



Printed Circuit Board

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Printed Circuit Board Overview

Deutsch Industrial printed circuit board or PCB connectors are heavy duty environmentally sealed connectors designed for wire-to-circuit board connections. Deutsch PCB connectors are built to maintain the integrity and continuity of data and power signals in harsh environments. Developed and designed for heavy duty electronically equipped vehicles, Deutsch Industrial printed circuit board connections use standard Deutsch connector bodies and will withstand dust, dirt, moisture, and vibration.

Available in a variety of styles from several different connector families, Deutsch printed circuit board connectors cover a range of pin counts from 2 to 80 and wire gauges from 10 to 22. Many of the connectors are available in straight, 90°, or solder pot options.

Deutsch PCB connectors mate with standard Deutsch plugs. With integral silicone wire seals and molded-in contacts that do not require potting or epoxy sealant, Deutsch PCB connectors are sealed, reliable, and easy to install.

■ Printed Circuit Board Connector Options

DRC Series

- 24, 40, 50, 60, 64, 70, 76, and 80 cavity arrangements
- Mating connectors accept 14-22 AWG

DT Family

- DT Series 2, 3, 4, 6, 8, and 12 cavity arrangements
- DT Series mating connectors accept 14-20 AWG
- DT Series flangeless options available
- DTM Series 8, 12, and 48 cavity arrangements
- DTM Series mating connectors accept 16-22 AWG
- DTM Series flangeless 48 way option
- DTP Series 4 cavity arrangement
- DTP Series mating connectors accept 10-14 AWG
- Some arrangements of the DT and DTM Series are available with **A**, **B**, **C**, and **D** keying options

HD10 Series

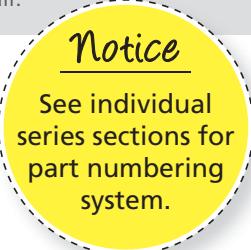
- 6 and 9 cavity arrangements
- Mating connectors accept 14-20 AWG

STRIKE Series

- 32 cavity arrangement
- Mating connectors accept 14-22 AWG

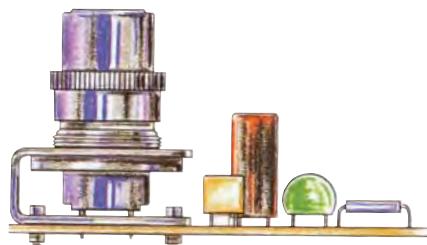
EEC Enclosure and Flange Receptacle

- DT Series header 12, 24, 36, and 48 cavity arrangements
- DT Series mating connectors accept 14-20 AWG
- DTM Series header 12 and 24 cavity arrangements
- DTM Series mating connectors accept 16-22 AWG
- Some arrangements of the DT and DTM Series are available with **A**, **B**, **C**, and **D** keying options



helpful
hint

By fixing the connectors to the board prior to soldering, pressure can be greatly reduced at the solder joint.





■ DRC10 Series Straight

Materials

Housing: Thermoplastic
 Grommet: Silicone elastomer
 Receptacle Threaded Insert: Steel
 Contacts: Molded-in copper alloy, tin plated solder pot standard (gold optional - see modifications)

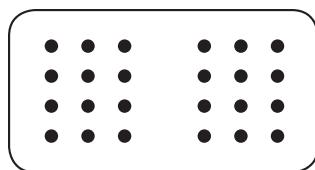
Mating Plugs

24 Pin: DRC16-24S*
 40 Pin: DRC16-40S



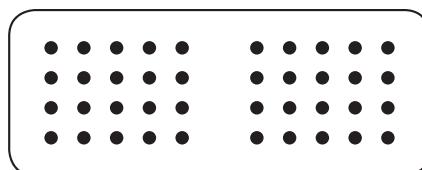
Modifications

A004: Tin plated PCB pins
 AG02: Some terminals are gold plated



DRC10-24P*

24 size 16



DRC10-40P*

40 size 16

■ DRC13 Series 90°

Materials

Housing: Thermoplastic
 Receptacle Threaded Insert: Steel/Brass
 Contacts: Molded-in copper alloy, tin plated PCB pins standard (gold optional - see modifications)
 Mounting Seal: Silicone

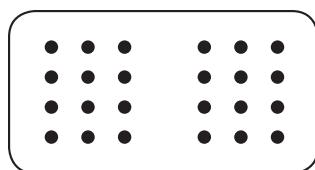
Mating Plugs

24 Pin: DRC16-24S*
 40 Pin: DRC18-40S*
 70 Pin: DRC16-70S*



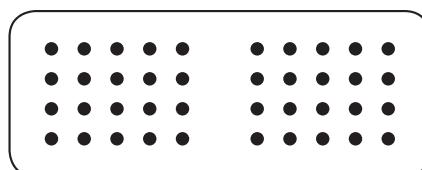
Modifications

C023: 5mm² threaded insert mounting holes
 G002: Only outside terminal rows are gold plated
 N012: One piece connector design



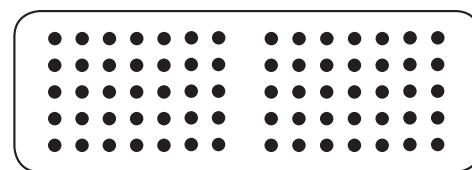
DRC13-24P*

24 size 16



DRC13-40P*

40 size 16



DRC13-70P*

70 size 16



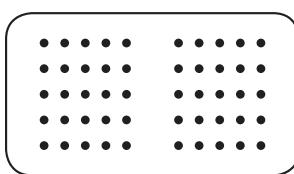
■ DRC20/22 Series Straight

Materials

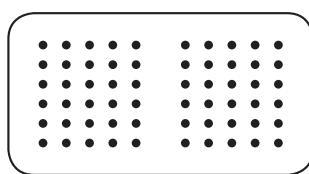
Housing: Thermoplastic
Grommet: Silicone elastomer
Receptacle Threaded Insert: Steel
Contacts: Molded-in copper alloy, gold plated mating side, tin plated PCB side (size 12 contacts are tin plated on mating and PCB sides)
Mounting Seal: Silicone rubber

Mating Plugs

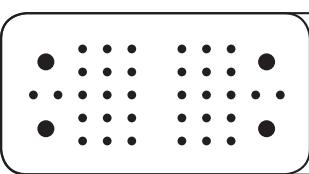
50 Pin: DRC26-50S**
60 Pin: DRC26-60S**
76 Pin: (2)DRC26-38S**



DRC2*-50P*
50 size 20



DRC20-60P*
60 size 20



DRC20-76P****
68 size 20, 8 size 12

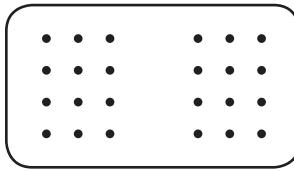
■ DRC23 Series 90° Miniature

Materials

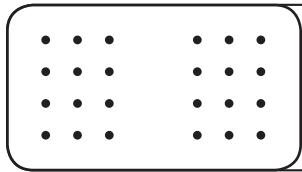
Housing: Thermoplastic
Grommet: Silicone elastomer
Receptacle Threaded Insert: Steel
Contacts: Molded-in copper alloy, gold plated PCB pins standard (tin optional)
Mounting Seal: Silicone rubber

Mating Plugs

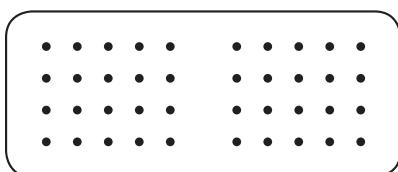
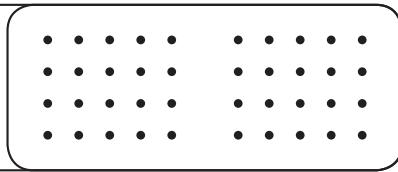
24 Pin: DRC26-24S*
40 Pin: DRC26-40S*
64 Pin: DRC26-24S*, DRC26-40S*
80 Pin: (2)DRC26-40S*



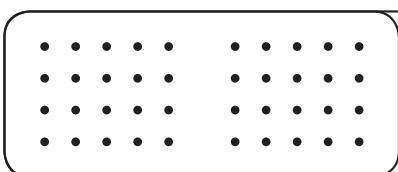
DRC23-24**
24 size 20



DRC23-64**
64 size 20



DRC23-40**
40 size 20



DRC23-80**
80 size 20



■ DT13/15 Series 90° or Straight

Materials

Housing: Thermoplastic

Contacts: Molded-in copper alloy, tin plated (gold optional - consult factory)

Mounting Seal: Silicone rubber

Mating Plugs

2 Pin: DT06-2S

4 Pin: DT06-4S

6 Pin: DT06-6S

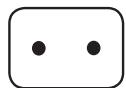
8 Pin: DT06-8S*

12 Pin: DT06-12S*

Modifications

B016: Extended shell and additional keys

G003: Gold plated pins



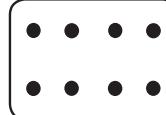
DT1*-2P
2 size 16



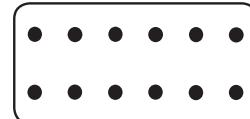
DT1*-4P
4 size 16



DT1*-6P
6 size 16



DT1*-8P*
8 size 16
A, B, C, D



DT1*-12P*
12 size 16
A, B, C, D



DT13



DT15

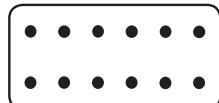
■ DTM13/15 Series 90° or Straight

Materials

Housing: Thermoplastic

Contacts: Molded-in copper alloy, tin plated (gold optional - consult factory)

Mounting Seal: Silicone rubber



DTM1*-12P*
12 size 20
A, B, C, D

Mating Plugs

12 Pin: DTM06-12S*



DTM13



DTM15

Notice
Camcar thread forming screws are recommended. See drawing.

■ DTP10 Series Straight

Materials

Housing: Thermoplastic

Contacts: Molded-in copper alloy, tin plated

Mounting Seal: Silicone rubber



DTP10-4P
4 size 12

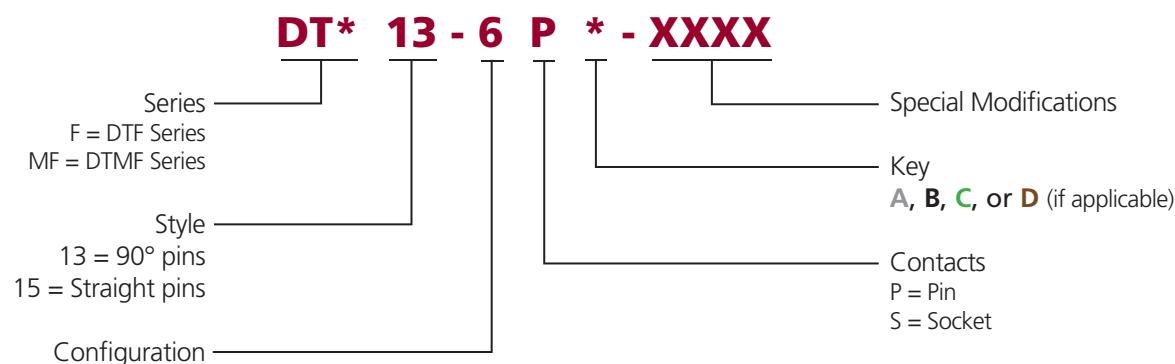
Mating Plugs

4 Pin: DTP06-4S





■ Flangeless Part Numbering System



■ DTF13 Series Flangeless 90°

Materials

Housing: Thermoplastic

Contacts: Molded-in copper alloy, tin plated (gold optional - consult factory)

Mating Plugs

2 Pin: DT06-2S

3 Pin: DT06-3S

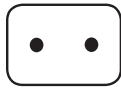
4 Pin: DT06-4S

6 Pin: DT06-6S

12 Pin: DT06-12S*

Modifications

G003: Gold plated pins



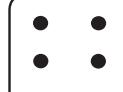
DTF13-2P
2 size 16



DTF13-3P
3 size 16



DTF13-4P
4 size 16



DTF13-6P
6 size 16



DTF13-12P*
12 size 16
A, B, C, D



■ DTF15 Series Flangeless Straight

Materials

Housing: Thermoplastic

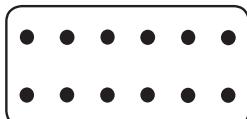
Contacts: Molded-in copper alloy, tin plated (gold optional - consult factory)

Mating Plugs

12 Pin: DT06-12S*

Modifications

G003: Gold plated pins



DTF15-12P*
12 size 16
A, B, C, D

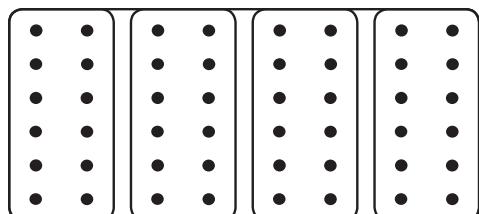


■ DTMF15 Series Miniature Straight

Materials

Housing: Thermoplastic

Contacts: Molded-in copper alloy, tin plated (gold optional - consult factory)



DTMF15-48P

(4)12 size 20

Mating Plugs

12 Pin: (4) DTM06-12S*

Modifications

B026: Alternate keying position



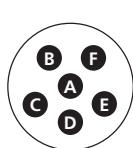
■ HD10 Series Straight

Materials

Housing: Thermoplastic

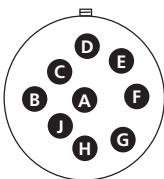
Contacts: Molded-in copper alloy, nickel plated

Mounting Seal: Standard O-rings may be used



HD10-6-96P-N005

6 size 16



HD10-9-96P-N005

9 size 16

Mating Plugs

6 Pin: HD16-6-96S

9 Pin: HD16-9-96S

Modifications

N005: Straight reduced diameter pins supplied as standard



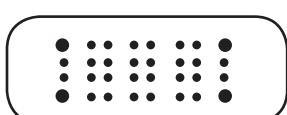
■ STRIKE13/15 Series 90° or Straight

Materials

Housing: Thermoplastic

Contacts: Molded-in copper alloy, tin plated (gold optional - consult factory)

Mounting Seal: Silicone rubber



SRK1*-MD*-32A-001-****

4 - Size 16

28 - Size 20

Mating Plugs

32 Pin: SRK06-MD*-32A-***

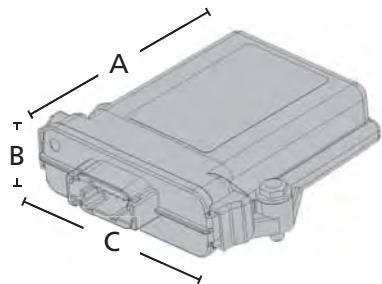




Printed Circuit Board Enclosures and Headers

Deutsch Industrial offers compact circuit board enclosures that accept snap-in headers. The enclosure features a through hole mounting flange on each side, as well as optional venting. Designed with space to accommodate one or more DT or DTM Series interfaces, the headers feature 90° pins. A radial flange seal provides environmental sealing to the enclosure. The headers mate with the DT and DTM standard plugs.

■ DTM Series Enclosure and Header Dimensions



DTM Series Enclosure with Header		
Overall Length A	Overall Height B	Overall Width C
5.24 (133.03)	1.42 (36.00)	4.68 (118.80)

Dimensions are for reference only.

■ DTM Header Connector

Materials

Contacts: Molded-in nickel mating side, tin plated PCB side

Mating Plugs

12 Pin: DTM06-12S*
24 Pin: (2) DTM06-12S*

Modifications

GR01: DTM Series snap-in header with gold plated pins
R008: DTM Series snap-in header



DTM13-12P-****

12 size 20
A, B, C, D



DTM13-12PA-12PB-****

(2) 12 size 20
A, B



DTM13-12PC-12PD-****

(2) 12 size 20
C, D

■ DTM PCB Enclosure

Material

Housing: Thermoplastic

Venting*

A: With vent hole
B: Without vent hole

Modifications

E016: Molded in clear Ultem® material



EEC-325X4*

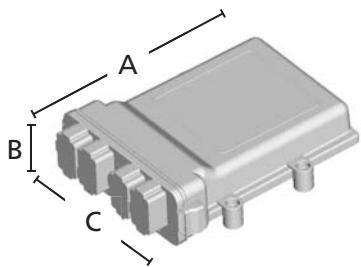


EEC-325X4*-E016





■ DT Series Enclosure and Header Dimensions



DT Series Enclosure with Header		
Overall Length A	Overall Height B	Overall Width C
7.93 (201.30)	2.15 (54.63)	6.30 (160.00)

Dimensions are for reference only.

■ DT Header Connector

Materials

Contacts: Molded-in tin (gold optional - consult factory)

Mating Plugs

12 Pin: DT06-12S*
24 Pin: (2) DT06-12S*
36 Pin: (3) DT06-12S*
48 Pin: (4) DT06-12S*

Modifications

GR02: DT Series snap-in header with gold plated pins
R015: DT Series snap-in header



DT13-12PA-R015
12 size 16
A



DT13-24PAB-R015
(2) 12 size 16
A, B



DT13-36PABC-R015
(3) 12 size 16
A, B, C



DT13-48PABCD-R015
(4) 12 size 16
A, B, C, D

Notice

Keying position of receptacle must match keying position of mating plug(s).

■ DT PCB Enclosure

Material

Housing: Thermoplastic

Venting*

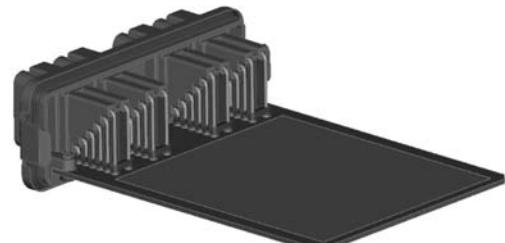
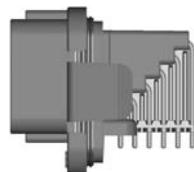
A: With vent hole
B: Without vent hole

Board Size

5" X 6.50"



EEC-5X650*





Electronic Module Design Recommendations

Deutsch connectors are designed to handle all environmental conditions typically seen on heavy duty equipment. Design considerations have been given for temperature, vibration, and high current levels to exist simultaneously in a connector with no performance degradation.

■ Low Voltage Circuits

Applications with data input/output signals of 0 to 5 volts require special consideration in the terminal selection. The primary concern is ensuring the low voltage signal is carried through the circuit. To minimize signal degradation, select a gold plated terminal. Gold is a better plating choice for 0 to 5 volt applications because it does not oxidize and easily conducts lower voltage signals. Nickel and tin platings are not designed for voltage levels less than 5 volts. Terminals plated with nickel and tin will over time form a layer of oxidation on the surface of the plating that only higher voltage signals are able to break through. The small additional cost for the gold terminal can dramatically improve the reliability of the electronic system.



■ Air Tight Connections

In some applications, it is important to prevent air from penetrating electronic enclosures. Air can bring in water vapor and create condensation on the printed circuit board. To prevent this from happening, potting or a light conformal coating can be applied to the board.

Another method for protecting against air penetration is to seal the enclosure after it is assembled and tested. One drawback to consider is accommodating the connector interface. The flange seal prevents air penetration at the flange, but there is still a possibility for air to enter through the pin terminal area. Deutsch has several designs that offer a seal around the terminal. This can prevent any air penetration through the connector up to a 5 p.s.i. pressure differential. Consult a Deutsch representative for additional assistance.



■ Eliminating Long Term Vibration Problems

A critical concern when applying connectors to printed circuit boards is the long term durability as it relates to temperature cycling and vibration. All of the components including the design of the box, the pc board, the connector, and the seal must work together to account for temperature cycling and vibration. The main concern is to not have the pc board flex in service.

A typical heavy duty application uses either a straight extended pin connector or a connector with pins that are bent 90° to the axis of the connector. At the point the connector mates with the board, there is a mechanical attachment for the connector to the pc board which is independent of the solder. The engaging end of the connector normally goes through an opening in the box that houses the pc board. The connector is then attached to the box during which time a seal is used to prevent moisture intrusion into the box.

Another design pitfall is stress on the soldered terminal on the connector. To avoid these concerns, an allowance must be made to assure that stress between the pc board and connector does not interfere with the seal performance. There are a variety of methods that can be used to create a successful design. These methods include having the pc board loose in the box and then pot the box with a flexible sealant after the sealing flange is attached to the box. Another possibility would be to reflow the solder after the board and connector are mounted in the box. There are several good approaches to solving these problems and providing a trouble free installation. Consult a Deutsch representative for assistance specific to your application.



