Team 302 Component Selection

Comins, Hawthorne, Onyenso, Salt

Sensor #1: Water Level

Solution	**Pro(s)**	**Con(s)**
Picture 	• Application Specific • Printed measurement system on sensor • Wide temperature operating range • Intuitive operation • Temperature Compensation	• Expensive • No-solder pins • Wider tolerance at higher values
Option#1	eTape PN-12110215TC-12	
Description	A solid state, continuous (multi-level) fluid level sensor for measuring levels in water, non-corrosive water based liquids and dry fluids. (powders)	
Price	$39.95	
Link	Link	

Solution	**Pro(s)**	**Con(s)**
Picture 	• Relatively cheap • Thin • Wide range of actuation force • Sensitive • Durable • Variety of configurations	• Too basic • Water resistance is questionable • Requires more setup • Questionable physical integration into main device
Option#1	Interlink Electronics FSR® 408-300	
Description	A robust polymer thick film (PTF) device that exhibits a decrease in resistance with increase in force applied to the surface of the sensor.	
Price	$21.95	
Link	Link	

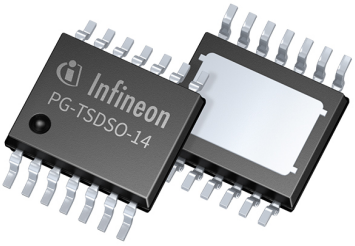
Solution	Pro(s)	Con(s)
Picture 	• Higher penetration power • Waterproof • Dustproof • Direct serial connection • Easy setup • Durable • Aesthetically pleasing • Cheap	• Awkward implementation • May interfere with data collection • May impact results
Option#1	DFRobot A02YYUW Waterproof Ultrasonic Sensor	
Description	An ultrasonic distance sensor determines the distance to a target by measuring time lapses between the sending and receiving of the ultrasonic pulse.	
Price	$18.62	
Link	Link	

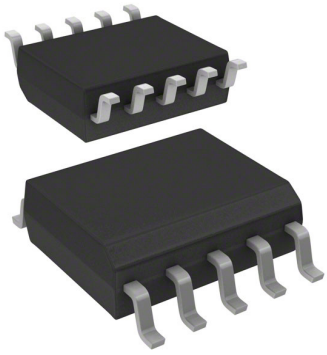
Final Selection

Sensor #1: Water Level

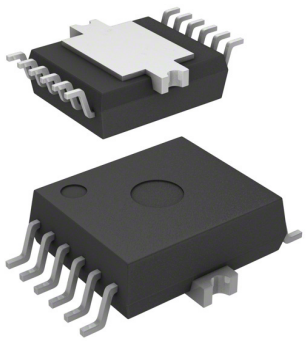
For sensor #1, the water level sensor, we chose to go with **Option #1,** what this option provides more than every other option in its category is simplicity. It may be on the pricier side, but the sensor is catered to the direction we want to take our project. We expect its integration to be straightforward and simple, with the caveat of not being able to solder the pins on it. Option #3 was also in consideration for what it had to offer at the price it was at, however it appeared to be more general as opposed to option #1's focused intent.

Motor Driver

Solution	Pro(s)	Con(s)
Picture 	• Can work with 3.3V • Relatively inexpensive	•
Option#2	TLE94103EPXUMA1CT-ND	
Description	IC HALF BRIDGE DRVR 2A TSDSO-14	
Price	$1.96	
Link	Link	

Solution	Pro(s)	Con(s)
Picture 	• Relatively easy set up •	• Bare minimum datasheet • Supply voltage 18 •
Option#3	620-1498-1-ND	
Description	IC HALF BRIDGE DRIVER 1A 10SSOP	
Price	$1.43	

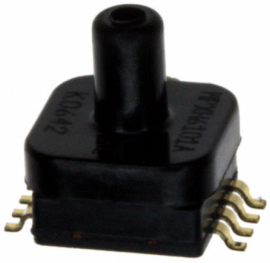
Solution	Pro(s)	Con(s)
Link	Link	

Solution	Pro(s)	Con(s)
Picture 	• Used in class • Well developed data sheet • Multiple funtions	• Expensive • Harder to configure
Option#3	IFX9201SGAUMA1CT-ND	
Description	IC HALF BRIDGE DRIVER 6A 12DSO	
Price	$3.79	
Link	Link	

Final Selection:
Option #1:
rational

Atmospheric Pressure Sensor

Solution	Pro(s)	Con(s)
Picture 	• 0.5% accuracy offset • Low operating voltage • High temperature range	• Expensive
Option 1	BLCR-L10D-U2	
Description	Barometric SENSOR 0.36PSIG 0.12" .032V	
Price	$37.41	
Link	Link	

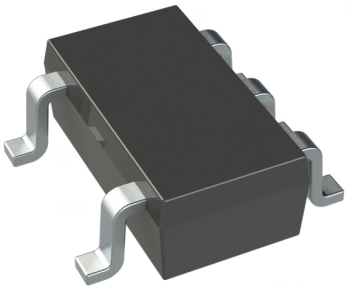
Solution	Pro(s)	Con(s)
Picture 	• Works with 5V supply voltage • Accurate in high temperature scenarios • Easy to Install	• Expensive • 1.5% Accuracy offset
Option 2	MPXH6400AC6U	
Description	Barometric SENSOR 58.02PSIA 0.13" 4.8V SSOP	
Price	$18.51	
Link	Link	

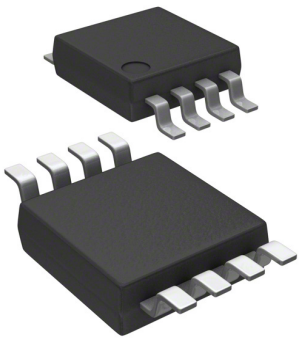
Solution	Pro(s)	Con(s)
Picture 	• High Temperature range • Easy to Install • High max operating pressure • Low operating voltage	• Expensive • Through Hole
Option 3	ADP41913	
Description	Barometric SENSOR 142.24PSIG 0.1" .065V	
Price	$19.75	
Link	Link	

Final Selection:

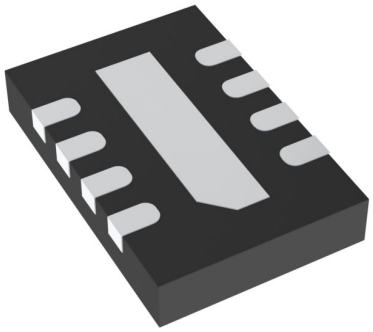
Option 1: BLCR-L10D-U2

The sensor is easy to install, has a favorable operating range and is accurate with a .5% offset even in high temperatures.

Solution	Pro(s)	Con(s)
Picture 	• Less expensive • Simple to use • Standard footprint	• Less extensive data sheet
Option 1	MCP3221A0T-E/OTCT-ND	
Description	IC ADC 12BIT SAR SOT23-5	
Price	$1.91	
Link	Link	

Solution	Pro(s)	Con(s)
Picture 	• Good datasheet • 3 analog inputs • Runs on either 5V and 3.3V	• Might need a larger set up • Expensive •
Option 2	MAX11613EUA+CT-ND	
Description	IC ADC 12BIT SAR 8UMAX	
Price	$4.15	

Solution	Pro(s)	Con(s)
Link	Link	

Solution	Pro(s)	Con(s)
Picture 	• Typical to use • Uses I2C (easy)	• Relatively Expensive • Might be difficult to solder
Option 3	LTC2451CDDB#TRMPBFCT-ND	
Description	IC ADC 16BIT SIGMA-DELTA 8DFN	
Price	$3.77	
Link	Link	

Final Selection: