Deutsch Connectors vs. Weatherpacks
Cooper Union Motorsports Electronics Team

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."[1] 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[8,9,10].

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."[2]

Side-By-Side Comparison

	Deutsch	Weatherpacks
Advantages	- Three series: miniature, regular, and power (DTM, DT, DTP)[1] - Accepts 14-20 wire gauge (AWG) - Mounting options: Inline, flange, PCB - "Rectangular, thermoplastic housing" - "Wedgelocks assure contact alignment and retention"	- Accepts gauges 22-12 wire - Inline and pane mount options - Somewhat cheaper - Already have crimper
Waterproof?	Yes, up to three feet submerged[1]	yes[3]
Resistant to most chemicals?	yes[1]	yes[3]
Latch?	yes[1]	yes[3]

Can disassemble?	yes[4]	yes
Pins	2, 3, 4, 6, 8, 12[4]	1-6 pins
Operating Temperature	-55°C to 125°C[1]	-40°C to 125°C[3]
Max voltage drop	89mV[11]	3.0mV/A[3]
Max resistance	DTM: 6mΩ/A[11] DT: 7.5mΩ/A DTP: 11mΩ/A	10mΩ/A[3]
Max current	DTM series: 7.5A[4] DT series: 13A DTP series: 25A	20A[3]
Cable range	DTM series: size 20 Deutsch contacts[4] (20 gauge)[5] DT series: size 16 Deutsch contacts (16 gauge) DTP series: size 12 Deutsch contacts (14 gauge)	22-18 gauge, 16-14 gauge, and 12 gauge options[2]
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 Plug housing, requires female socket terminals Wedgelocks Crimper	Tower housing (for inline connection), requires female terminals Shroud housing (for inline connections), requires male terminals 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[6,7].	

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 Digi-Key
DT plug (2 pin)	$1.04 Digi-Key
DT receptacle (3 pin)	$1.26 Digi-Key
DT receptacle (3 pin)	$1.26 Digi-Key
DT plug (3 pin)	$1.22 Digi-Key
DT receptacle (4 pin)	$1.44 Digi-Key
DT plug (4 pin)	$1.50 Digi-Key
DT receptacle wedgelock (2 pin)	$0.17 Digi-Key
DT plug wedgelock (2 pin)	$0.17 Digi-Key
DT receptacle wedgelock (3 pin)	$0.17 Digi-Key
DT plug wedgelock (2 pin)	$0.17 Digi-Key
DT receptacle wedgelock (4 pin)	$0.21 Digi-Key
DT plug wedgelock (4 pin)	$0.35 Digi-Key
Size 16 pin	$0.12 Mouser (Amphenol AT)
Size 16 socket	$0.27 Mouser (Amphenol AT)
Crimp tool	$44.34 Del City

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
[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/
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