



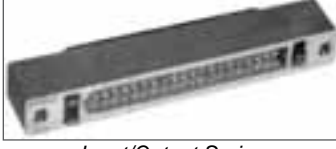


- 38999 SJT I II III
- 26482 Matrix 2
- 83723 III Pyle Matrix
- 5015 Crimp Rear Release Matrix
- 26500 Pyle
- Printed Circuit Board
- EMI Filter Transient
- Fiber Optics
- High Speed Contacts
- Options Others

Wide range of Rectangular Interconnects

Amphenol provides an impressive array of Rectangular Connectors to meet the needs of high density systems and interconnect attachments to Printed Circuit Boards. The Low Mating Force Rectangulars have proven performance on the ground, in the air, and at sea. Applications include: M1A2 Abrams, F-16 Falcon, F/A-22 Raptor, F-35 Lightning 11, AIM-132, ASRAAM. The LRM Surface Mount Connectors shown on page 433 & 434 also have met the needs of major programs that include:

F-35, F-16, F-15, F/A-22, F/A-18, B2, JTRS, EH101, Sincgars, ATACMS, M1 Tanks, Grippen, F-117, Harpoon, LANTRIN, AH-64 APACHE, ASRAAM, ATFLIR

Low Mating Force Rectangular Connectors with Bristle Brush Contacts

Reference Catalog 12-035*	APPLICATION	STANDARDS/ REQUIREMENTS	COUPLING/ MOUNTING	CONTACT TERMINATION/ ARRANGEMENTS	PERFORMANCE ENVIRON./ELECT.
 Mother Board Series	Military designation: M55302. Proprietary designations: MB, DB, I/O, PC. Rectangular connectors for attachment to printed circuit boards. Offers high contact density capability. Contain Bristle Brush contacts, consisting of multiple strands of high tensile strength wire that are bundled together to form a "brush-like" contact.	Military versions meet MIL-DTL-55302/166 through /172.	For mounting to printed circuit boards or discrete wires. Body styles offered: <ul style="list-style-type: none"> • Mother board • Daughter board • Input/Output • PC Flexibility in mating: <ul style="list-style-type: none"> • Perpendicular boards • End to end boards • Parallel boards • Wire to boards • Card extenders. Polarization keys provide up to 256 possible positions.	Brush contact termination. (Also called B3 contacts). Termination Styles: <ul style="list-style-type: none"> • PCB through-hole solder • Wire wrap (MB only) • Crimp to discrete wires (Input/Output only) • Solderless complaint into 0.040 plated through holes (MB only) Arrangements: <ul style="list-style-type: none"> • 2, 3 or 4 row arrangements with 10 to 100 contacts per row in one contact per row increments. • 0.100 inch center to center square grid contact spacing. 	Operating temp. from -65°C to +125°C. Connector bodies are high performance glass-filled thermoplastic moldings. Connector configurations are capable of supporting data rates up to 400 Mbps.
 Daughter Board Series					
 Input/Output Series					
 PC Series					
					
<p><i>Variety of Rectangular Brush Connectors including smaller styles that have only 10 contacts and are available in color coded moldings.</i></p>					

OPTIONAL FEATURES

- Locking screws and bushings are available for attaching connectors to boards.
- Contact styles available: straight, 90 degree, PCB stub, wire wrap and crimp.
- Small 10-contact arrangement styles are available with option of multi-colored moldings for color coding applications.

MARKETS

- Medical Equipment
- IC Chip Testers
- GPS Systems
- Telecommunications
- Factory Automation
- Military and Commercial Aviation
- Military Vehicles
- Space applications

Low Mating Force High Cycle, Bristle Brush Contacts

As mentioned in the Rectangular section of this publication, the Amphenol Low Mating Force and Amphenol LRM Surface Mount Connectors utilize the Bristle Brush contact design. The Brush or B³ contact is made up of multiple strands of high tensile wire that are bundled together. 70% to 90% reduction in mating/unmating forces is achieved over conventional contacts, and the brush contact has proven durability and long contact life. Hybrid Low Mating Force connectors can be designed with combinations of brush and coax/twinax/power contacts or fiber optic termini. LRM Surface Mount Connectors can also be designed with combinations of contact styles.



Bristle Brush Contacts - Multiple Stands of Wire are Bundled together to form a "Brush-like" Contact

*Amphenol is developing a combined rectangular catalog 12-R1. 12-035,12-037 and LM-300 will be included in the combined rectangular catalog please contact Amphenol Aerospace for future availability.

Rectangular Interconnects

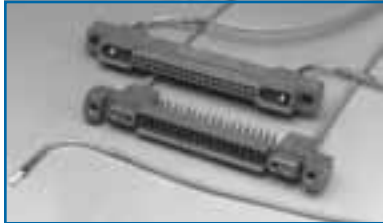
For a Wide Range of Applications, Military

Hybrid Rectangular Connectors with Brush/Power/Coax/Fiber Optic Combinations

Reference Catalog 12-035



Power/Coax/Brush Contact Combinations



Fiber Optics/Brush Contact Combinations

APPLICATION

Rectangular connectors for attachment to printed circuit boards. Offers versatility of combining contact types- power, coax, twinax, fiber optics and Brush contacts in one high density package.

STANDARDS/ REQUIREMENTS

M55302 type rectangular connectors with hybrid contact arrangements. Power contacts and shielded coax or twinax contacts meet M39029 standards. Fiber optic termini meet M29504/4 & /5 standards.

COUPLING/ MOUNTING

Same as shown above for Low Mating Force rectangular connectors.

CONTACT TERMINATION/ ARRANGEMENTS

Combinations of termination styles:
 • Brush contacts (as described above)
 • Power contacts - (standard M39029 size 16 or 12; same as used in MIL-DTL-38999 Series II)
 • Coax or twinax contacts - (M39029, size 16 and 12)
 • Fiber optic termini (multi-mode size 16; same as used in MIL-DTL-38999 Series III)

PERFORMANCE ENVIRON./ELECT.

Connector performance and brush contact performance is the same as shown above for Low Mating Force Rectangular connectors. Optical performances of fiber optic termini are the same as termini used in multi-channel circular connectors.

OPTIONAL FEATURES

- Hybrid configurations are available with fiber optics and brush contacts. (See photo above and Fiber Optic section of this catalog).
- Hybrid configurations are available with power and/or shielded (coax or twinax contacts). (See photo shown above).

LRM Surface Mount Connectors with Brush Contacts

Reference Catalog 12-037*



Chevron Grid - Up to 300 Contacts in 6 Rows.



Staggered Grid - Up to 360 Contacts in 8 Rows.



GEN-X Grid - Up to 472 Contacts in 8 Rows.

APPLICATION

Line replaceable modular interconnects with very high contact densities, for attachment to printed circuit boards. Contain Bristle Brush contacts, consisting of multiple strands of high tensile strength wire that are bundled together to form a "brush-like" contact. LRM connectors are available in SEM-E and custom form formats.

STANDARDS/ REQUIREMENTS

Uses Bristle Brush contact which meets MIL-DTL-55302. Amphenol staggered grid LRM connector is the F-22 Avionics system connector choice.

COUPLING/ MOUNTING

Modules: Surface mount/Straddle mount with .0375 spacing between leads, with rows of leads on each side of the module. Can be centered or off-centered mounted. **Backplanes:** Available with through-hole solder posts or with compliant pins. **Polarization:** Insert arrangement controls mating orientation. Up to 4096 keying combinations.

CONTACT TERMINATION/ ARRANGEMENTS

Brush contact termination. **Chevron Grid:** Backplane termination: PCB through-hole solder. Module/LRM termination: Surface mount on 0.025 pitch. **Staggered Grid:** Backplane termination: PCB through-hole solder or solderless compliant into 0.025 plated-through holes. Module/LRM termination: Surface mount on 0.025 pitch to flex circuit. **GEN-X Grid:** Backplane termination: PCB through-hole solder or solderless compliant into 0.025 plated-through holes. Module/LRM termination: Surface mount on 0.0375 pitch to rigid flex circuit boards.

PERFORMANCE ENVIRON./ELECT.

Operating temp. from -65°C to +125°C. Suitable for vapor phase soldering. Connector bodies are aluminum alloy with electroless nickel finish. Superior performance under vibration. Connector configurations are capable of supporting data rates in excess of 1 Gbps. Staggered and GEN-X styles are standard with ESD protection - see below. Bristle Brush contacts provide:
 • Low mating/unmating forces - 70% to 90% reduction from conventional pin and socket contacts.
 • Proven durability and long contact life - over 20,000 cycles of mating and unmating without performance degradation.
 • Multiple points (14-17) of contact per mated contact.
 • Intermittency-free performance.
 • Redundant current paths (stable, low resistance).
 • Proven electrical and gas tight contact sites.



Variety of Rectangular Interconnection Products, including LRMs and Low Mating Force Brush Connectors. Also shows the OBIS, Optic-Electric Backplane.

OPTIONAL FEATURES

- Wide range of combinations available for PCB/heat sink accommodations.
- Ruggedized VME64-X is another LRM type connector - See next page.
- Hybrid arrangements with Brush contacts, coaxial, power and fiber optics are available in the Staggered grid style.

MARKETS

- Military and Commercial Aviation
- Military Vehicles and GPS Systems

III
II
I
SJT
38999

Matrix 2
26482

Matrix Pyle
83723 III

Crimp Rear Release Matrix
5015

Pyle
26500

Printed Circuit Board

EMI Filter Transient

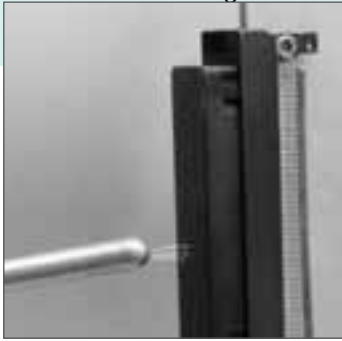
Fiber Optics

High Speed Contacts

Options Others

LRM Connectors with ESD Protection

Reference Catalog 12-037*



APPLICATION	STANDARDS/ REQUIREMENTS	COUPLING/ MOUNTING	CONTACT TERMINATION/ ARRANGEMENTS	PERFORMANCE ENVIRON./ELECT.
Staggered style and GEN-X style are standard with ESD protection. These connectors utilize the Faraday cage principal to shunt electrostatic discharge events to the conductive enclosure on which the connector is mounted, thus never allowing the high voltage, high current discharge event to reside on any contacts.	Exceeds protection requirements of IEC 801-2 and MIL-STD-1686.	LRM connectors with the added feature of ESD protection eliminate the need for discrete components (such as diodes) and maximizes PC board real estate.	See termination information for LRM connectors above.	Ensures that all components within a conductive enclosure will be subjected to a max. of 20V during electrostatic discharges between -26 KV and +26 KV. Response time is instantaneous. No capacitive loading of signal contacts. The ESD protection is provided on the module/LRM connector in the unmated condition, making it ideal for Level 2 maintenance.

OPTIONAL FEATURES

- (Also see ESD protection in MIL-DTL-38999 Series III connectors - Filter/Transient Protection section. Consult Amphenol for further information.)

MARKETS

- Military and Commercial Aviation
- Military Vehicles and GPS Systems

LRM Surface Mount Connectors with Fiber Optics, RF Modules, Power Supply Modules

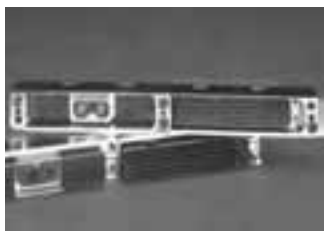
Reference 12-037*



LRM with Fiber Optics



RF Modules



Power Supply Modules

APPLICATION	STANDARDS/ REQUIREMENTS	COUPLING/ MOUNTING	CONTACT TERMINATION/ ARRANGEMENTS	PERFORMANCE ENVIRON./ELECT.
Line replaceable modular interconnects with very high contact densities, for attachment to printed circuit boards. Offers versatility of combining contact types within modules - fiber optics, shielded RF coax, and power contacts one high density package.	High performance LRM connectors with hybrid contact arrangements available.	Same as for LRM connectors shown on preceding page.	Combinations of: • Brush contacts • Fiber Optic LRM - MIL-T-29504 type termini or MT ferrules (2-24 fiber lines per ferrule) • RF Modules with coax contacts - size 16 M39029 type, size 12 for DC-2 GHz or size 8 for DC-32 GHz. Other RF contacts can be accommodated. • Power Supply Modules with custom 270VDC sections utilizing size 22D crimp or compliant pin contacts. Crimp termination size 16, 12 and 8 contacts for high current applications.	Connector performances and brush contact performances are the same as shown on preceding page for LRM connectors. Power supply modules with 270VDC sections are capable of providing corona-free operation at 75,000 ft.

OPTIONAL FEATURES

- Digital/Brush contact inserts can be partially populated to permit high voltage carrying capacity through the electrical PWB, while isolating sensitive electrical signals.
- Differential pair inserts have been specifically designed to support data rates with excess of 1.2 Gbps.
- Also see page 40 for optical backplane interconnection system, that can provide up to 192 fiber optic lines and 80 digital contacts in SEM-E format.

MARKETS

- Military and Commercial Aviation
- Military Vehicles
- GPS Systems

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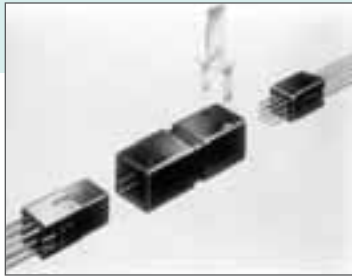
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- 26482 Matrix 2
- 83723 III Pyle Matrix
- 5015 Crimp Rear Release Matrix
- 26500 Pyle
- Printed Circuit Board
- EMI Filter Transient
- Fiber Optics
- High Speed Contacts
- Options Others

Rectangular Interconnects

For a Wide Range of Applications, Military

Pyle LMS Modular Connectors

Reference Pyle Bulletin LM-300*



APPLICATION	STANDARDS/ REQUIREMENTS	COUPLING/ MOUNTING	CONTACT TERMINATION/ ARRANGEMENTS	PERFORMANCE ENVIRON./ELECT.
In-line splice connectors - simple, low cost interconnection devices that incorporate LMD modules and contacts.	Supplements the LMD family.	3-piece assembly with 2 styles - standard requiring removal tool, or style with a push button release. Bracket available for panel mounting.	Uses modules common to LMD connectors.	Operating temp. from -55°C to +140°C.

OPTIONAL FEATURES

- Panel mounting bracket available or tie straps.
- Module removal tool available for standard splice style.

MARKETS

- Instrumentation and Testing Equipment

Pyle LMD Modular Connectors

Reference Pyle Bulletin LM-300*



APPLICATION	STANDARDS/ REQUIREMENTS	COUPLING/ MOUNTING	CONTACT TERMINATION/ ARRANGEMENTS	PERFORMANCE ENVIRON./ELECT.
Rectangular interconnects comprised of housings, modules and contacts, designed to provide flexibility in the assembly of wire harnesses. For attachment to PC boards. Also designs for rack & panel or cable to cable attachment.	Designed for wire harness terminations and to eliminate costly PC board and associated hardware.	<u>Linear module design</u> - for rack & panel or cable to cable applications. <u>Bussing modules</u> - allow for a plurality of circuit networks without extra hardware. <u>Diode modules</u> - sealed for protection; eliminate need for PC boards/ hardware. <u>Relay modules</u> - sealed or unsealed; eliminate need for PC boards/hardware.	Modules incorporate crimp contacts in sizes 8, 16, 20 and 22.	Operating temp. from -55°C to +140°C. Durability: 250 cycles mating and unmating. Module insertion and removal force: 5 lbs. max. Housings, modules and contacts are all ordered separately and require assembly with appropriate LMD accessory tools. Housings of black thermoplastic are U/L rated 94VO flame retardant. Housings of white thermoplastic provide increased resistance to industrial oils and solvents.

OPTIONAL FEATURES

- Variety of module options provide a mix of both active and passive devices within one connector.
- Modules offered either environmentally sealed or unsealed.
- Standard design - housings with 6 bays with choice of four module contact arrangements: 1 #8, 4 #16, 9 #20, 16 #22. PC tail contacts also available.
- Housing material options: black or white thermoplastic.
- Plug and receptacle housings may be front or rear panel mounted.
- Optional keying post provides six position keying capability.
- Optional center jackscrew available for ease of mating and unmating and high reliability under vibration.
- Two types of cable strain reliefs - for either internal or external attachment.

MARKETS

- Instrumentation and Avionics Controls

VME P0/J0 MT Connectors with Fiber Optics

Reference 12-037*



APPLICATION	STANDARDS/ REQUIREMENTS	COUPLING/ MOUNTING	CONTACT TERMINATION/ ARRANGEMENTS	PERFORMANCE ENVIRON./ELECT.
For attachment to VME-64X printed circuit board and cards where fiber optics is required. Used in place of P0/J0 electrical applicable connectors.	Tested to IEEE 1156.1-1993 paragraphs.	Mount to standard VME64X cards and backplanes in the P0/J0 location.	Uses fiber optic "MT" ferrules in the P0/J0 location.	Operating temp. from -55°C to +125°C. Shock: 100g, 6ms, 1/2 sine, 18 pulses Shock: 30g, 6ms, 1/2 sine, 18 pulses Sine Vibration: 10g, 40 min/axis, 3 axis Random Vibration: 0.15g ² Hz, 40 min/axis, 3 axis ESD: 15 KV/150 pF

OPTIONAL FEATURES

- Designed to customer specifications.

MARKETS

- Military and Commercial Aviation
- Military Vehicles
- GPS Systems

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III	38999
II	26482
I	Matrix 2
SJT	83723 III
Matrix	Pyle
Pyle	5015
Release Matrix	Crimp Rear
	Release Matrix
	26500 Pyle
	Printed
	Circuit Board
	EMI Filter
	Transient
	Fiber Optics
	High Speed
	Contacts
	Options
	Others