

MISSION-CRITICAL
INTERCONNECT
SOLUTIONS



Glenair
SIGNATURE SERIES

Space-Grade Rectangular Connectors

Proven, Rugged, Flight-Heritage Technologies





PhoneSat 2.5 CubeSats at
NASA Ames Research Center

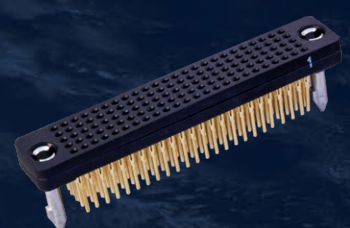
HDSTACKER™

High-density, solder-free, PCIe-ready board-to-board stackable connectors

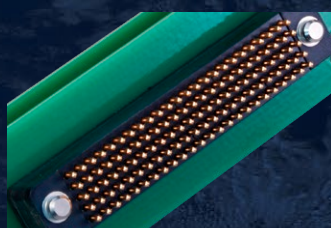
Mission-critical board-to-board connector applications demand fail-safe signal integrity as well as rugged and reliable harsh-environment performance. The HD Stacker™ brings Glenair innovation to stacking board-to-board connectors with several significant design improvements: Ultra high-density .0625" center-to-center Chevron Contact System provides 55% more contacts per connector size, or a 31% size reduction for the same number of contacts as compared to current industry solutions. Polarized connector bodies and available polarized guide pins prevent accidental mismatching. The solder-free press-fit compliant pin contacts are removable, repairable, and available in custom lengths. HD Stacker connectors may also be ordered with pre-wired cable or flex jumper terminations. High-speed signal integrity test reports are available upon request. Choose HD Stacker for the ultimate in high-density, rugged board-to-board stackable connector performance.

- High-density .0625" pitch Chevron Contact System
- PCIe 3.0 capable
- Performance up to 10.5Gbs
- Polarized insulator and hardware options
- Solder free "eye of the needle" compliant tail for press fit installation
- High-temp PPS insulator meets NASA outgassing requirements
- Available wired / flex jumpers
- Available between-board spacers up to 1 inch

HD STACKER™ FOR MISSION-CRITICAL BOARD-TO-BOARD APPLICATIONS



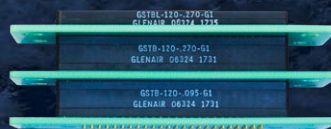
Solder-free press-fit
(compliant pin) board mounting



.0625" pitch contact spacing:
highest available density



Polarized shells and keyed guide
pin hardware prevent mis-mating



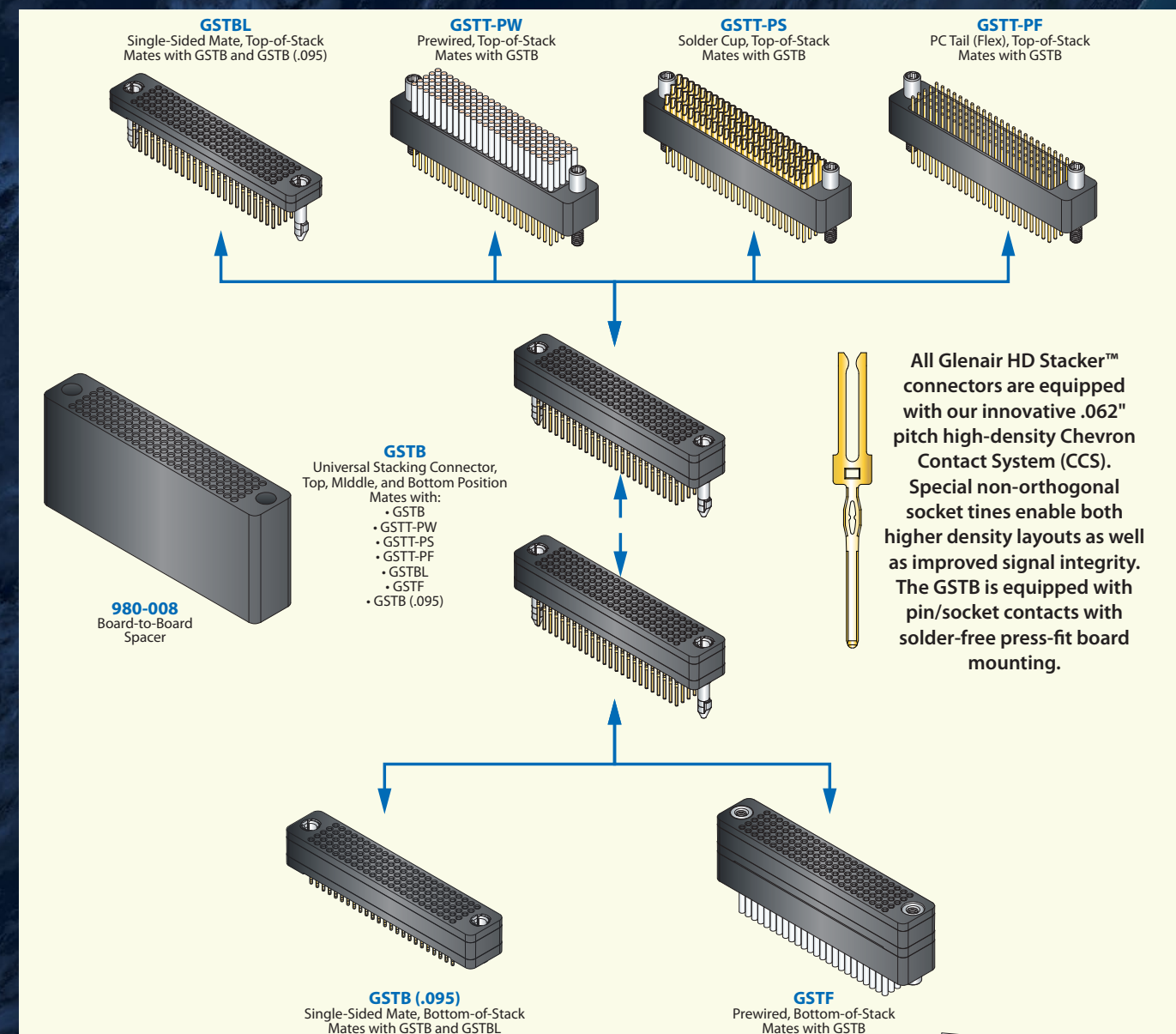
Controlled signal integrity for
differential applications
(PCIe Rev 3 capable)

.0625" PITCH COMPLIANT PIN High-Density Stacker™

Rugged board-to-board stackable connectors



HD STACKER™ POSITION AND MATING COMPATIBILITY GUIDE



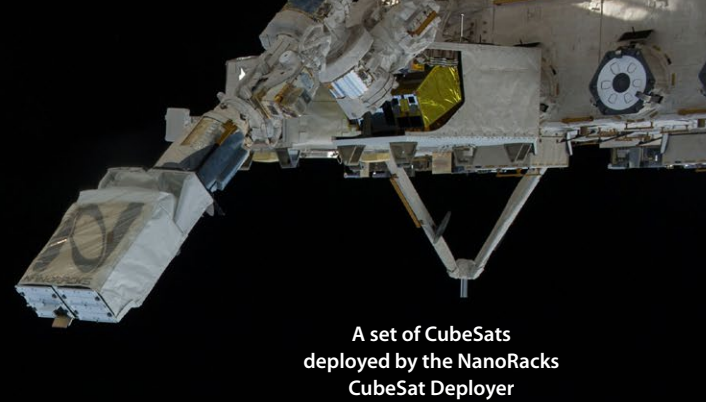
QUALIFICATION TESTING / HIGH-SPEED PERFORMANCE

Stacker connectors were qualified in accordance with MIL-DTL-55302G testing for:

- Contact engagement/separation
- Contact retention
- DWV
- Electrical resistance
- Mechanical vibration and shock
- Insulation resistance
- Thermal shock
- Contact resistance
- Humidity

High-frequency electrical performance tests were performed for: Insertion loss, return loss, crosstalk, and time domain performance metrics including impedance and eye pattern. Complete test reports are available at www.Glenair.com/technical_information_test_reports





A set of CubeSats
deployed by the NanoRacks
CubeSat Deployer

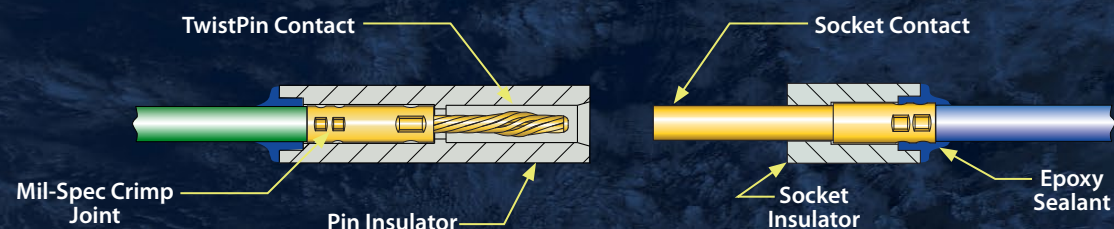
SERIES 171 Latching MicroStrips

TwistPin performance and durability in an economical, space-saving single row package

Series 171 MicroStrips are made for high-reliability wire-to-board and wire-to-wire applications. These high-density strip connectors are typically used in ruggedized 3 Amp signal applications, where higher-performance contacts, precision machined shells and space-grade dielectrics offer significant advantages compared to commercial-grade headers and jumpers. Glenair's rugged, high force TwistPin contact accepts up to #24 gage wire, the current rating is 3 Amps, the voltage rating is 600 Vac, and the temperature rating is -55C to +150C. The Series 171 Latching MicroStrip connector meets all applicable requirements of MIL-DTL-83513. Choose solder cup, pre-wired, or printed circuit board versions. A stainless steel latch provides secure coupling.

- High-reliability TwistPin contact system
- #24-30 AWG wire size
- .050" pitch contact spacing
- Solder cup, pre-wired or PCB header terminations
- 3 Amps, +150C, 600 Vac

LATCHING MICROSTRIP CROSS-SECTIONAL VIEW



SERIES 171

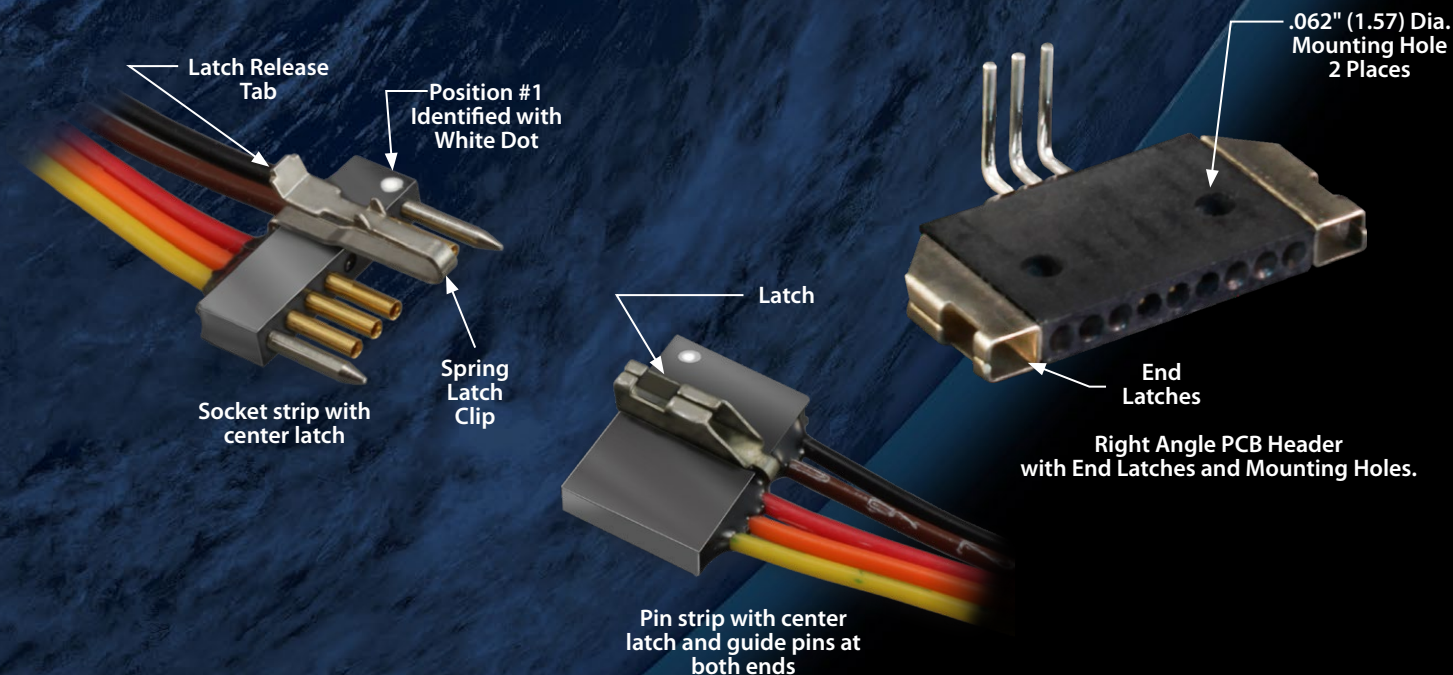
Latching MicroStrips

Superior TwistPin contact performance



ABOUT SPRING LATCHES, GUIDE PINS AND MOUNTING HOLES

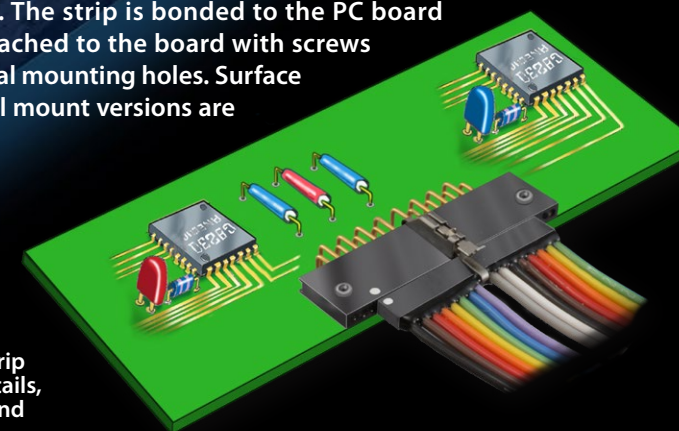
Optional stainless steel latch clips provide secure mating when subjected to shock and vibration. A single center latch is suitable for most applications. Dual end latches are also available. The spring latch is always installed on the socket strip. The latch receiver is installed on the pin strip. To unmate the connectors, simply press the release tab while pulling the connectors apart. MicroStrips are available with stainless steel guide pins. A single guide pin provides circuit polarization. A guide pin on each end helps to align connectors when mating and prevents damage to contacts. For most applications the preferred configuration is a single center latch with no guide pins. Mounting holes are now available. Attach strips to circuit boards with size 0-80 screws (customer-supplied).



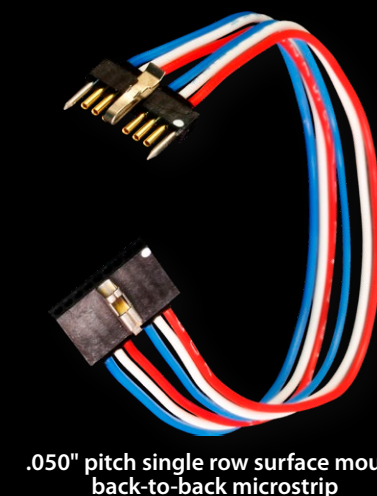
ABOUT BOARD MOUNT STRIPS

Space customers typically use MicroStrips for high reliability board-to-wire I/O applications. The pin strip is usually configured with right angle thru-hole PC tails. The strip is bonded to the PC board with epoxy, or attached to the board with screws installed in optional mounting holes. Surface mount and vertical mount versions are also available.

Right angle pin strip
with staggered PC tails,
mounting holes and
center latch



SINGLE ROW BACK-TO-BACK MICROSTRIPS



.050" pitch single row surface mount
back-to-back microstrip



JAXA Kibo Laboratory module
from the International
Space Station

Certified SpaceWire cables for both
laboratory/test applications and
flight applications

NASA
ESA, JAXA
SCREENED

SERIES MWDM Micro-D Connectors



Standard



Hermetic



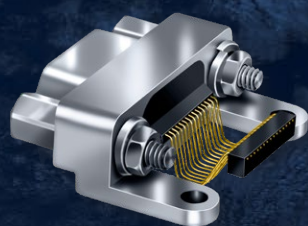
EMI Filter

TwistPin equipped MIL-DTL-83513 Micro-D
connectors offer outstanding mating
performance, durability and minimal
contact resistance

- High density Micro TwistPin contacts set on .050" centers
- 9 to 130 contact arrangements
- Pigtail, PCB, solder cup, and flex terminations
- Single row, multi-row, low profile and high density insert arrangements
- QPL and commercial versions
- Same-day availability on all part numbers
- Qualified for use in ESA, NASA, JAXA applications



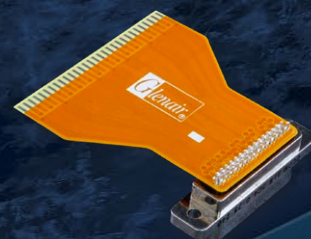
MasterLatch™



Surface Mount



Rear Panel Mount



Flex Circuit

MIL-DTL-83513 AND COMMERCIAL Micro-D Connectors

Mission-critical mating performance



Metal Shell Micro-D for Harnessing Applications



GRPM Solder Cup



GRPM
Insulated Wire



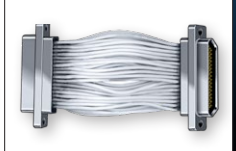
GRPM
Uninsulated Wire



MWDM Solder Cup



MWDM
Insulated Wire



MWDM
Back-To-Backs



Shielded Cable
Assembly



MWDM
Uninsulated Wire



GMDR
Insulated Wire



GMDE Environmental



GSWM SpaceWire



GMLM MasterLatch

Micro-Ds for Printed Circuit Board



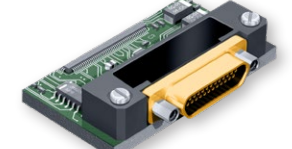
GRPM-CBS



GRPM-CBR



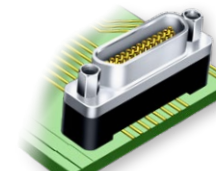
MWDM-BS



MWDM-BR



MWDM-CBR



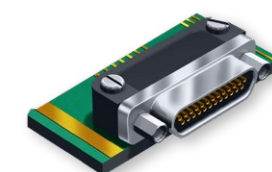
MWDM-CBS



90° Surface Mount



GMR7580



GMR7590



GMR7580C



GMR7590C



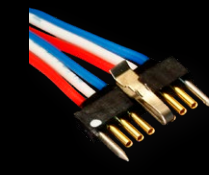
Right Angle Filter



WellMaster™ 260



Sav-Con®



Latching MicroStrip



Low Profile

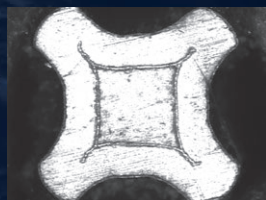


The International Space Station

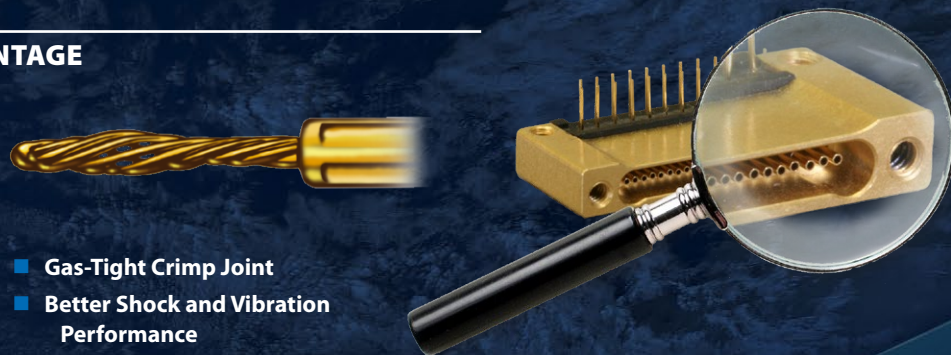
SERIES 89 Nanominiature Connectors

MIL-DTL-32139 qualified connectors for mission-critical board-to-wire applications—simply the smallest and lightest mil-spec connector in the business

THE NANO TWISTPIN ADVANTAGE



Transverse cross-section of a TwistPin contact crimped to solid wire



- Gas-Tight Crimp Joint
- Better Shock and Vibration Performance
- Corrosion Proof Contact Alloy

- 1 Amp current rating
- .025 Inch (0.64 mm) contact spacing
- #30 And #32 gage wire accommodation
- Single and double row
- Metal shell, aluminum, titanium or stainless steel
- TwistPin contact system
- Gold alloy contact, unplated
- Thru-hole and surface-mount PCB versions

SERIES 89 Nanominiature Connectors

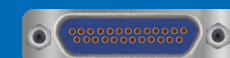
The smallest and lightest mil-spec connector

Series 89 Nanominiature Connector Performance Summary	
Contact Spacing	.025" (0.64mm) Contact Centers
Wire Accommodation	#30-#32 AWG
Current Rating	1 AMP Max
DWV	250 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 Millivolt Drop Maximum
Shock, Vibration	100g's, 20 g's
Durability	200 Mating Cycles
Corrosion Resistance	48 Hours Salt Spray
Mating Force	5 Ounce Max, 0.4 Ounce Min

How Small Are They?



D-Subminiature Connector
25 Contacts
on 0.109 Inch Spacing



Micro-D Connector
25 Contacts
on 0.050 Inch Spacing



Nano Connector
25 Contacts
on 0.025 Inch Spacing

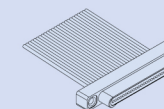


Also available: space-grade Nano circulars

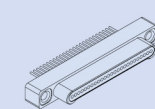


SERIES 89 NANOMINIATURE PRODUCT SELECTION GUIDE

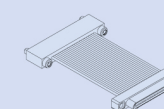
Pre-Wired Single Row Connectors



Insulated Wire

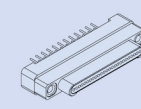


Uninsulated Wire

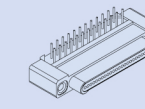


Back-to-Back Cables

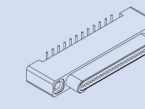
Pre-Wired PCB Connectors



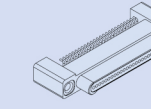
Thru-Hole Vertical



Thru-Hole 90°

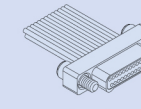


SMT Vertical

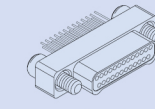


SMT 90°

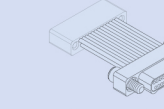
Pre-Wired Double Row Connectors



Insulated Wire

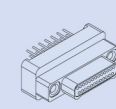


Uninsulated Wire

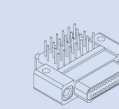


Back-to-Back Cables

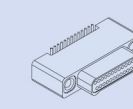
Double Row PCB Connectors



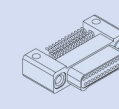
Thru-Hole Vertical



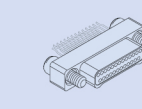
Thru-Hole 90°



SMT Vertical

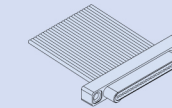


SMT 90°

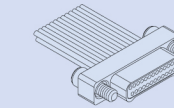


SMT Straddler

Pre-Wired MIL-DTL-32139 Connectors



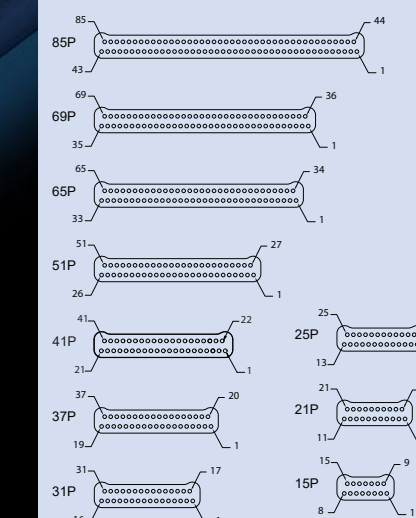
Single Row, Insulated Wire



Double Row, Insulated Wire

NANOMINIATURE CONTACT ARRANGEMENTS

Single Row Mating Face of Pin (Plug) Connector



Double Row Mating Face of Pin (Plug) Connector





JAXA Kounotori H2 Transfer Vehicle and the Canadarm on the ISS

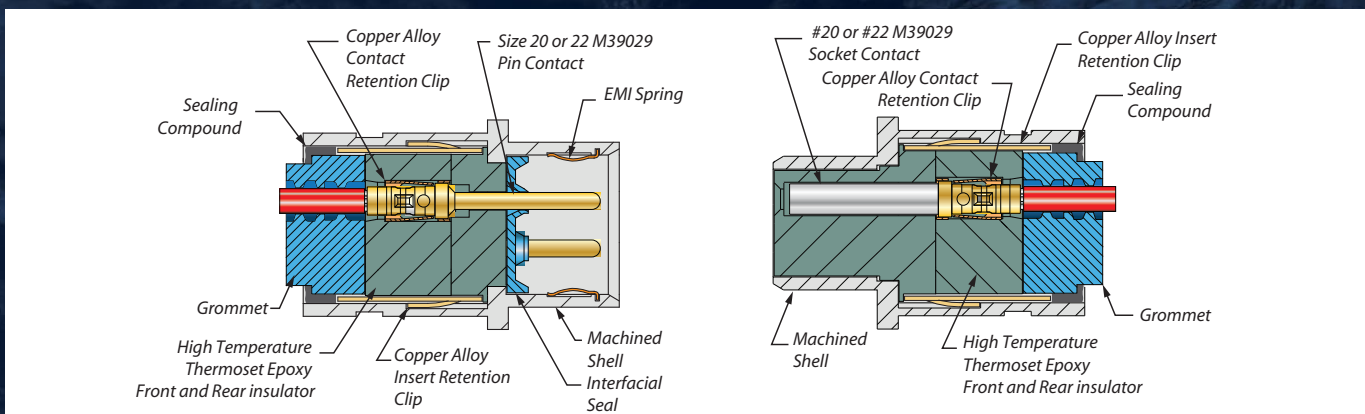
ADVANCED-PERFORMANCE HiPer-D Connectors

Space-grade M24308 intermateable

The HiPer-D connector is a M24308-type D-Subminiature connector with superior design features. Unlike standard M24308 connectors with stamped steel shells, the HiPer-D connector features a one-piece machined shell, 200°C continuous operating temperature rating and enhanced, mated shell EMI/RFI protection via an integrated ground spring. Aerospace grade fluorosilicone grommets and face seals (JAXA / NASA outgassing available) provide environmental protection. The HiPer-D is intermateable, intermountable and interchangeable with standard M24308 D-Sub connectors.

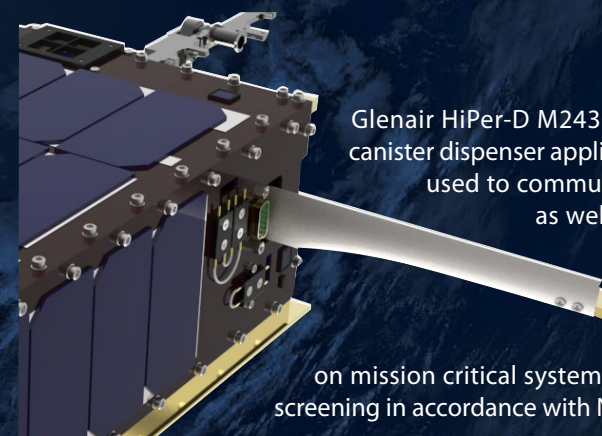
- Advanced temperature, vibration and EMC/ electrical performance
- 11 standard and 20 combo insert arrangements
- High temperature epoxy insulators
- Watertight sealing
- Rugged machined one-piece shell

STANDARD AND HIGH DENSITY HiPer-D® - CUTAWAY



SERIES 28 HiPer-D Space Grade Connectors

Product features and specifications



Glenair HiPer-D M24308 D-sub connectors are ideally suited for CubeSat or NanoSat canister dispenser applications where rack and panel or connectorized wire assemblies are used to communicate with HDRMs, pin pullers, pin pushers, door status sensors, as well as system communications and testing prior to deployment of satellite equipment. Standardized usage of M24308 connectors on hardware interfaces simplifies interconnection and communication. Glenair HiPer-D space grade M24308 D-sub connectors eliminate potential interconnect electrical problems on mission critical systems. Connectors are supplied with NASA/ESA/JAXA outgassing and screening in accordance with NASA EEE-INST-0002.

HiPer-D High-Performance D-Sub vs. MIL-STD-24308		
Specification / Feature	M24308	HiPer-D
Temperature	-55°C to +125°C	-65°C to +200°C
Insulator	Thermoplastic	Thermoset Epoxy
Shell	Steel (Brass)	Aluminum (SST)
Voltage	1000 VAC	1000 VAC
Grounding	Dimples in shell (not in Mil-Spec)	Nickel-plated Copper Alloy EMI spring
Environmental	No	Yes
Vibration, sine	20 g	60 g
Vibration, random	N/A	43 g
Shock	50 g	300 g
Bolt-on backshells	No	Yes

HiPer-D M24308 Combo-Ds for power, signal, and RF applications

- Size #8 power and 50 ohm or 75 ohm RF contacts
- Mixed layouts with #8's and #20's
- 200°C continuous operating temperature
- 20 tool layouts
- Crimp and PC tail terminations



High-Speed HiPer-D High-Performance M24308

Crimp contact non-environmental connectors with #8 contacts for high-speed data transmission

- One-piece rugged machined aluminum shell
- Two to five size 8 Coax, Twinax, or Quadrx contacts
- Common ground plane (no insulators)
- Available in straight and right angle PCB versions
- Non scoop-proof solution. For scoop-proof rectangular connector requirements, see Series 792





View from the
Cupola of the
International
Space Station

HIGH PERFORMANCE

Series 791

The next-generation micro-miniature rectangular connector for demanding aerospace applications



Polarized / keyed shells prevent mis-mating and allow designers to specify identical layouts side-by-side without risk of circuit damage

Sometimes the simplest ideas are the best ideas. The Series 791 is a simple idea. Let's create a brand new class of connector – the micro-miniature rectangular. Let's combine the versatility of the Series 790 Micro-D type connector with the rugged features of our popular HiPer-D M24308 type connector. Let's add a unique dual lobe shell and let's recess the pins to eliminate the possibility of scooping damage. Let's add high speed datalink capability.

Originally designed for NASA's Orion project, the 791 is qualified for manned space flight. The 791's small size and blind mate capability make it a perfect choice for 2U and 3U electronics modules. Space applications include radars, satcom, exoatmospheric vehicles, flight avionics, power distribution units, and satellite instrumentation.



Prevent mis-mating with Mod Code 555 special keying option

- Next-generation small form factor aerospace-grade rectangular connector approved for manned space flight
- Scoop-proof recessed pin contacts
- 37 arrangements; 12 shell sizes; size 23, 16, 12 and 8 contacts
- Environmental
- EMI shielded
- Guide pins for blind mate modules

SERIES 791 MICRO-CRIMP

Next-generation micro-miniature rectangular for demanding aerospace applications



Save Size and Weight with Series 791 Connectors

The Next Generation Micro-miniature rectangular Connector for Demanding Aerospace / Space Flight Applications

About The Series 791

The Series 791 is an aerospace-grade micro-miniature rectangular connector with EMI protection and environmental sealing. Originally developed for NASA's Orion capsule, The 791 is qualified for manned space flight and is ideal for radars, weapons systems and avionics gear.

The Series 791 is available either with crimp pins or with printed circuit terminals. Machined aluminum alloy shells feature dual lobes for polarization. Contact sizes range from size 8 to size 23 in 37 arrangements. Pin contacts are recessed to prevent scooping damage while mating. Crimp contacts conform to M39029 requirements and are rear release.

An optional ground spring reduces susceptibility to EMI problems. Fluorosilicone face seals and wire grommets prevent moisture and contamination. Panel mount versions are available with an O-ring, or for improved panel bonding, a metal spring.

Board mount versions include straight or right angle terminals. Right angle PCB connectors feature an aluminum shroud covering the terminals.

Hardware options include screwlocks, jackscrews or guide pins for blind mate applications.



M-17P17 with size 16 contacts



Integral backshell cable connector

- Coax, twinax, quadrax and Ochito octaxial contacts
- Rugged aluminum shell with dual polarizing lobes
- Straight and right angle printed circuit board mounting

- Available with integral oval band porch or backshell accommodation
- Superior EMI shell-to-shell performance compared to M24308
- SAE AS39029 crimp-and-poke contacts



Shell size A – the smallest 791

- -65°C to +150°C
- Panel mount versions with O-ring or EMI spring



Series 791 with MT ferrules



Series 791 with MT ferrules

- Ruggedized small form-factor, high-density MT fiber optic solution
- Optimized for use with parallel optic transceivers in ribbon or round cable applications

- Epoxy sealed board-mount configurations, straight and 90°, with and without panel mount sealing
- Internal ground spring
- Fully shrouded shells for superior EMC performance compared to M24308



The next-generation micro miniature rectangular connector with El Ochito contacts for high-speed aerospace applications



The robotics workstation inside the ISS cupola

The Series 792 connector brings high-speed data-rate performance to the Glenair Series 79 rectangular family. Size 8 cavities accept standard Quadrax or El Ochito® shielded octaxial contacts making it a perfect choice for radars, weapons systems, mission computers and displays, communications gear, and more.



- High-speed Ethernet, USB 3.0, HDMI, and DisplayPort
- PCB-mount and cable connectors
- Scoop-proof interface
- 12 arrangements and 6 shell sizes
- Precision-machined dual-lobe polarized shells
- Environmentally sealed
- Integrated EMI shielding and grounding
- Blind mating

HIGH-SPEED Series 792

The next-generation micro miniature rectangular for high-speed aerospace applications

DESCRIPTION	REQUIREMENT	PROCEDURE / NOTES	DESCRIPTION	REQUIREMENT	PROCEDURE / NOTES	
Operating temperature	-65° to +175°C	EIA-364-32 Test Condition IV	Shell-to-shell resistance	2.5 millivolt maximum	EIA-364-83	
Current rating	1.5 Amps (datalink contacts) 5 Amps (Size #23 contacts)	Datalink contacts tested: El Ochito® White	Shielding effectiveness	Frequency	Attenuation dB	EIA-364-66
DWV (sea level)	750 VAC (Size #23 contacts) 1000 VAC (datalink contacts)	EIA-364-20		100	75	
Insulation resistance	5000 MΩ minimum	EIA-364-21		1000	50	
Contact resistance, 25°C	55 millivolt maximum	EIA-364-06, 1.0 A test current, #24 AWG wire		3000	44	
				6000	38	
			10000	35		
			Ingress protection	IP67 rating	IEC-60529	

Insert Arrangements

A-1W1 • A-1G1*
1 #8

A-3W1
1 #8 / 2 #23

B-2W2 • B-2G2*
2 #8

B-6W2
2 #8 / 4 #23

B-23W1
1 #8 / 22 #23

C-3W3 • C-3G3*
3 #8

C-9W3
3 #8 / 6 #23

C-24W2
2 #8 / 22 #23

D-4W4 • D-4G4*
4 #8

D-12W4
4 #8 / 8 #23

D-27W3
3 #8 / 24 #23

E-5W5 • E-5G5*
5 #8

E-15W5
5 #8 / 10 #23

E-48W3
3 #8 / 45 #23

F-9W9 • F-9G9*
9 #8

F-31W9
9 #8 / 22 #23

Contact Key

Size #8

Size #23

* Grounded aluminum insert



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