

## **Fluorination Alexa Description**

Posted to Amazon Alexa Skills Store 10/30/18 at around 3:00a.m. Surprisingly good writing for that time.

Jonathan Lam

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"Golden ratio." "Electrosynthesis of ammonia." "Significant figures." Ask Fluorination anything, now with Alexa!

Fluorination is a free educational app, designed for students to easily share information between themselves. Students can sign up at the Fluorination website (<https://fluorination-server.herokuapp.com>) at any time and quickly search topics, filtering by keywords, course, subject, and location. The website provides a clean interface for interacting with Fluorination's knowledge database; now, Alexa allows a hands-free way to access the same wealth of knowledge!

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### About Fluorination

It all started at HackCooper 2018. Four sleep-deprived, ambitious students from the Cooper Union for the Advancement of Science and Art decided that it was too difficult to find the correct data for school assignments. Yes, there's Yahoo Answers and Socratic and Stack Overflow when you need them. But those websites are Q&A-based, specific and not totally helpful. It's easy to ask the wrong question and receive an answer that doesn't really help your need. Plus, most Q&A sites are over-cluttered with data and advertisements; not the kind of information a late-nighter needs to finish his or her paper on group theory.

That's where Fluorination comes in -- our focus is on providing "open knowledge." Users can contribute whatever knowledge they want, and be able to navigate existing knowledge in a game-like format! You may end up finding the information you didn't know you needed by reading some open-ended post on fluid dynamics or modern anthropology or a comprehensive study of toilets.

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Version 1.0.0 (10/30/18):

- Initial release for Amazon Echo. Woohoo!

The Fluorination concept and website (<https://fluorination-server.herokuapp.com>) was developed during HackCooper 2018 on 10/14/18. The website and app, especially the game-like features, are still very much in beta and still a concept. Currently, much of the data in this version is dummy content. You may get best results if you search a general topic, such as physics or math, by asking "Alexa, search physics using Fluorination." Currently, voice recognition of the word "Fluorination" is not very good.

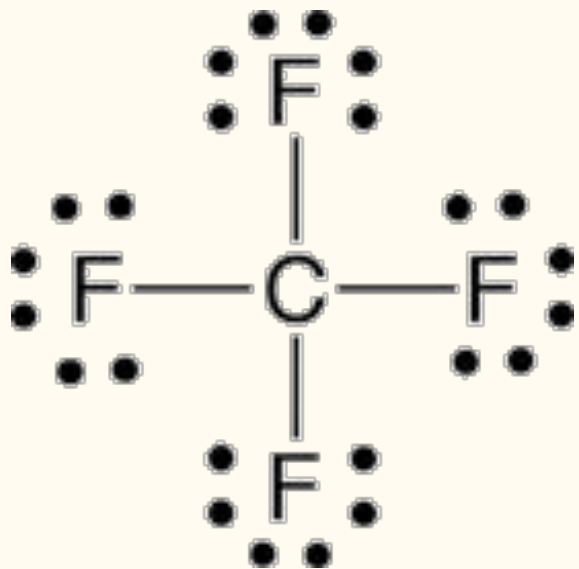
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Runs on any Echo device, with basic cards for the Echo Show and Echo Spot.

# Fluorination



# Why Fluorination?



# Our Inspiration



# Our Mission

Fluorination invites students to an interactive, informative, and immersive community with an education focused forum.

Search Assistance



algolia

Map Assistance



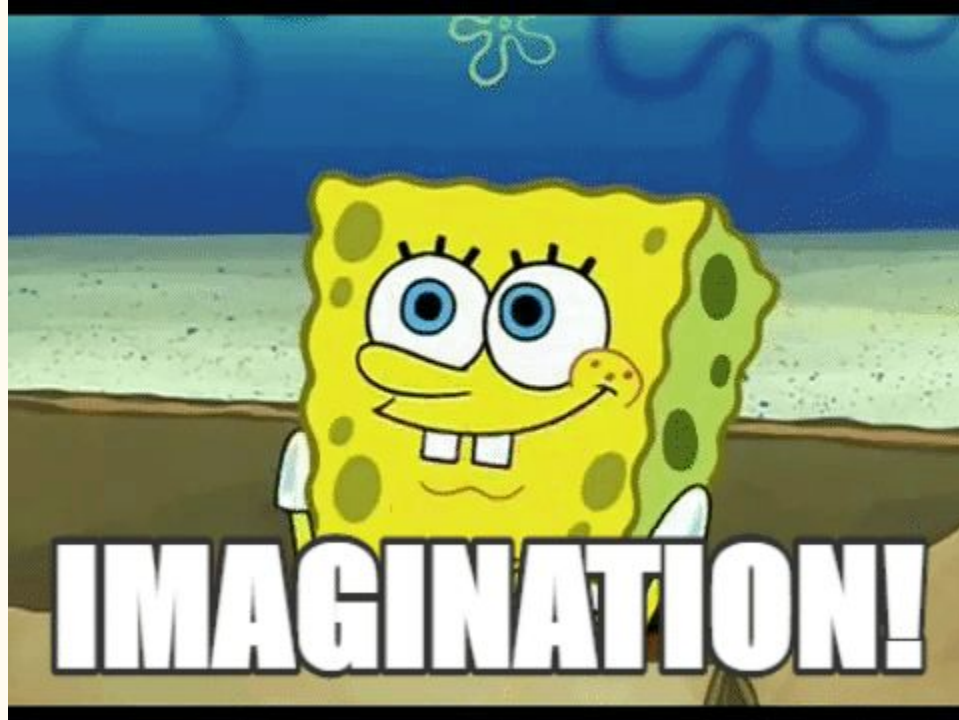


Domain Name



**DOMAIN.COM**

# Plans for Development



1. Saving posts in personal folders for later use
2. Comments Section
3. Map-like territory game as an incentive to post



## Deutsch Connectors vs. Weatherpacks

Cooper Union Motorsports Electronics Team

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### About Deutsch Connectors (proposed connectors)

Deutsch connectors are cable connectors sealed off from the environment and used in harsh environment applications. Strengths include “optional flange mounting, multi-pin arrangements, lower costs, and design flexibility.”<sup>1</sup> Amphenol AT series have very similar specifications (see “Alternatives” section in table).

Many forum posts comparing the two suggest that Deutsch connections are more robust, albeit more expensive<sup>8,9,10</sup>.

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### About Delphi Weatherpack Connectors (current connectors)

“Delphi Weather Pack Connectors are environmentally sealed electrical connections designed to withstand exposure to extreme temperatures and moisture. Terminals are tin plated and have special core wings which allow crimp-only connections, eliminating the need for solder. The connector and cavity seals are triple-ribbed and made of self-lubricating silicone. Cavity plugs are available to fill unused cavities.”<sup>2</sup>

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### Side-By-Side Comparison

|                              | Deutsch  | Weatherpacks  |
|------------------------------|--|---|
| Advantages                   | <ul style="list-style-type: none"><li>- Three series: miniature, regular, and power (DTM, DT, DTP)<sup>1</sup></li><li>- Accepts 14-20 wire gauge (AWG)</li><li>- Mounting options: Inline, flange, PCB</li><li>- “Rectangular, thermoplastic housing”</li><li>- “Wedgelocks assure contact alignment and retention”</li></ul> | <ul style="list-style-type: none"><li>- Accepts gauges 22-12 wire</li><li>- Inline and pane mount options</li><li>- Somewhat cheaper</li><li>- Already have crimper</li></ul> |
| Waterproof?                  | Yes, up to three feet submerged <sup>1</sup>   | yes <sup>3</sup>  |
| Resistant to most chemicals? | yes <sup>1</sup>   | yes <sup>3</sup>  |
| Latch?                       | yes <sup>1</sup>   | yes <sup>3</sup>  |

|                       |  |   |
|-----------------------|--|---|
| Can disassemble?      | yes <sup>4</sup>   | yes   |
| Pins                  | 2, 3, 4, 6, 8, 12 <sup>4</sup>   | 1-6 pins  |
| Operating Temperature | -55°C to 125°C <sup>1</sup>  | -40°C to 125°C <sup>3</sup>   |
| Max voltage drop      | 89mV <sup>11</sup>   | 3.0mV/A <sup>3</sup>  |
| Max resistance        | DTM: 6mΩ/A <sup>11</sup><br>DT: 7.5mΩ/A<br>DTP: 11mΩ/A   | 10mΩ/A <sup>3</sup>   |
| Max current           | DTM series: 7.5A <sup>4</sup><br>DT series: 13A<br>DTP series: 25A   | 20A <sup>3</sup>  |
| Cable range           | DTM series: size 20 Deutsch contacts <sup>4</sup> (20 gauge) <sup>5</sup><br>DT series: size 16 Deutsch contacts (16 gauge)<br>DTP series: size 12 Deutsch contacts (14 gauge) | 22-18 gauge, 16-14 gauge, and 12 gauge options <sup>2</sup>   |
| How to assemble       | Crimp socket (female) or pin (male), push terminal into housing, add appropriate wedgelock. Make sure to add blanks (cavity plugs) for unused contacts.                        | Crimp appropriate terminal, push into housing. Add cavity plugs for unused contacts.  |
| Parts description     | Receptacle housing, requires male pin terminals<br>Plug housing, requires female socket terminals<br>Wedgelocks<br>Crimper   | Tower housing (for inline connection), requires female terminals<br>Shroud housing (for inline connections), requires male terminals<br>Crimper |
| Alternatives          | Amphenol's AT series was designed to be completely compatible with the Deutsch's DT series and be of a similar quality, but at a lower cost <sup>6,7</sup> .                   |   |

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## Cost

Example products shown. Unit prices are given. Unit prices are taken from the 10 unit price break (cost when buying 10+ units). This is not a comprehensive search for cheapest components.

### Deutsch Connectors

| Part                            | Price and Source                            |
|---------------------------------|---|
| DT receptacle (2 pin)           | \$0.85 <a href="#">Digi-Key</a>             |
| DT plug (2 pin)                 | \$1.04 <a href="#">Digi-Key</a>             |
| DT receptacle (3 pin)           | \$1.26 <a href="#">Digi-Key</a>             |
| DT receptacle (3 pin)           | \$1.26 <a href="#">Digi-Key</a>             |
| DT plug (3 pin)                 | \$1.22 <a href="#">Digi-Key</a>             |
| DT receptacle (4 pin)           | \$1.44 <a href="#">Digi-Key</a>             |
| DT plug (4 pin)                 | \$1.50 <a href="#">Digi-Key</a>             |
| DT receptacle wedgelock (2 pin) | \$0.17 <a href="#">Digi-Key</a>             |
| DT plug wedgelock (2 pin)       | \$0.17 <a href="#">Digi-Key</a>             |
| DT receptacle wedgelock (3 pin) | \$0.17 <a href="#">Digi-Key</a>             |
| DT plug wedgelock (2 pin)       | \$0.17 <a href="#">Digi-Key</a>             |
| DT receptacle wedgelock (4 pin) | \$0.21 <a href="#">Digi-Key</a>             |
| DT plug wedgelock (4 pin)       | \$0.35 <a href="#">Digi-Key</a>             |
| Size 16 pin                     | \$0.12 <a href="#">Mouser</a> (Amphenol AT) |
| Size 16 socket                  | \$0.27 <a href="#">Mouser</a> (Amphenol AT) |
| Crimp tool                      | \$44.34 <a href="#">Del City</a>            |

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### Sources

- [1]: <https://www.te.com/usa-en/faqs/deutsch-dt-connectors.html>
- [2]: <https://www.waytekwire.com/products/20/Weather-Pack-Connectors/>
- [3]: [https://www.allelectronics.com/mas\\_assets/media/allelectronics2018/spec/WP1-10.pdf](https://www.allelectronics.com/mas_assets/media/allelectronics2018/spec/WP1-10.pdf)
- [4]: <https://www.te.com/usa-en/videos/transportation/deutsch-dt-te-logos.html>

- [5]: <http://www.deutsch.cz/connectors/dvi-automotive/contactss/?lang=en>
- [6]: <http://blog.delcity.net/compare-amphenol-at-series-to-deutsch-dt-series>
- [7]: <http://amphenol-sine-com.3dcartstores.com/pdf/catalog/ATvsDT.pdf>
- [8]:  
<https://www.offshoreonly.com/forums/general-q/327160-deutsch-weatherpack-metripack.html#post4315278>
- [9]: <https://www.garagejournal.com/forum/showthread.php?t=377265>
- [10]: <https://www.race-dezert.com/forum/threads/deutsch-or-weather-pack-connectors.41886/>
- [11]:  
[https://www.te.com/commerce/DocumentDelivery/DDEController?Action=showdoc&DocId=Specification+Or+Standard%7F108-151009%7FB3%7Fpdf%7FEnglish%7FENG\\_SS\\_108-151009\\_B3.pdf%7FN-A](https://www.te.com/commerce/DocumentDelivery/DDEController?Action=showdoc&DocId=Specification+Or+Standard%7F108-151009%7FB3%7Fpdf%7FEnglish%7FENG_SS_108-151009_B3.pdf%7FN-A)