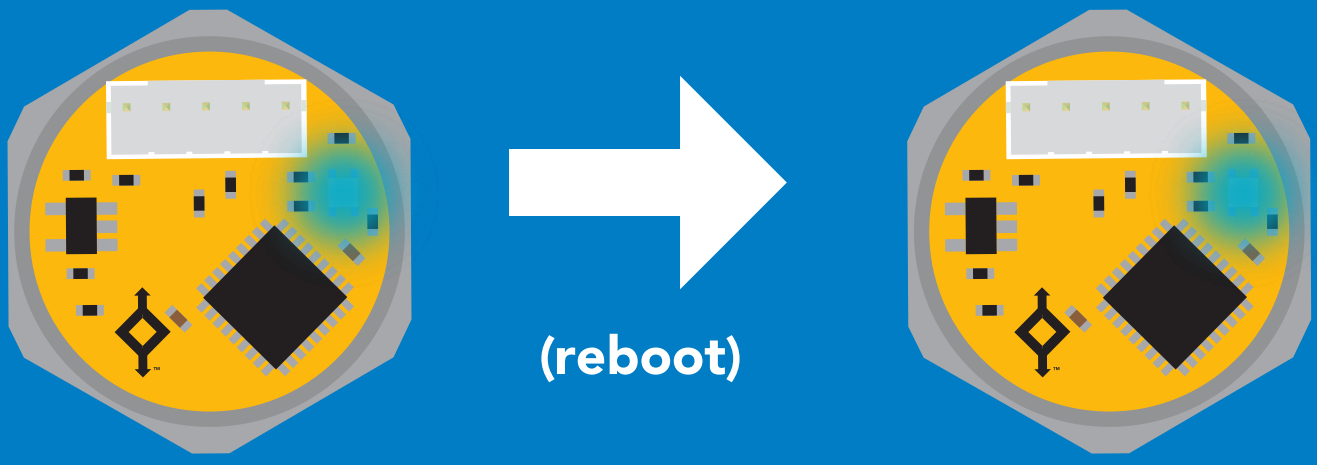
Factory enable factory reset

I²C address will not change

Example	Response
Factory	device reboot (no response given)

Clears calibration
LED on
Response codes enabled

Factory



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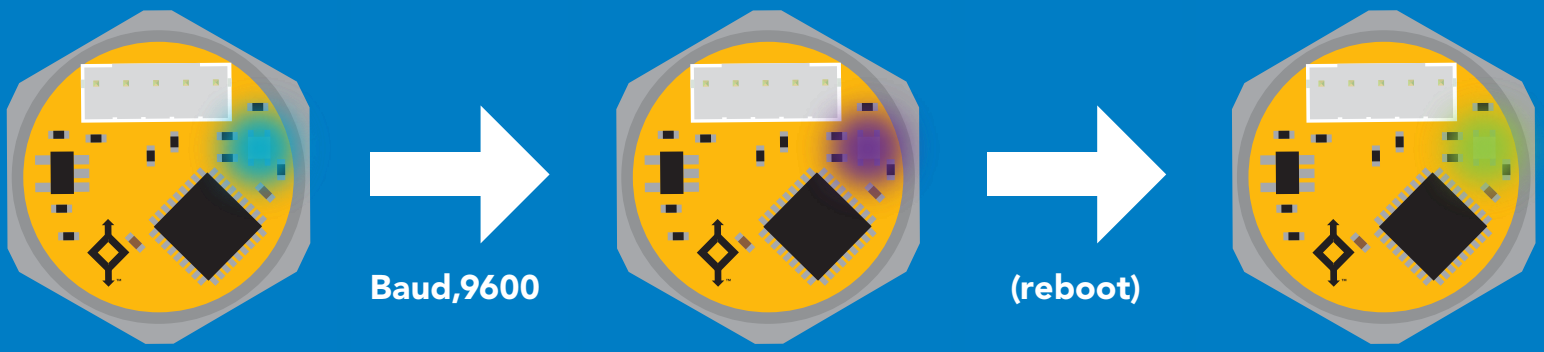
Change to UART mode

Command syntax

Baud,n switch from I²C to UART

Example	Response
Baud,9600	reboot in UART mode (no response given)

n =
- 300
- 1200
- 2400
- 9600
- 19200
- 38400
- 57600
- 115200



Changing to UART mode

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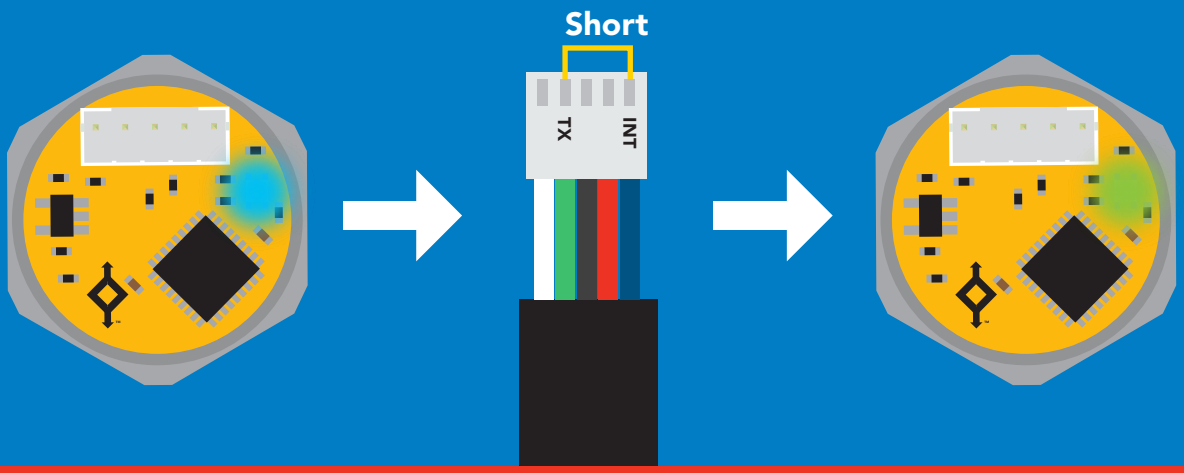
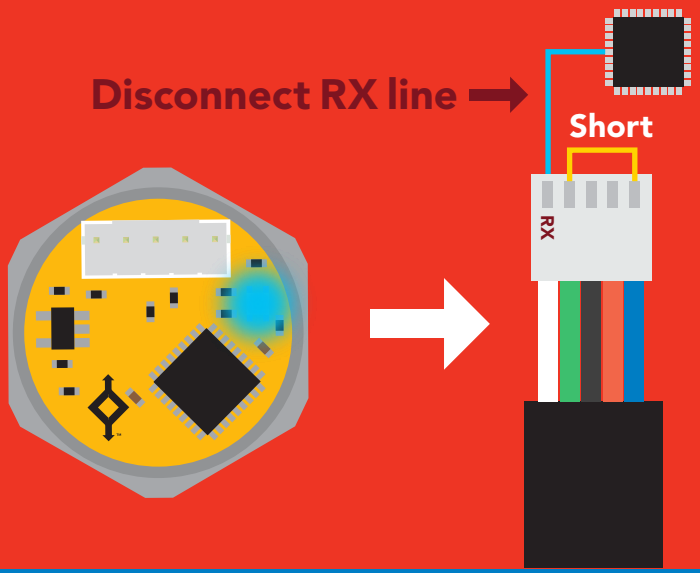
Manual switching to UART

- Disconnect ground (power off)
- Disconnect TX and RX
- Connect TX to INT
- Confirm RX is disconnected
- Connect ground (power on)
- Wait for LED to change from Blue to Green
- Disconnect ground (power off)
- Reconnect all data and power

Example





AtlasScientific™
Environmental Robotics
r 0.1

Datasheet change log

Datasheet V 2.0

Revised design of EZO-PRS throughout document.

Datasheet V 1.6

Revised naming device info on pages 25 & 49.

Datasheet V 1.5

Added the custom calibartion pages on pages 22 & 46.

Datasheet V 1.4

Revised accuracy value on cover page.

Datasheet V 1.3

Revised pressure output in PSI to 50.000 on cover pg.
added inches of water & cm of water resolution info on pages 23 and 46.

Datasheet V 1.2

Updated firmware info on pg 55.

Datasheet V 1.1

Moved Default state to pg 9.

Datasheet V 1.0

Initial release - New datasheet

Firmware updates

V1.0 – Initial release (Aug, 7 2019)

V1.01 – (Nov, 5 2019)
• Fixed glitch where the alarm was not initially set correctly.

V1.02 – (April, 9 2021)
• Added custom calibration

Warranty

Atlas Scientific™ Warranties the EZO-PRS™ Embedded Pressure Sensor to be free of defect during the debugging phase of device implementation, or 30 days after receiving the EZO-PRS™ Embedded Pressure Sensor (which ever comes first).

The debugging phase

The debugging phase as defined by Atlas Scientific™ is the time period when the EZO-PRS™ Embedded Pressure Sensor is inserted into a bread board, or shield. If the EZO-PRS™ is being debugged in a bread board, the bread board must be devoid of other components. If the EZO-PRS™ Embedded Pressure Sensor is being connected to a microcontroller, the microcontroller must be running code that has been designed to drive the EZO-PRS™ Embedded Pressure Sensor exclusively and output the EZO-PRS™ data as a serial string.

It is important for the embedded systems engineer to keep in mind that the following activities will void the EZO-PRS™ Embedded Pressure Sensor warranty:

- **Soldering any part of the EZO-PRS™ Embedded Pressure Sensor.**
- **Running any code, that does not exclusively drive the EZO-PRS™ Embedded Dosing Pump and output its data in a serial string.**
- **Embedding the EZO-PRS™ Embedded Pressure Sensor into a custom made device.**
- **Removing any potting compound.**

Reasoning behind this warranty

Because Atlas Scientific™ does not sell consumer electronics; once the device has been embedded into a custom made system, Atlas Scientific™ cannot possibly warranty the EZO-PRS™ Embedded Pressure Sensor, against the thousands of possible variables that may cause the EZO-PRS™ Embedded Pressure Sensor to no longer function properly.

Please keep this in mind:

1. **All Atlas Scientific™ devices have been designed to be embedded into a custom made system by you, the embedded systems engineer.**

2. **All Atlas Scientific™ devices have been designed to run indefinitely without failure in the field.**

3. **All Atlas Scientific™ devices can be soldered into place, however you do so at your own risk.**

Atlas Scientific™ is simply stating that once the device is being used in your application, Atlas Scientific can no longer take responsibility for the EZO-PRS™ Embedded Pressure Sensors continued operation. This is because that would be equivalent to Atlas Scientific™ taking responsibility over the correct operation of your entire device.