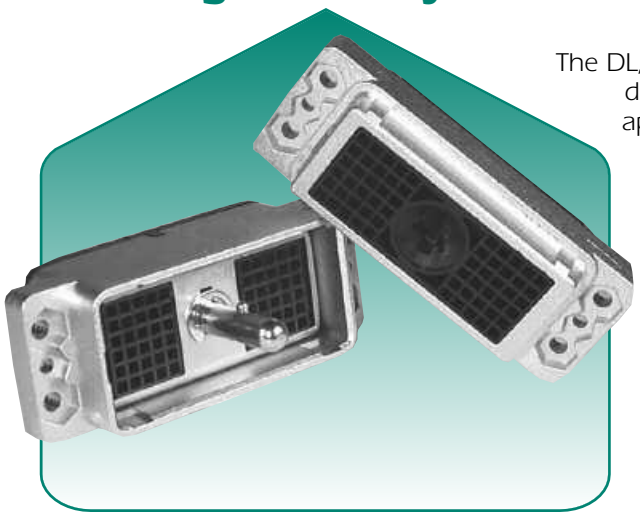
High Density Zero Insertion Force (ZIF) Connectors



The DL, Zero Insertion Force Connector (ZIF) is a very versatile high density connector. It offers an economical solution for unique applications with a wide variety of sizes and accessories to an interconnect solution. These are suited for commercial/ industrial applications with the ease of no sliding force during mating & unmating. DL connectors can be found in various applications such as medical, sound, lighting & entertainment equipment. The new DLM shielded metal shell connector offers a stronger, light weight aluminum housing that is nickel plated for maximum shielding effectiveness along with great looks. Now available and fully intermatable with the 60, 96 and 156 contact versions, which have become an industry standard.

Applications

- Medical
  - Ultrasound Diagnostic
  - Patient Monitoring
  - Hospital Equipment
- Test & Instrumentation
  - Avionics
  - Automated Test Equipment
  - Computer & Peripheral Equipment
  - Semiconductor
- Commercial/Industrial Manufacturing
  - Automation
  - Robotics
  - Electrical Controls
- Entertainment
  - Recording Studio Equipment
  - Stage Lighting & Sound
  - Broadcasting Equipment
- Telecommunication
  - Systems Interconnect
  - Manufacturing Test Equipment
  - Switching Systems
- Transportation
  - Locomotive Systems
  - Automotive Electronics
  - Aircraft Simulators

Features

True Zero Insertion Force (ZIF) Connectors
There is no build up of mating force typically associated with high pin count style connectors. So mating and un-mating is as easy as twisting a handle.

Long Mating Life
10,000 matings minimum (100,000 for DLD drawer style) allows these connectors to be used in testing and burn in applications.

High Pin Count
60, 96, 156, 260, 360, 624, 1248, and even 2496 contacts make the DL series one of the highest pin count per connector available.

Wide Selections of Terminations
Crimp, printed circuit, square post, and solder buss style contacts give you maximum flexibility on how to wire your connectors.

New Nickel Plated Aluminum Housings
The DLM1/2/3 (60,96 & 156 pin) versions are now available in a strong metal shell fully EMI/RFI shielded version that can mate with the standard plastic housing version. This allows for easy upgrade to a shielded version without sacrificing intermatability of units already in the field.

Contact Wiping
During mating the contacts wipe lightly together which helps clean the contact mating area and assures low contact resistance needed for digital or low current applications.

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Technical Specifications

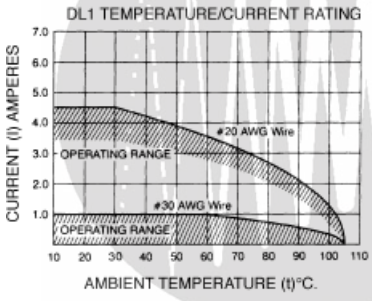
MATERIALS & FINISHES

Shells	DL1/2/3	Glass filled thermoplastic, UL94V1 rated, Color: Black
	DL4	Aluminum alloy, cadmium plated housing, clear anodized mounting plate
	DL5	Glass filled thermoplastic, UL94V0 rated, Color: Black
	DLD1/2	Glass filled thermoplastic, UL94V1 rated, Color: Black
	DLM1/2/3/5/6	Aluminum alloy, nickel plated
Actuators & Plug insert retainers		Stainless steel, passivated
Spring Mounting Screws (DLD)		Stainless steel, passivated
Compression Spring (DLD)		Music wire, zinc plated
Contacts		Copper alloy
Plating		
	Crimp	50µ inches gold over 50µ inches nickel mating area gold flash on balance
	Crimp	20µ inches gold over 50µ inches nickel mating area tin lead on balance
	Square Post	50µ inches gold over 50µ inches nickel mating area gold flash on balance
	Square Post	20µ inches gold over 50µ inches nickel mating area gold flash on balance
	PC/RC	20µ inches gold over 50µ inches nickel mating area tin lead on balance
Insulators		
	DL4	Glass filled thermoplastic, UL94V1 rated, Color: Grey
	DLM1/2/3/5/6	Glass filled thermoplastic, UL94V0 rated, Color: Black

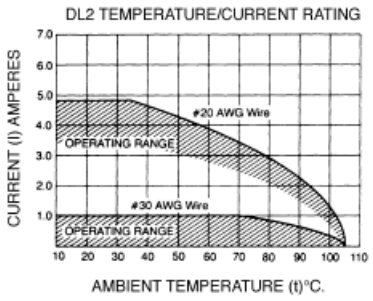
ELECTRICAL

Dielectric Withstanding Voltage	1200 Vac RMS – Crimp & square post contacts 1000 Vac RMS – PC/RC round PCB contacts 750 Vac RMS – DL4
Current Rating	5 Amps maximum – Crimp & square post contacts 4 Amps maximum – PC/RC contact 10 Amps up to 60 Amps maximum for buss contacts

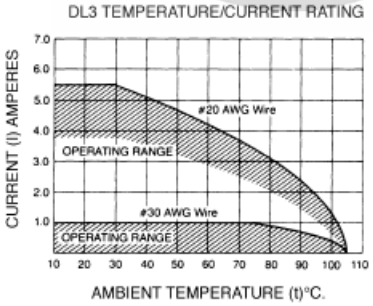
DL1 DLM1 DLD1



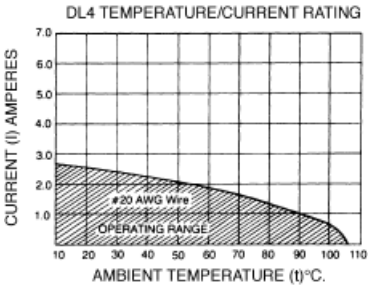
DL2 DLM2 DLD2



DL3 DLM3



DL4



Note: The Ambient Temperature Curves shown represent the rated current carrying capacity of the Cannon DL1/2/3/4, DLM1/2/3, and DLD1/2 electrical connectors, derated to 80% of the value recorded using the methods specified by International Electro-Technical Commission Document 48 (1975).

Current was applied to the total connector (all contacts) in one-half ampere increments and maintained at each current level until thermal stability was achieved. A thermocouple inserted into the "hottest area" of each connector then measured the connector temperature at the same time that an ambient temperature reading was taken. The difference between the two measured values is the heat rise or self-heating created solely by the current flow, and this temperature rise for the current level was deducted from the insulator material rated temperature. These values were then derated to 80% to obtain the curves shown.

Wire Range Sizes	32 AWG –18 AWG
Contact Resistance	15 milliohms maximum – Crimp & square post contacts 20 milliohms maximum – Crimp 32-30 AWG contacts 30 milliohms maximum – PC/RC contacts
Insulation Resistance	5000 megohms minimum

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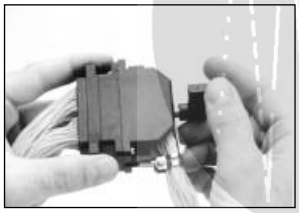
MECHANICAL

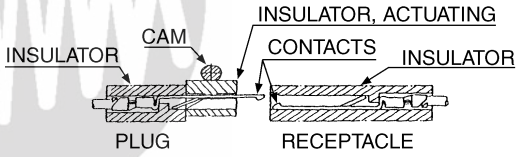
Operating Temperature	-55°C to 105°C: DL4 -55°C to 71°C
Durability	10,000 Mating cycles minimum DL/DLM 20,000 Mating cycles minimum DL4 100,000 Mating cycles minimum DLD
Insulation Strip Length	32 to 22 AWG .130" (3.30mm) 20 to 18 AWG .160" (4.06mm)
Insulation Diameter	30 to 28 AWG .053 (1.35mm) maximum 26 to 24 AWG .065 (1.65mm) maximum 22 to 18 AWG .074 (1.88mm) maximum
Crimp Tensile Strength min. lbs.	

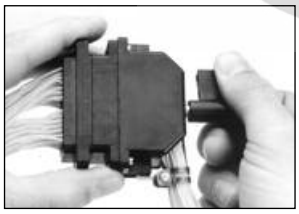
AWG	Lbs.
32	1
30	1.5
28	3
26	10
24	15
22	15
20	19
18	30

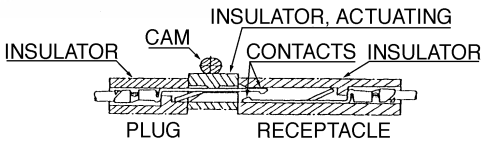
Chemical Resistance	Salt spray per MIL-STD-202 method 101 Condition B (48 hours)
Vibration	Per MIL-STD-202 method 204 Condition C Per MIL-STD-167-1/2 Modified (DL4)
Shock	Per MIL-STD-202 method 213 Condition A (50g's)
Contact Type	Crimp, wire wrap, printed circuit board, Bus contacts -solder or crimp lug tab
Number of Circuits	60-2496
Contact Insertion	Hand insertable from rear no insertion tool required
Contact Retention	8 lbs. (35.585 newtons) minimum
Contact Spacing	.100" (25.4mm) square grid
Polarization	By center and/or corner polarizing post kit
Approvals	UL94V1 and UL94V0 materials

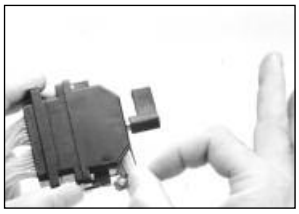
How DL/DLM Hand Actuated Connectors Work

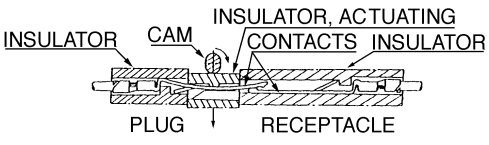












How DLD Drawer Style Connectors Work