Modular Jacks and MRJ21 Product

RoHS Ready

Tyco Electronics

Our commitment. Your advantage.

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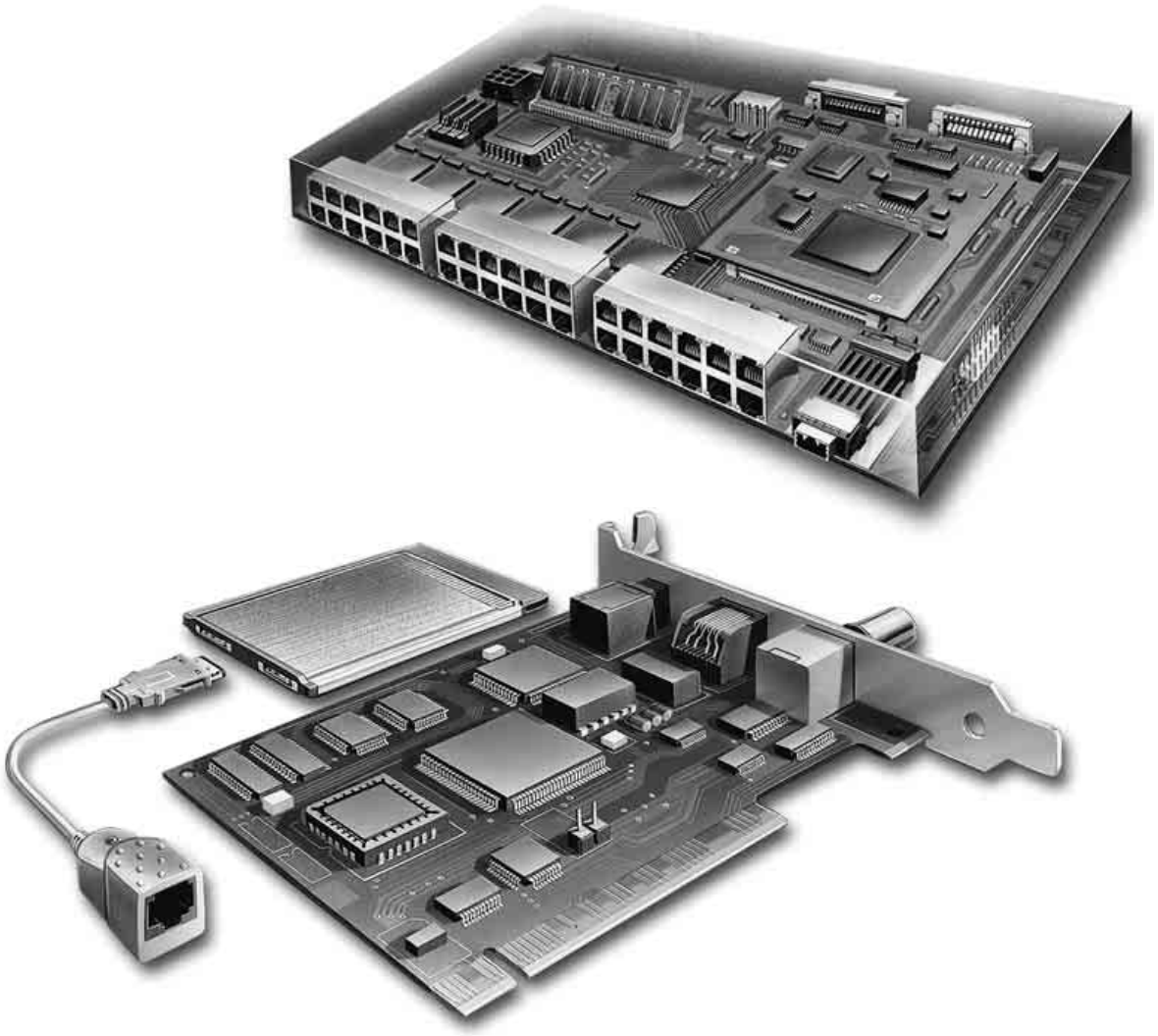
Restrictions on the Use of Hazardous Substances (RoHS)



Restriction on the use of Hazardous Substances (RoHS)

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

RoHS Compliant — Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

NOTE: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

NOTE: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we have the answers at www.tycoelectronics.com/leadfree

RoHS Customer Support Center

Catalog 82066
Revised 11-07

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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USA: 1-800-522-6752
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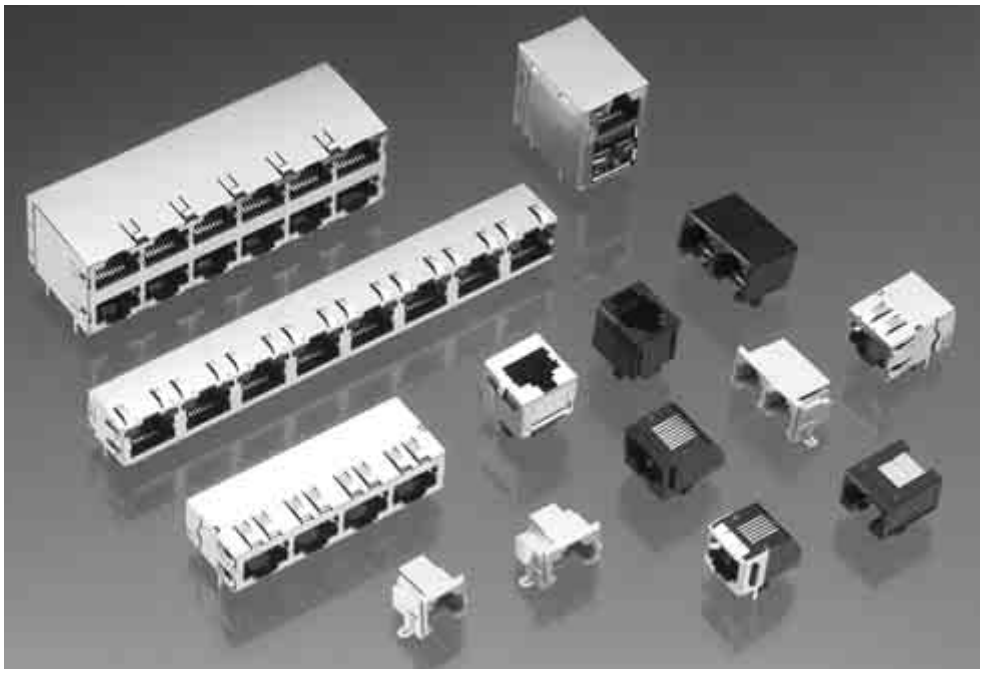
Introduction



Modular Jacks consist of single or multi-port, stacked, high performance, jacks with LEDs, surface or pc board mount, and shielded or unshielded varieties. They offer compact size, high reliability and meet FCC Rules and Regulations, Part 68. The high performance category 5 jacks conform to TIA/EIA-568A requirements. The housing materials are available in polyester for wave solder applications and high temperature Nylon, PCT or SPS for IR reflow applications. All housing materials are UL 94V-0 flame retardant. All shields consist of copper alloy base metal with tin-lead plating over copper underplate. All contacts are overall nickel plated phosphor bronze, with selectively plated gold in the contact area, and tin-lead in the solder area.

Single Port Modular Jacks are available in both side or top entry and shielded or unshielded. The side entry additionally comes in a variety of heights from 17.4mm to 11.5mm. They are designed for direct mounting on pc boards and ease of soldering and board cleaning. The shielded mod jacks are available with and without panel grounds.

Multi-Port Modular Jacks are for applications requiring printed circuit board mounted, shielded and unshielded, ganged modular jacks. With industry pc board footprints, these 8-position right-angle jacks can be designed into various networking devices.

Stacked Modular Jacks low profile and narrow width allow more ports to be packed into less space, while the accurately positioned solder tails reduce assembly labor. Low profile stacked modular jacks exceed Near End Crosstalk (NEXT) requirements of 40db at 100 MHz, on all 4-pair combinations. They are available in both unshielded and shielded versions. Shielded modular jacks are available with and without panel grounds.

High Density CAT 5e MRJ21 connector is a fully shielded, high density I/O interconnect providing density/space savings for current 10/100 or GbE RJ45/RJ21 applications. The cable assembly requires 1/3 the space of standard telecom configurations using Mod Plugs, MRJ21, or RJ21 telecom connectors.

High Performance Modular Jacks exceed Near End Crosstalk (NEXT) requirements of -40dB at 100 MHz, on all 4-pair combinations and meet requirements of FCC, Part 68. They are available in single or multi-port configurations, shielded or unshielded. The need for customized printed circuit boards to achieve high performance is eliminated.

LEDs integrated into the modular jack eliminates the need for additional system space for indicators. The modular jack now functions as transmit/receive; line status and collisions can be identified by viewing LEDs directly in each port. This product is available in single, ganged, and stacked versions in a variety of LED color combinations.

Surface Mount Modular Jacks are available in unshielded single and dual-port varieties along with a special invertible jack. These jacks are tape and reel packaged for automatic pick and place applications.

MAG45

- In December 2001, Tyco Electronics acquired Transpower Technologies, a manufacturer of data-com, telecom, and power magnetic components. As a result, Tyco Electronics now offers a broad range of RJ45 modular jacks with integrated magnetics for 10 Base-T, 10/100 Base-T, 10/100/1000 Base-T, and VOIP/Powered Ethernet applications.
- Configurations include single port, multiport (1x2, 1x4, 1x5, 1x6, 1x8), stacked (2x1, 2x3, 2x4, 2x6, 2x8), and stacked USB/RJ45. Integrated LEDs are optional.
- When specifying a MAG45 connector, the following information will assist in determining the correct part number for the application:
  - What is the transmission rate (10/100 Base-T, 10/100/1000 Base-T)?
  - Will the application require power over Ethernet capability?
  - What is the PHY (Physical Layer) Transceiver Chip? Is it Auto-MDIX enhanced? (Auto-sensing Media Dependent Interface Crossover)
  - Is an integrated 2 kV de-coupling capacitor desired?
  - Has a preferred electrical pin-out (signal path) been derived?
  - What is the connector configuration (single port, 1xN, 2xN, USB/RJ45)?
  - Are integrated LEDs required? If so, define

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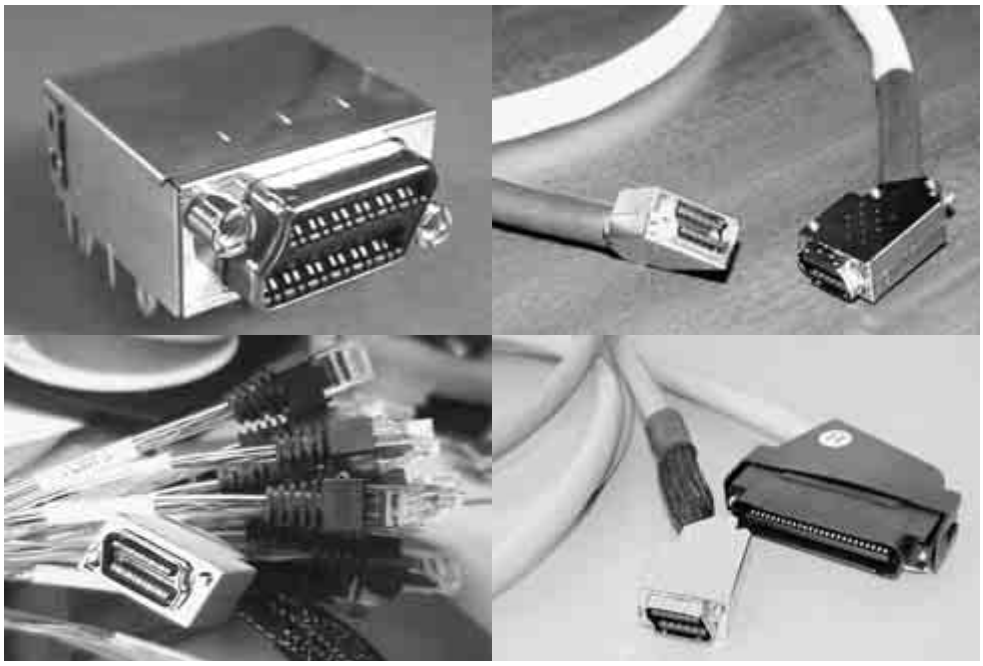
High Density, CAT 5e MRJ21 Product

Product Facts

- **Designed to meet or exceed CAT 5e crosstalk. Contact layout and footprint for differential pairs creates reduced crosstalk and built in compensation.**
- **1.5 to 3 times the port density of 2x6 stacked Mod Jack (RJ45)**
- **3 times port density of an RJ21**
- **Height of dual receptacle meets requirements of Compact PCI component standard**
- **Fully shielded system to control EMI**
- **Robust die cast cable covers provide 45° left or right cable exit for ease of routing**
- **1mm pair spacing, 1.5 pair to pair spacing**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request



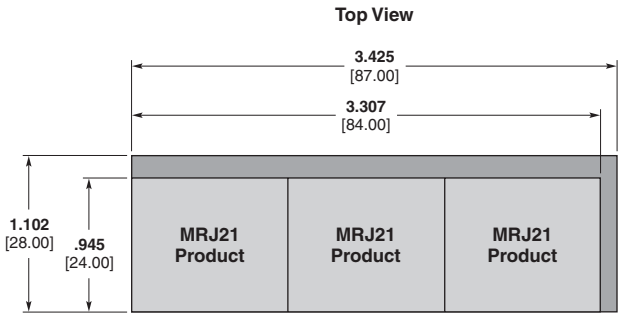
MRJ21 product is the next generation of I/O interconnect providing density/space savings for current 10/100 or GbE RJ45 applications or RJ21 applications. MRJ21 product provides a complete solution set for the customer including:

- PCB connectors in a variety of configurations
- Option for integrated magnetics
- Increases I/O port density over RJ45 connectors
- Cleaner cabling solutions than RJ45 cabling schemes
- Improved Wiring closet management
- Lower end user maintenance costs

Application

- Modular Data Center/SAN Connectivity
- Switches
- Core & Edge Routers
- Digital Cross Connects
- Gigabit Ethernet, 10/100 BaseT
- DSLAM
- Almost any place Mod Plugs are used today

MRJ21 Product vs. 2x6 Stacked Jack Density Comparison



Stacked Jack (2x6) = 12 ports	Port Increase
MRJ21 Product @ 10/100 = 36 ports	3X
MRJ21 Product @ GbE = 18 ports	1.5X

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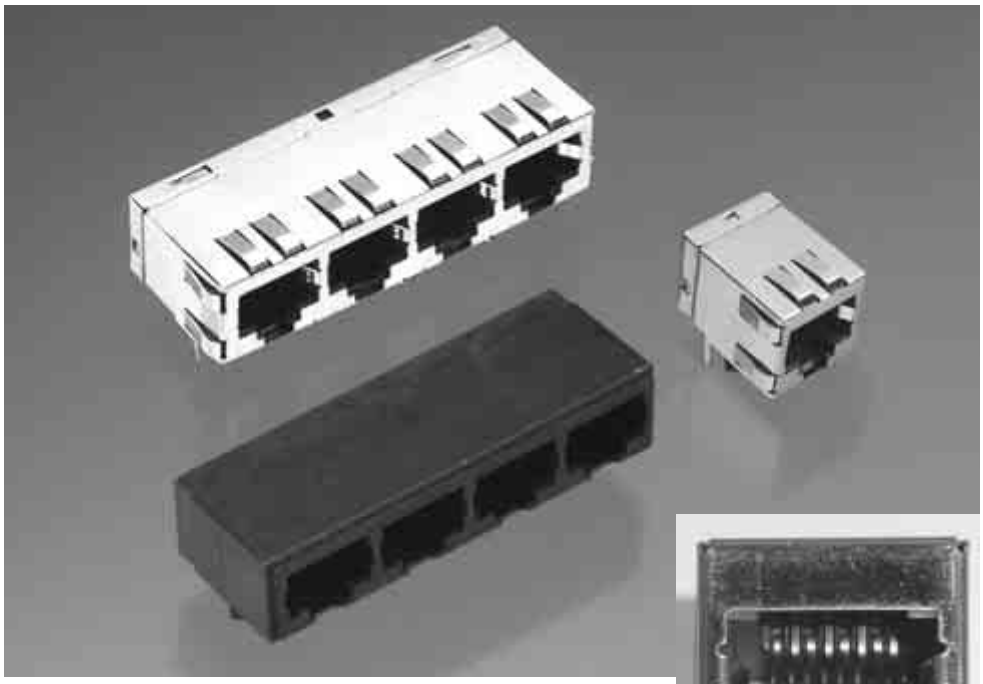
High Performance Modular Jacks

Product Facts

- **Performance exceeds Near End Crosstalk (NEXT) requirements of -40dB on all pair combinations at 100 MHz per EIA/TIA 568A**
- **Meets all dimensional, tolerance and metallic plating requirements of FCC Part 68**
- **Available in single port or multiple port configurations, shielded or unshielded**
- **Accurately positioned solder tails reduce assembly labor while selectively deposited gold plating results in lower cost**
- **Eliminate need for customized printed circuit board compensation to achieve high performance**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request



Top Entry

Specifications

Electrical

Current — 1.5 amp maximum @ 25°C

Voltage — 150 VAC maximum

Operating Temperature — -40°C to 70°C

Insulation Resistance — 500 megaohms min.

Dielectric Withstanding Voltage — 1000 VAC, RMS

Mating/Unmating Forces — 5 pounds maximum

Durability (Mating Cycles) — 750 minimum

Material and Finish

Housing — High temperature Nylon, Black, UL 94V-0 rated, IR reflow compatible

Contact — Phosphor bronze, gold over nickel in contact area, tin-lead over nickel in solder area

Shield — Brass, bright tin-lead plated

Technical Documents

Application Specifications
114-02048

Product Specification
108-01163-2

High Performance Modular Jacks are typically Cat 5 performance or higher.
Category Performance Summary:

CAT 3:	Up to 16 MHz at -34dB.	Typically used for voice and transmission rates up to and including 16 Mbps.
CAT 4:	Up to 20 MHz at -44dB.	Typically used for improved Token Ring up to and including 20 Mbps.
CAT 5:	Up to 100 MHz at -40dB.	Typically used for voice and transmission rates up to and including 100 Mbps.
CAT 5e:	Up to 100 MHz at -43dB.	Typically used for voice and transmission rates up to and including 100 Mbps.

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LED Modular Jacks

Product Facts

- **Meets or exceeds FCC Part 68 rules and regulations with standard pc board footprints**
- **LEDs integrated directly into jack, yet maintains compact form**
- **Unshielded and shielded versions in popular size configurations**
- **Shielded jacks provide grounding through panel and pc board**
- **LEDs located at top of jack for effective visibility**
- **Accurately positioned solder tails reduce assembly labor while selectively deposited gold plating results in lower cost**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
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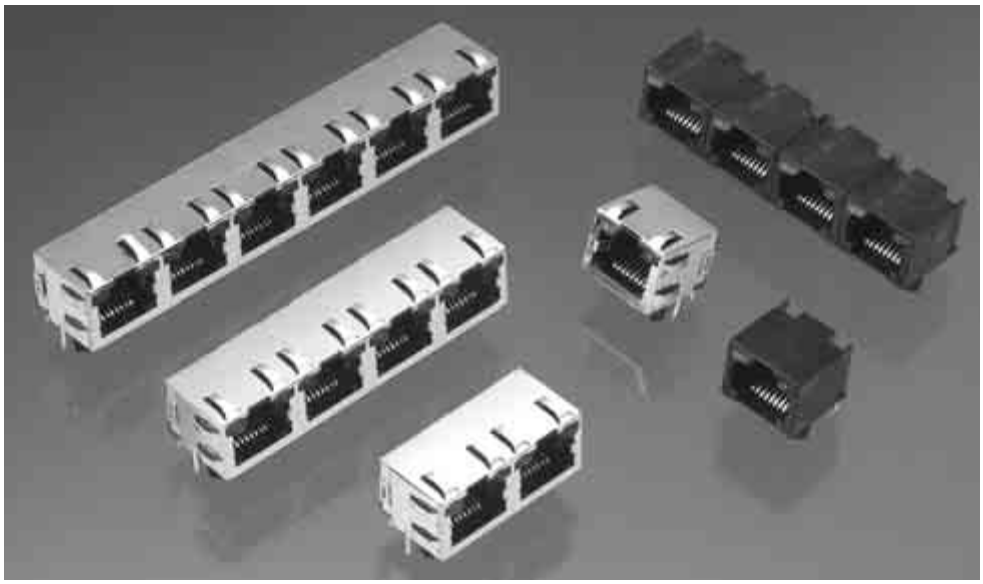

Specifications

Electrical

Current Rating — 1.5 amp max. @ 25°C

Voltage Rating — 150 VAC max.

Dielectric Withstanding Voltage — 1000 VAC

Insulation Resistance — 500 megaohms min.

Shielding Effectiveness — 20dB min., 10 to 200 MHz

Mechanical

Durability — 750 mating cycles

Mating/Unmating Forces — 4 1/2 lbs. max.

Operating Temperature — 40°C to 70°C

Material and Finish

Housing — High temperature Nylon UL 94V-0 rated

Contact — .013 [0.33] Phosphor bronze; plated .000050 [0.00127] gold in localized area and .000150 [0.00381] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

Shield — .010 [0.25] copper alloy tin-lead plated

Technical Documents

Application Specifications
114-2154

Product Specifications
108-01163-4

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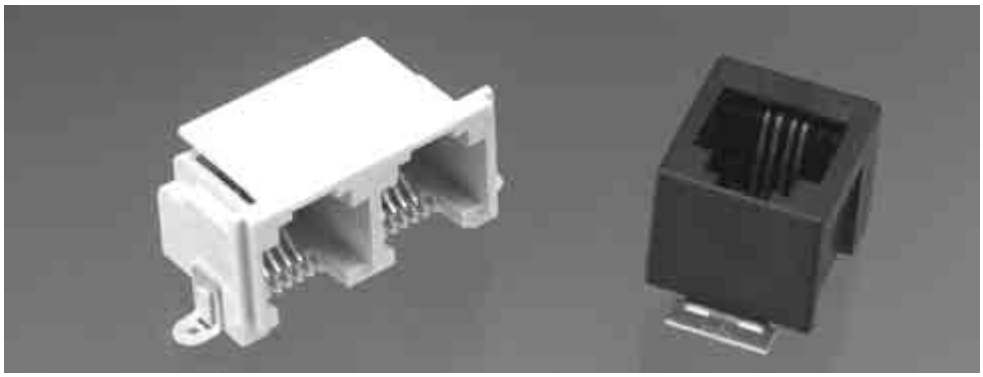
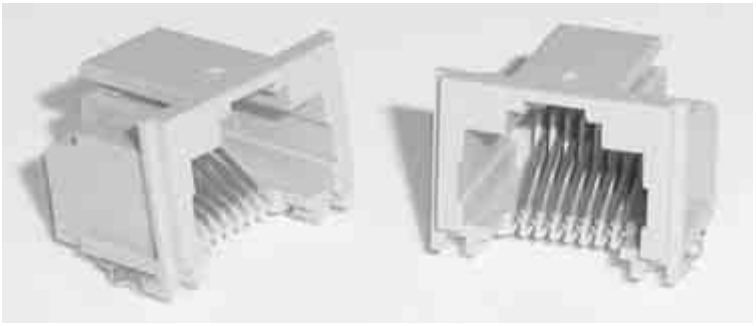
Surface Mount Modular Jacks

Product Facts

- **Meets or exceeds FCC Part 68 rules and regulations; REA PE-76; and UL 1863, Communication Circuit Accessories**
- **Meets 1000 volt dielectric requirement**
- **Available in both single and multi-port**
- **Designed for direct mounting on pc boards**
- **Designed for ease of soldering and board cleaning**
- **Selectively gold plated contacts for lower cost**
- **Compatible with vapor phase & IR reflow soldering**
- **All jacks are flame retardant polyester**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request





Specifications

Electrical

Current Rating — 1.5 amp max. @ 25°C, derated to 0.2 amp max. @ 70°C ambient

Voltage Rating — 150 volts ac max.

Dielectric Withstanding Voltage — 1000 VAC, RMS, 60 Hz, 1 min.

Insulation Resistance — 500 megaohms min.

Surge Test — to 1000 volts

Mechanical

PC Board Retention — will not dislodge from pc board when subjected to 1 lb. [4.4N] pull before soldering and 10 lb. [44N] pull after soldering

Durability — 750 mating cycles

Material and Finish

Housing — Polyphenylene Sulfide, UL 94V-0 rated

Contact — .014 [0.36] thk. Phosphor bronze; plated .000050 [0.00127] gold in contact area and .000150 [0.00381] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

Technical Documents

Application Specifications
114-02048

Product Specifications
108-01163

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Single Port Modular Jacks

Product Facts

- **Meets or exceeds FCC Part 68 rules and regulations; REA PE-76; and UL 1863, Communication Circuit Accessories**
- **Meets 1000 volt dielectric requirement Contact to Contact**
- **Available in both top and side entry (Right-Angle)**
- **Designed for direct mounting on pc boards**
- **Designed for ease of soldering and board cleaning**
- **Available in both shielded and unshielded versions**
- **Shielded jack available with two grounding paths - pc board and panel**
- **20 dB shielding effectiveness from 30 MHz to 400 MHz**
- **Selectively gold plated contacts for lower cost**
- **All jacks are UL 94V-0 flame retardant polyester, standard color black, unless specified otherwise**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
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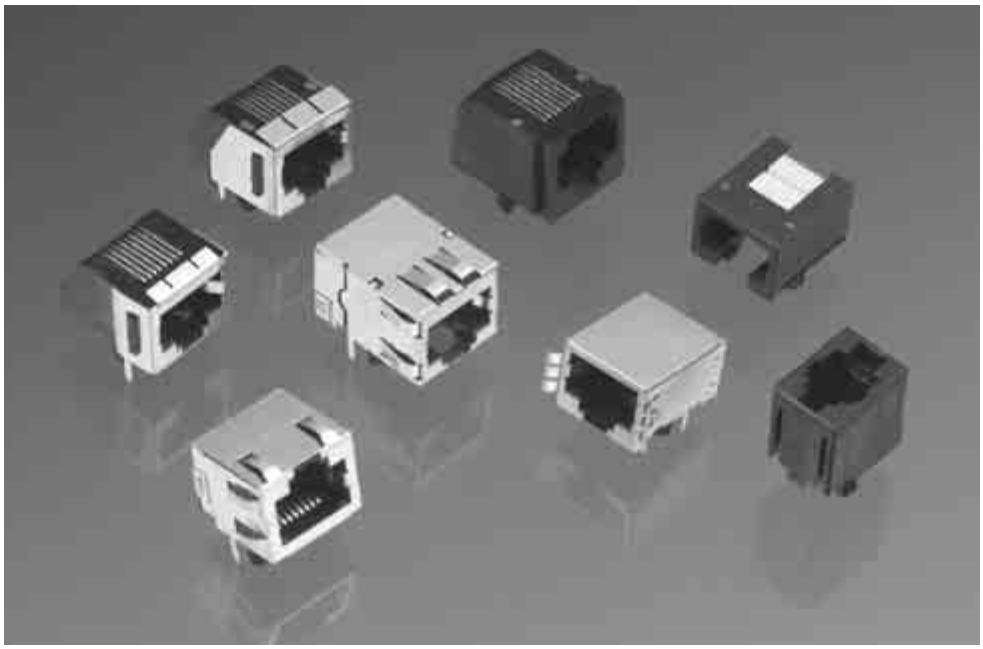

Specifications

Electrical

Current Rating — 1.5 amp max. @ 25°C, derated to 0.2 amp max. @ 70°C ambient

Voltage Rating — 150 volts AC max.

Dielectric Withstanding Voltage — 1000 VAC, RMS, 60 Hz, 1 min. Contact to Contact

Mechanical

PC Board Retention — will not dislodge from pc board when subjected to 1 lb. [4.4N] pull before soldering and 10 lb. [44N] pull after soldering

Durability — 750 mating cycles

Material and Finish

Housing — Through-hole: Polyester (wave solder compatible), UL 94V-0 rated; Surface Mount: Polyphenylene Sulfide, or High Temp Nylon, UL 94V-0 rated

Contact — .014 [0.36] thk. Phosphor bronze; plated .000050 [0.00127] gold in contact area and .000150 [0.00381] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

Technical Documents

Application Specifications
114-02048
114-6040

Product Specifications
108-01163
108-01163-1
108-01163-3
108-01163-4
108-01163-7

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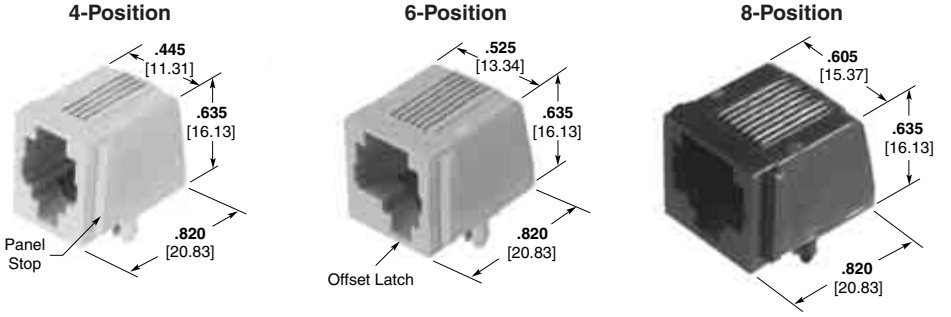
Single Port Modular Jacks (Continued)

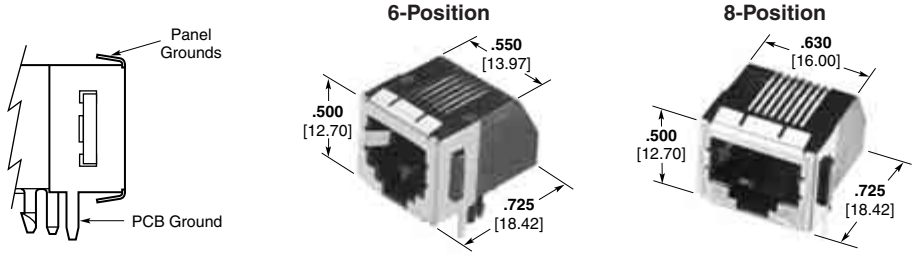
Side Entry (RA), Thru-Hole



Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
215875-1	4/4	Without	No	Cat 3	Without	No	Without
2-215875-1	4/4	Without	No	Cat 3	Without	No	Without
5520249-2	4/4	Without	No	Cat 3	With	No	Without
215876-2	6/4	Without	No	Cat 3	Without	No	Without
5555140-2	6/4	Without	Yes	Cat 3	With	No	Panel and PCB
5555163-2	6/4	Without	No	Cat 3	With	No	Without
1-215876-3	6/6	Without	No	Cat 3	Without	No	Without
215876-1	6/6	Without	No	Cat 3	N/A	No	Without
5520250-3	6/6	Without	No	Cat 3	With	No	Without
5555003-1	6/6	Without	No	Cat 3	With	No	Without
5555140-1	6/6	Without	Yes	Cat 3	With	No	Panel and PCB
5555154-1	6/6	Without	Yes	Cat 3	With	No	PCB Ground
5555163-1	6/6	Without	No	Cat 3	With	No	Without
5555165-1	6/6	Without	No	Cat 3	Without	No	Without
106066-2	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
1116062-2	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
1116503-2	8/8	Without	Yes	Cat 5	Without	No	PCB Ground
6116526-1	8/8	Without	Yes	Cat 5	Without	No	PCB Ground
1-215877-3	8/8	Without	No	Cat 3	Without	No	Without

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Low Profile, Face Shield



Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
5555162-1	8/8	Without	No	Cat 3	With	No	Without
5555164-1	8/8	Without	No	Cat 3	Without	No	Without
1-5406299-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
1-1734264-1	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
1734579-1	8/8	Without	Yes	Cat 3	Without	No	PCB Ground
215877-1	8/8	Without	No	Cat 3	Without	No	Without
2-215877-1	8/8	Without	No	Cat 3	Without	No	Without
2-215878-1	8/8	Without	No	Cat 3	Without	No	Without
2-5338556-1	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
3-5338556-1	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
5406217-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
5406296-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Note: All part numbers are RoHS compliant.

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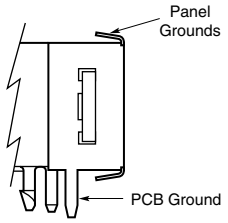
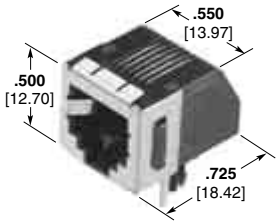
Single Port Modular Jacks (Continued)

Side Entry (RA), Thru-Hole

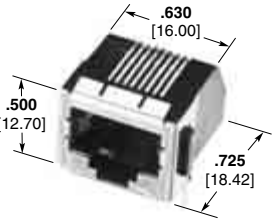
Low Profile, Face Shield
(Continued)



6-Position



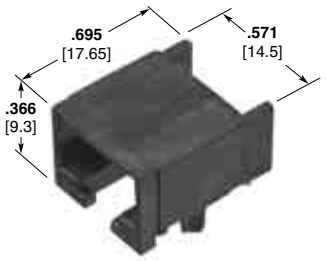
8-Position

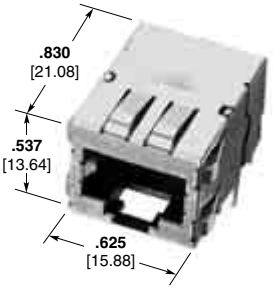


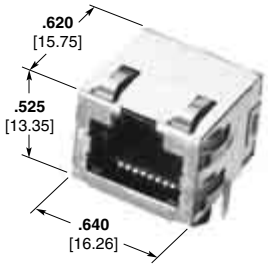
Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
5406299-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
1-406525-1	8/8	Without	No	Cat 5	Without	Yes	Without
1-406541-1	8/8	Without	Yes	Cat 5	Without	Yes	Panel and PCB
5520243-4	8/8	Without	No	Cat 3	Without	No	Without
5520251-4	8/8	Without	No	Cat 3	With	No	Without
5520426-4	8/8	Without	No	Cat 3	Without	No	Without
5555141-1	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
5555153-1	8/8	Without	Yes	Cat 3	With	No	PCB Ground
5555153-3	8/8	Without	Yes	Cat 3	With	No	PCB Ground

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Side Entry (RA), Thru-Hole







Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
5555166-1	8/8	Without	No	Cat 3	With	No	Without
5555167-1	8/8	Without	No	Cat 3	Without	No	Without
5557785-1	8/8	Without	No	Cat 3	Without	No	Without
5557789-1	8/8	Without	Yes	Cat 3	Without	No	PCB Ground
5557791-1	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
5558341-1	8/8	Without	No	Cat 5	Without	No	Without
5558342-1	8/8	Without	Yes	Cat 5	Without	No	PCB Ground
5558344-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
5569115-1	8/8	Without	Yes	Cat 3	With	No	Panel and PCB
5569118-1	8/8	Without	No	Cat 3	Without	No	Without
6116075-1	8/8	With	Yes	Cat 5	Without	Yes	PCB Ground
6116173-1	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
6364139-5	8/8	With	No	Cat 5	Without	Yes	Without
1734509-2	8/8	With	Yes	Cat 3	Without	No	PCB Ground
5406533-1	8/8	With	No	Cat 5	Without	Yes	Without
2-406549-1	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
2-406549-4	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
5569564-1	8/8	With	Yes	Cat 3	Without	No	Panel and PCB
1734542-5	10/10	Without	No	Cat 3	Without	No	Without
5558065-1	10/10	Without	No	Cat 3	Without	No	Without
5558067-1	10/10	Without	Yes	Cat 3	Without	No	PCB Ground
5558070-1	10/10	Without	Yes	Cat 3	Without	No	Panel and PCB

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Note: All part numbers are RoHS compliant.

Catalog 82066
Revised 11-07

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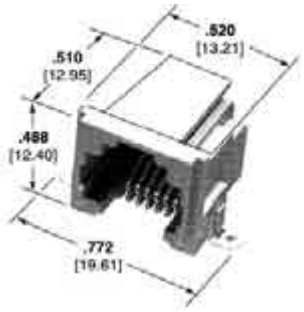
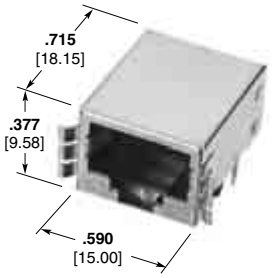
UK: 44-8706-080-208

Single Port Modular Jacks (Continued)

Side Entry (RA), Surface Mount



1339212-1

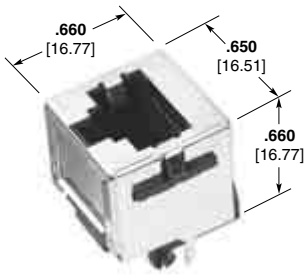


1339212-1

Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
6339212-1	6/6	Without	Yes	Cat 3	Without	Yes	Panel and PCB
5406514-2	6/6	Without	No	Cat 3	Without	Yes	Without
5555077-1	6/6	Without	No	Cat 3	With	No	Without
6339160-1	8/8	Without	Yes	Cat 3	Without	Yes	Panel and PCB
5406721-1	8/8	Without	No	Cat 3	With	Yes	Without
5406721-2	8/8	Without	No	Cat 3	With	Yes	Without
5558178-1	8/8	Without	Yes	Cat 3	With	No	PCB Ground

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Top Entry, Thru-Hole



Shielded 557484-1

Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
5520257-2	4/4	Without	No	Cat 3	With	No	Without
5406010-2	6/2	Without	No	Cat 3	Without	No	Without
5520258-2	6/4	Without	No	Cat 3	With	No	Without

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Note: All part numbers are RoHS compliant.

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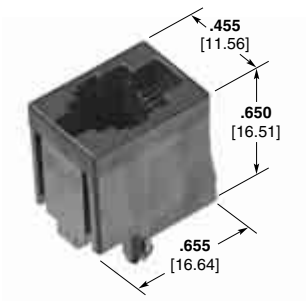
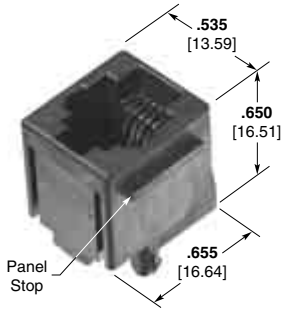
Single Port Modular Jacks (Continued)

Top Entry, Thru-Hole

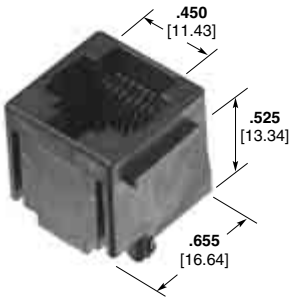
4-Position



6-Position



8-Position

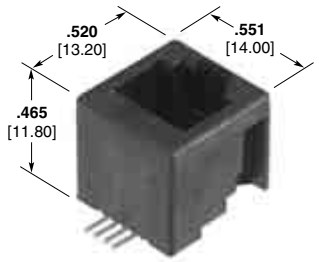


Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
5520425-2	6/4	Without	No	Cat 3	Without	No	Without
216548-1	6/6	Without	No	Cat 3	With	No	Without
216564-1	6/6	Without	No	Cat 3	With	No	Without
5520258-3	6/6	Without	No	Cat 3	With	No	Without
5520425-3	6/6	Without	No	Cat 3	Without	No	Without
5554990-1	6/6	Without	No	Cat 3	With	No	Without
100616-1	8/8	Without	Yes	Cat 3	With	No	PCB Ground
100616-2	8/8	Without	Yes	Cat 3	With	No	PCB Ground
6116202-1	8/8	Without	Yes	Cat 5	Without	No	PCB Ground
216550-1	8/8	Without	No	Cat 3	With	No	Without
216566-1	8/8	Without	No	Cat 3	With	No	Without
5520259-4	8/8	Without	No	Cat 3	With	No	Without
5555799-1	8/8	Without	No	Cat 3	Without	No	Without
5556416-1	8/8	Without	No	Cat 3	Without	No	Without
5557484-1	8/8	Without	Yes	Cat 3	With	No	Panel and PCB
5557730-1	8/8	Without	Yes	Cat 3	With	No	Panel and PCB
5557969-1	8/8	Without	Yes	Cat 3	With	No	Panel and PCB
5557969-2	8/8	Without	Yes	Cat 3	With	No	Panel and PCB

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Top Entry, Surface Mount

6-Position



Top or Bottom Entry
Part Number 1-338088-3

Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
1-338084-3	4/4	Without	No	Cat 3	Without	No	Without
1-338086-3	6/6	Without	No	Cat 3	Without	No	Without
2-338086-3	6/6	Without	No	Cat 3	Without	No	Without
1-338088-3	8/8	Without	No	Cat 3	Without	No	Without
2-338088-3	8/8	Without	No	Cat 3	Without	No	Without

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Note: All part numbers are RoHS compliant.

Catalog 82066
Revised 11-07

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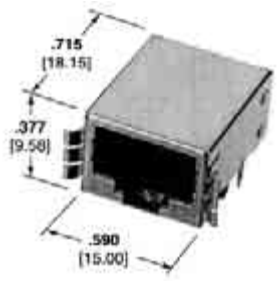
Single Port Modular Jacks (Continued)

Top Entry, Press Fit

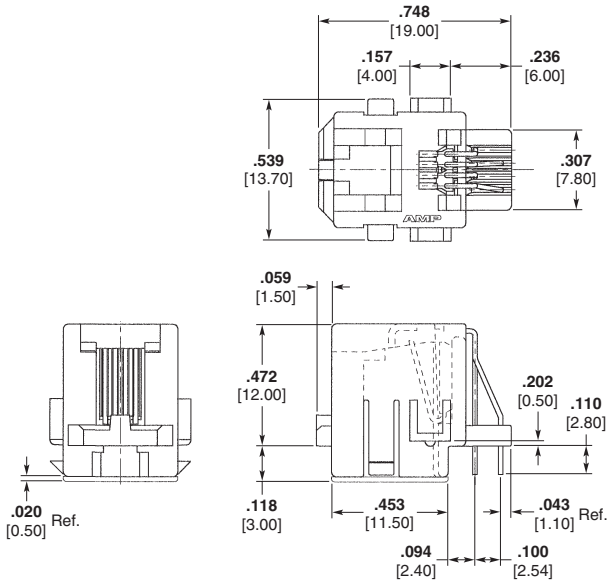


Part Number 1116201-1

Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
6116201-1	8/8	Without	No	Cat 5	Without	No	Without
6116201-2	8/8	Without	No	Cat 5	Without	No	Without
6116202-1	8/8	Without	Yes	Cat 5	Without	No	PCB
6116418-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Bottom Entry, Thru-Hole



Part Number 216444

Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
216444-1	4/4	Without	No	Cat 3	Without	No	Without
216446-1	6/6	Without	No	Cat 3	Without	No	Without

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Note: All part numbers are RoHS compliant.

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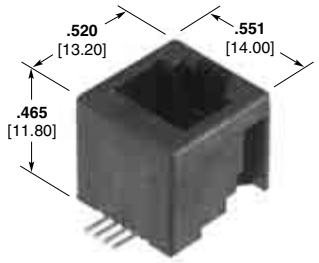
Single Port Modular Jacks (Continued)

Bottom Entry, Surface Mount

6-Position



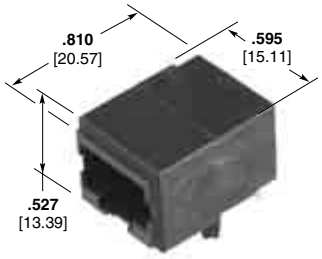
Top or Bottom Entry
Part Number 1-338088-3

Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
100860-1	6/6	Without	No	Cat 3	Without	No	Without
1-338088-5	8/8	Without	No	Cat 3	Without	No	Without
2-100860-1	6/6	Without	No	Cat 3	Without	No	Without

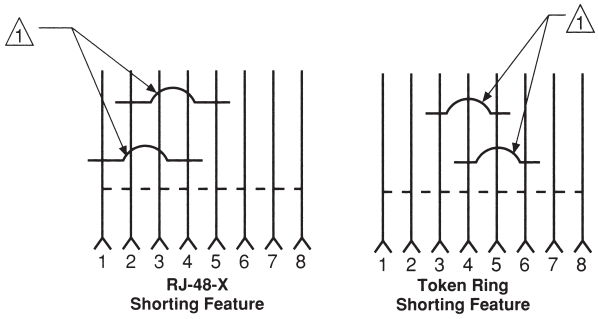
Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Shorting

Unshielded



Positions/ Contacts	Shorting Configuration		Tray Packaging Part No.
8/8	1-4 & 2-5	RJ 48X	5557788-1
8/8	3-5 & 4-6	IBM Token Ring Emulation	5569972-1

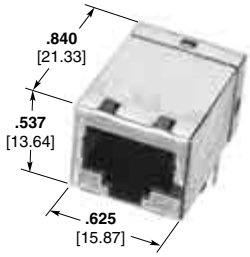


RJ-48-X Shorting Feature

Token Ring Shorting Feature

1 Short is removed by insertion of modular plug.

Shielded



Positions/ Contacts	Shorting Configuration		Panel Grounds	Tray Packaging Part Numbers
8/8	1-4 & 2-5	RJ 48X	—	5557789-1
8/8	1-4 & 2-5	RJ 48X	Y	5557791-1
8/8	3-5 & 4-6	IBM Token Ring Emulation	—	5569972-1

NOTE: SHIELDED PRODUCT WITH PANEL GROUNDS ALWAYS CONTAINS PCB GROUNDS

IBM is a trademark of International Business Machine Corporation.

Note: All part numbers are RoHS compliant.

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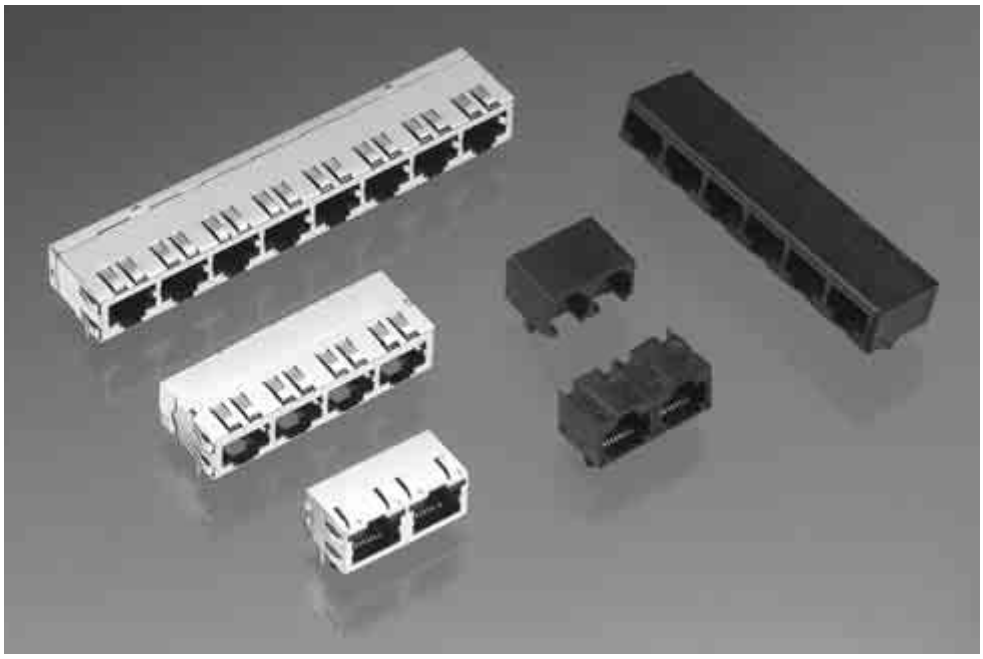
Multi-Port Modular Jacks

Product Facts

- **Meets or exceeds FCC Part 68 rules and regulations with standard pc board footprints**
- **Low profile and narrow width allow more ports to be packed into less space**
- **Unshielded and shielded versions in popular size configurations**
- **Positive connection throughout life of equipment with insert molded contacts**
- **Accurately positioned solder tails reduce assembly labor while selectively deposited gold plating results in lower cost**
- **Center mounting leg available on 8 port shielded and unshielded versions**
- **Available with two grounding paths; pc board & panel**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request



Specifications

Electrical

Current Rating — 1.5 amp max. @ 25°C

Voltage Rating — 150 VAC max. Contact to Contact

Dielectric Withstanding Voltage — 1000 VAC

Insulation Resistance — 500 megaohms min.

Shielding Effectiveness — 20dB min., 10 to 200 MHz

Mechanical

Durability — 750 mating cycles

Mating/Unmating Forces — 5 lbs. max.

Operating Temperature — 40°C to 70°C

Material and Finish

Housing — High temperature nylon, black UL 94V-0 rated

Contact — .013 [0.33] Phosphor bronze; plated .000050 [0.00127] gold in localized area and .000150 [0.00381] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

Shield — .010 [0.25] or .0077 [0.20] copper alloy tin-lead plated

Technical Documents

Application Specifications
114-02048

Product Specifications
108-01163

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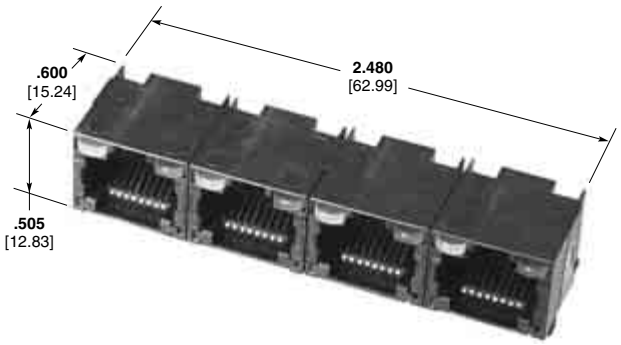
Multi-Port Modular Jacks (Continued)

Side Entry (RA), Thru-Hole



Multi-Port
Unshielded

No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
1 x 2	3-1734479-3	6/6	Without	No	Cat 3	Without	Yes	Without
1 x 2	5406542-1	6/6	Without	No	Cat 3	Without	Yes	Without
1 x 2	5406443-1	8/8	Without	Yes	Cat 5	Without	No	PCB Ground
1 x 2	5557560-1	8/8	Without	No	Cat 4	Without	No	Without
1 x 2	6116353-1	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
1 x 2	6368419-1	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
1 x 4	1734714-2	8/8	Without	Yes	Cat 3	Without	No	Panel and PCB
1 x 4	5406203-3	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
1 x 4	5406281-3	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
1 x 4	5557562-1	8/8	Without	No	Cat 4	Without	No	Without
1 x 4	5558503-1	8/8	Without	Yes	Cat 5	Without	No	PCB Ground
1 x 4	5406536-4	8/8	With	No	Cat 5	Without	Yes	Without
1 x 4	5406552-1	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
1 x 4	5406552-4	8/8	With	Yes	Cat 5	Without	Yes	Panel and PCB
1 x 6	5406206-1	8/8	Without	Yes	Cat 5	Without	No	Panel and PCB
1 x 8	5558505-1	8/8	Without	Yes	Cat 5	Without	No	PCB Ground

Side Entry (RA), Thru-Hole (Combination RJ11/RJ45)

No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
1 x 2	2-1734712-2	6/2	With	Yes	Cat 3	Without	Yes	PCB Ground

Note: All part numbers are RoHS compliant.

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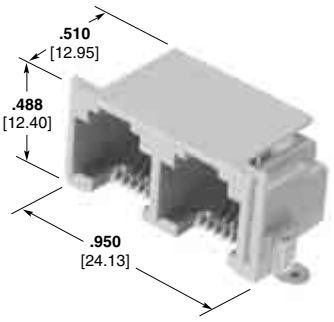
Multi-Port Modular Jacks (Continued)

Side Entry (RA), Surface Mount



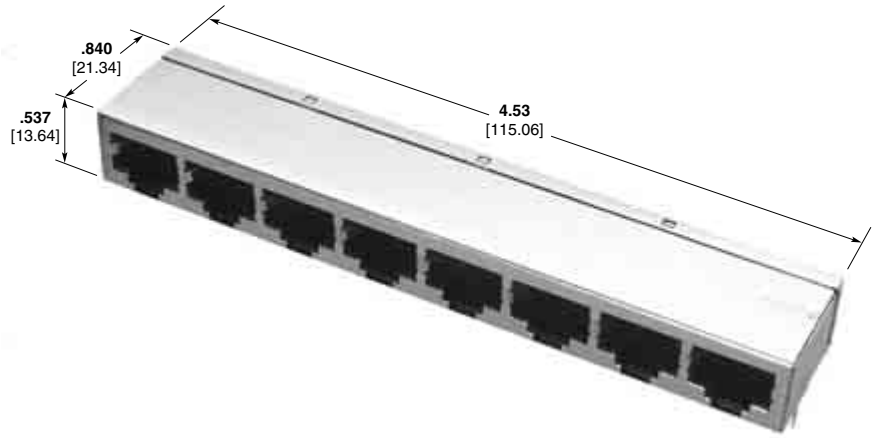
Part Number 406903-1

No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
1 x 2	5406903-1	6/6	Without	No	Cat 3	Without	Yes	Without
1 x 2	5406903-2	6/6	Without	No	Cat 3	Without	Yes	Without

Top Entry, Thru-Hole

No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
1 x 6	569748-1	8/8	Without	No	Cat 5	Without	No	Without

Shorting



No. of Ports	Positions/ Contacts	Shorting Configuration		Panel Grounds	Tray Packaging Part Numbers
1 x 8	8/8	1-4 & 2-5	RJ 48X	—	5558846-1

NOTE: SHIELDED PRODUCT WITH PANEL GROUNDS ALWAYS CONTAINS PCB GROUNDS

Note: All part numbers are RoHS compliant.

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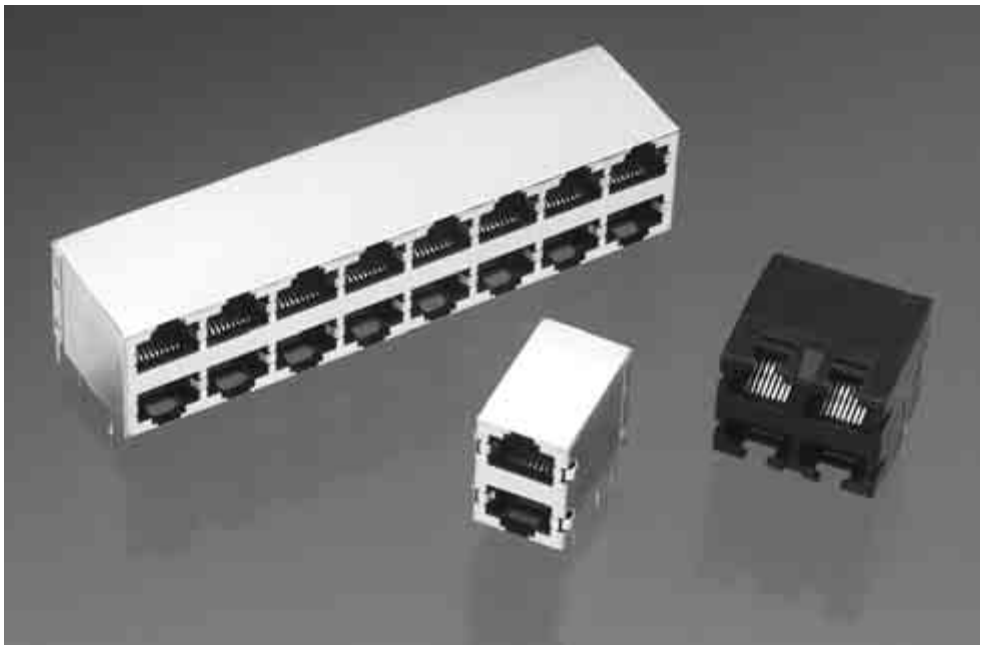
Stacked Modular Jacks

Product Facts

- **Performance exceeds Near End Crosstalk (NEXT) requirements of -40dB on all pair combinations at 100 MHz per EIA/TIA 568A**
- **All Stacked Jacks have Category 5 performance.**
- **Meets or exceeds FCC Part 68 rules and regulations with standard pc board footprints**
- **Low profile and narrow width allow more ports to be packed into less space**
- **Unshielded and shielded versions in popular size configurations**
- **Positive connection throughout life of equipment with insert molded contacts**
- **Accurately positioned solder tails reduce assembly labor while selectively deposited gold plating results in lower cost**
- **Center mounting leg standard on 8 port shielded and unshielded versions**
- **Available with two grounding paths; pc board & panel**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request



Specifications

Electrical

Current Rating — 1.5 amp max. @ 25°C

Voltage Rating — 150 VAC max.

Dielectric Withstanding Voltage — 1000 VAC

Insulation Resistance — 500 megaohms min.

Shielding Effectiveness — 20dB min., 10 to 200 MHz

Mechanical

Durability — 750 mating cycles

Mating/Unmating Forces — 5 lbs. max.

Operating Temperature — -40°C to 70°C

Material and Finish

Housing — High temperature Nylon, black UL 94V-0 rated, IR reflow compatible

Contact — .013 [0.33] Phosphor bronze; plated .000050 [0.00127] gold in localized area and .000150 [0.00381] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

Shield — .010 [0.25] copper alloy tin-lead plated

Technical Documents

Application Specifications
114-02048

Product Specifications
108-1163-2

Catalog 82066
Revised 11-07

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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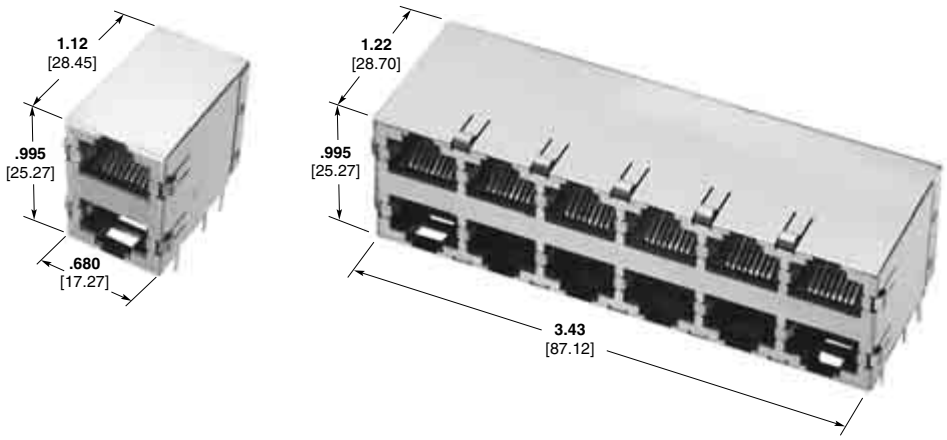
Stacked Modular Jacks (Continued)

Side Entry (RA), Thru-Hole



No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
2 x 1	5569381-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 2	5569260-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 3	5569256-1	8/8	Without	Yes	Cat 5	Without	N/A	PCB Ground
2 x 4	1734715-2	8/8	Without	Yes	Cat 3	Without	N/A	Panel and PCB
2 x 4	5569257-1	8/8	Without	Yes	Cat 5	Without	N/A	PCB Ground
2 x 4	5569262-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 6	5406494-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 6	5569263-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 8	5569254-1	8/8	Without	Yes	Cat 5	Without	N/A	PCB Ground
2 x 8	5569259-1	8/8	Without	Yes	Cat 5	Without	N/A	PCB Ground
2 x 8	5569264-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB

Note: Consult Tyco Electronics Sales Representative for additional Part Numbers and features differences (tail length, LED color, IRR, etc.)

Hole location varies among modular jack assemblies and is determined by the dimension from the center of the board-lock or guide pin mounting legs to the center of the shield tab solder tine.

Note: All part numbers are RoHS compliant.

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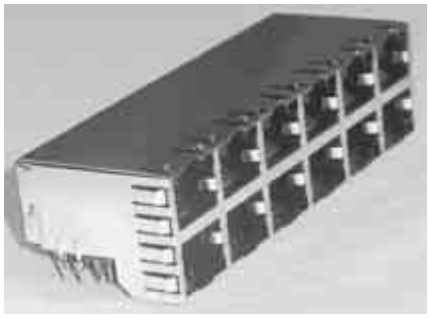
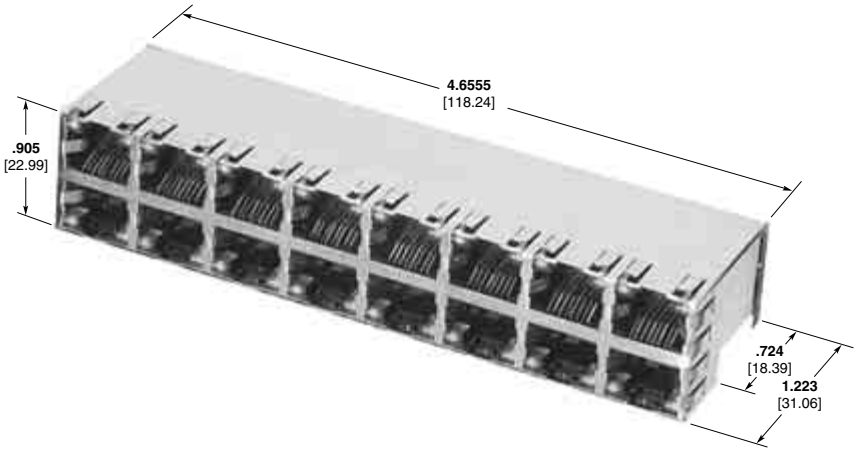
Stacked Modular Jacks (Continued)

Side Entry (RA), Press Fit/Offset

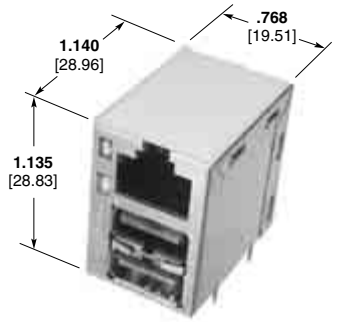




No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
2 x 4	6368077-2	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 4	6368062-1	8/8	With	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 4	1368077-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 6	6368035-1	8/8	With	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 6	6368116-2	8/8	With	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 8	6116689-1	8/8	Without	Yes	Cat 5	Without	N/A	Panel and PCB
2 x 8	6116317-2	8/8	With	Yes	Cat 5	Without	N/A	Panel and PCB

Note: Consult Tyco Electronics Customer Drawing for additional Part Numbers.

RJ45, Dual USB



No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
2 x 1	6116151-2	8/8	With	Yes	Cat 5	Without	No	PCB
2 x 1	6116151-1	8/8	Without	Yes	Cat 5	Without	No	PCB
2 x 1	6116640-1	8/8	With	Yes	Cat 5	Without	No	PCB

Note: Consult Tyco Electronics Customer Drawing for additional Part Numbers.

Note: All part numbers are RoHS compliant.

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High Density, CAT 5e MRJ21 Connector & Cable Assemblies

Product Facts

- **Designed to meet or exceed CAT 5e crosstalk. Contact layout and footprint for differential pairs creates reduced crosstalk and built in compensation.**
- **1.5 to 3 times the port density of 2x6 stacked Mod Jack (RJ45)**
- **3 times port density of an RJ21**
- **Height of dual receptacle meets requirements of Compact PCI component standard**
- **Fully shielded system to control EMI**
- **Robust die cast cable covers provide 45° left or right cable exit for ease of routing**
- **1mm pair spacing, 1.5 pair to pair spacing**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request

PCB Connector Part Numbers

Description	Base Part Number*
MRJ21 48-Position Receptacle Assembly	1761482-X

*Dash number indicates specific product features. See customer drawing or call your local Tyco Electronics Sales Representative for more information.

Cable Assembly Part Numbers

Description	Base Part Number**
MRJ21 Product to MRJ21 Product – Braided Shield	6653346-X
MRJ21 Product to MRJ21 Product – Unshielded	6653347-X
MRJ21 Product to RJ21 telecom connector – CAT 5 Braided Shield	6653348-X
MRJ21 Product to (12) RJ45 (2 pair/plug) – CAT 5 Braid Shield	6653439-X
MRJ21 Product to (12) RJ45 (2 pair/plug) – GbE 24 Pair UTP	6371664-X
MRJ21 Product to (6) RJ45 (4 pair/plug) – CAT 5 Braid Shield	6434918-X
MRJ21 Product to (6) RJ45 (4 pair/plug) – CAT 5e UTP	6713358-X

**Lengths are determined by dash number. Call your local Tyco Electronics Sales Representative for the specific Part Number for your required length cable assembly, or for other configurations not listed above.

Electrical Design Objectives

Voltage Rating — 250 Vac

Current Ratings (Signal) — 0.5 Amp

Dielectric Withstanding Voltage — 1,000 Vac (contact to contact); 1,500 Vac (contact to ground)

Insulation Resistance — 1,000 megaohms

Crosstalk — CAT 5e minimum

Environmental Design Objectives

Rated Temperature — -55°C to +85°C

Thermal Shock — 5 cycles, -55°C to +85°C

Humidity – Temperature — 50 cycles, 25°C to +65°C

Temperature Life — 500 hours, +85°C

Mechanical Design Objectives

Vibration — 5-500 Hz

Physical Shock — 30 G Peak

Durability — 500 cycles

Note: Future enhancements include press fit design and integrated ganged versions. Consult Tyco Electronics Sales Representative for additional information.

Note: All part numbers are RoHS compliant.

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MRJ21 Cassettes and Patch Panels

Product Facts

- High performance copper cabling solution
- High density, small form factor connectivity
- Factory terminated and tested solution
- Modular, pluggable solution
- Application specific cassettes

System Features and Benefits

- MRJ21 product provides an application independent copper platform for applications today and into the future — including Gigabit, VoIP & powered Ethernet
- The small size of the MRJ21 connector and cabling reduces cable bulk in pathways and spaces, enabling much higher port counts in a smaller space
- Factory termination and testing of the cassettes and patch panels provide assurance of pluggable performance on site. This enables rapid installation or MACs with pre-tested quality.
- The modularity of this solution significantly reduces time to install or migrate from a 10/100 Base-T 2-pair platform to a Gigabit Ethernet 4-pair platform. Upgrading is as simple as unplugging one cassette and plugging in the new one. The same cable is re-usable.
- Cassettes and patch panels break out high performance 24-pair solutions to the appropriate wiring patterns for standards-based 10/100 Base-T, Gigabit Ethernet, and other applications
- Common cable assembly lengths provide readily available, pluggable solutions, speeding implementation

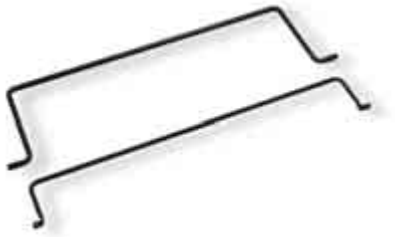
12-Port Cassette Front

48-Port Angled Patch Panel Loaded

6-Port Cassette Front

6-Port, 12-Port Cassette Back

Patch Panel



Cable Support Bar

Description	Part Number
Cassette, 6-Port, 10/100/1000 Base-T (4-Pair)	1479459-1
Cassette, 12-Port, 10/100 Base-T (2-Pair)	1479452-1
Patch Panel, 1U, 3-Cassette	1479451-1
Cable Support Bar 5" Deep	557548-1
Angled Patch Panel, 48-Port, 10/100/1000 Base-T	1777052-1
AMPTRAC Angled Patch Panel, 48-Port, 10/100/1000 Base-T	1777053-1*

*I/O Cable sold separately. See AMPTRAC Connectivity Management Data Sheet (1309354) for more information.

Note: Additional hardware options are available. Contact your Tyco Electronics Sales Engineer or check our website for the latest updates.

Note: All part numbers are RoHS compliant.

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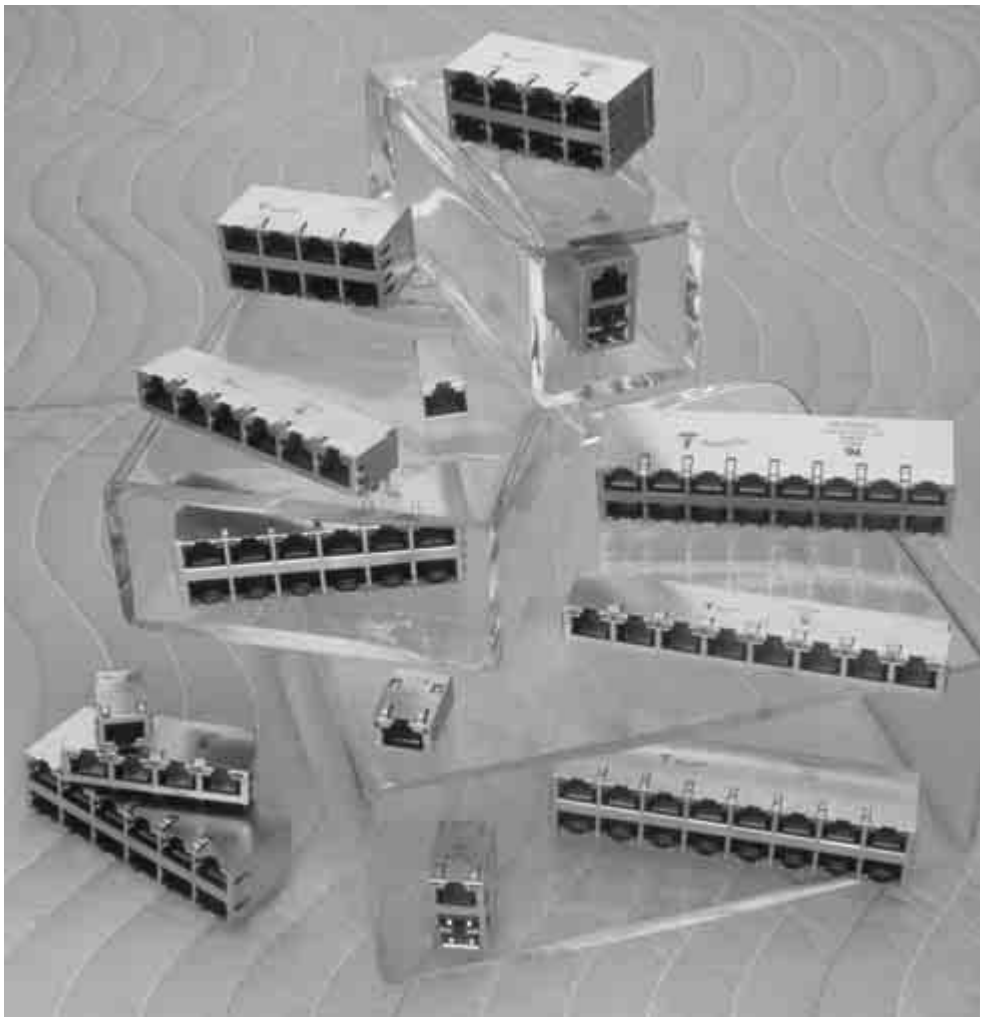
MAG45 Modular Jacks with Integrated Magnetics

Product Features

- **PCB space savings**
- **Improved reliability and EMI performance over discrete magnetics**
- **Micro-welding of mag wire to PCB versus soldering**
- **Meets or exceeds FCC Part 68, IEEE 802.3, and ANSI X3.263 requirements**
- **Supports all appropriate and available PHY Chips and applications**
- **Extended Temp -40C to +85C available**

Product Qualification

- **501 and 108 Qualification Test and Product Specification Reports available**
- **UL/CSA Recognized component**
- **For assistance in part selection, please refer to the Tyco Electronics E-Catalog**
- **Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist**



The MAG45 product line offers a broad range of available RJ45 modular jacks with integrated magnetics for 10/100 Base-T, Gigabit and PoE Enabled applications. Multiple configurations are available to include single port, tab up or tab down; single port USB/RJ45; single port low profile; ganged multiport, 1xN; and stacked multiport, 2xN. All available with or without LEDs. There are multiple LED combinations and color options available.

Available soon RJ45 with Integrated Magnetics/ PoE controller and MRJ21 product.

Available in Spring 2005 Pb Free/RoHS Compliant MAG45 product.

Note: All part numbers are RoHS compliant.

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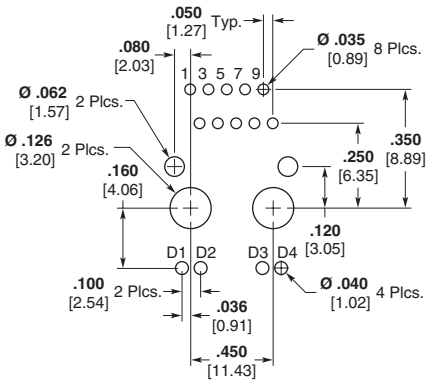
MAG45 Modular Jacks with Integrated Magnetics (Continued)

Single Port 10/100 Base-T, Gigabit & PoE, Tab Down

Product Facts

- Single Port
- Through Hole, Tab Down
- Available with or without LEDs
- UL Recognized
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

Single Port Tab Down*

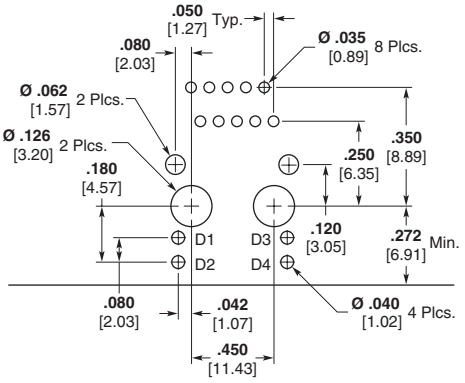
10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
✓	✓	✓	No

*multiple LED colors with and without resistors available.

10/100 Base-T	10/100 PoE	Gigabit
6605424-1	6605432-2	1-6605444-1
6-6605425-1	1-6605310-1	6605434-1
5-6605308-1	6-6605440-1	6605445-6

Single Port 10/100 Base-T, Gigabit & PoE, Tab Up

- Single Port
- Through Hole, Tab Up
- Available with or without LEDs
- UL Recognized Component
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

Single Port Tab Up*

10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
✓	✓	✓	**

*multiple LED colors with and without resistors available.
**under development.

10/100 Base-T	10/100 PoE	Gigabit
6605759-1	1-6605832-1	5-6605809-1
5-6605763-6	6605818-1	6605814-5
5-6605758-9	1-6605834-1	6605852-2

Note: All part numbers are RoHS compliant.

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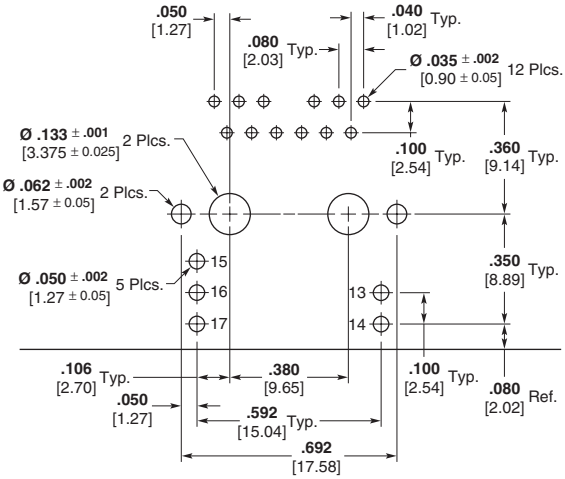
MAG45 Modular Jacks with Integrated Magnetics (Continued)

Single Port Low Profile 10/100 Base-T & Gigabit, Tab Up

- Height is .445" vs std .580"
- UL Recognized
- IEEE 802.3 & ANSI X3.263 Compliant
- With LEDs
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

Low Profile*

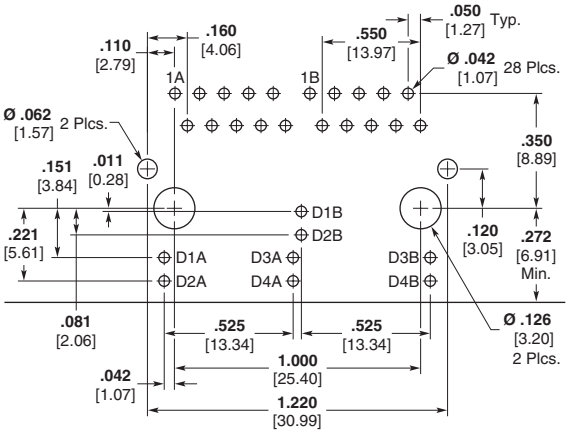
10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
✓	No	✓	No

*multiple LED colors with and without resistors available.

	10/100 Base-T	Gigabit
Tab Up	1368458-1	1368398-1
Tab Down	1368590-1	1368589-1

Ganged 10/100 Base-T, Gigabit & PoE, Tab Up

- Multi-Port Single Layer Connector
- Through Hole, Tab Up
- Available with or without LEDs
- UL Recognized Component
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

Ganged Multi-Port Tab Up (unless noted)*

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
1x2	✓	✓	✓	**
1x4	✓	✓	✓	✓
1x5	✓	✓	✓	**
1x6	✓	✓	✓	✓
1x8	✓	✓	✓	**

*multiple LED colors with and without resistors available.
** Under development.

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
1x2	5-6610000-1	1-6610128-1	1-6610209-1	No***
1x2 Tab Down	No***	No	1840516-6	No
1x4	5-6610049-1	1840500-1	6610068-6	1840514-1
1x4 Tab Down	6610211-1	No	6610204-1	No
1x4 Tab Down Low Profile	No***	No	1840515-1	No
1x4 Tab Up Low Profile	No***	No	1761889-1	No
1x5	6610078-2	6610182-2	1-6610132-1	No
1x6	1-6610084-1	5-6610168-8	6610157-1	6610199-1
1x8	6610112-1	1-6610122-1	6610160-6	No***

*** Contact product management about possibility of adding.

Note: All part numbers are RoHS compliant.

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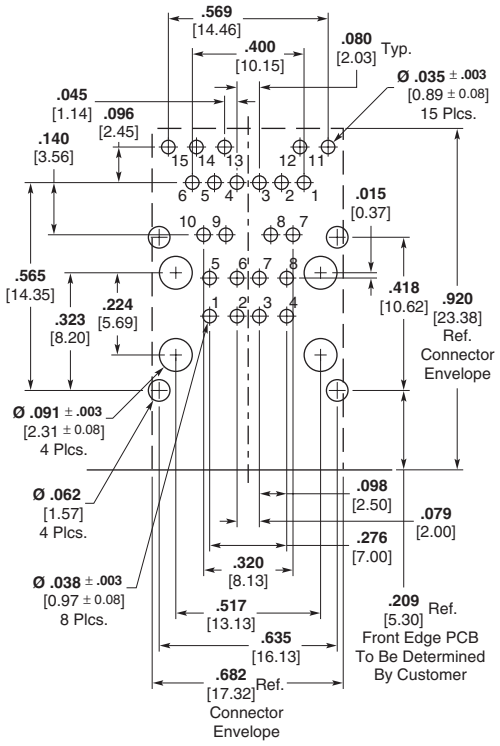
MAG45 Modular Jacks with Integrated Magnetics (Continued)

Stacked USB/RJ45 (10/100 Base-T or Gigabit)

- USB/RJ45 with integrated magnetics
- 10/100 or Gigabit applications
- Stacked USB type A included
- UL Recognized
- Available with LEDs
- IEEE 802.3 & ANSI X3.263 Compliant
- USB 2.0 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

USB/RJ45*

10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
✓	No	✓	No

*multiple LED colors with and without resistors available.

Port Configuration	10/100 Base-T	Gigabit
RJ45/Dual USB	6620004-1	6368472-1
	6620002-1	6620005-1
	6368532-1	6620009-1
RJ45/Single USB	No**	1840012-1

** Contact product management about possibility of adding.

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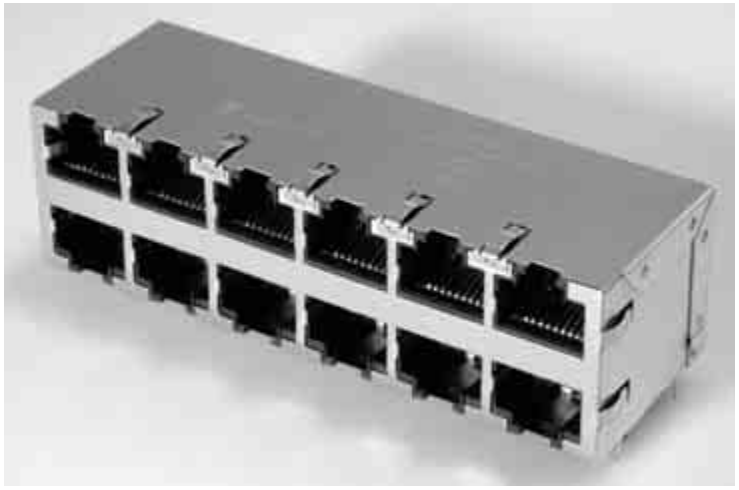
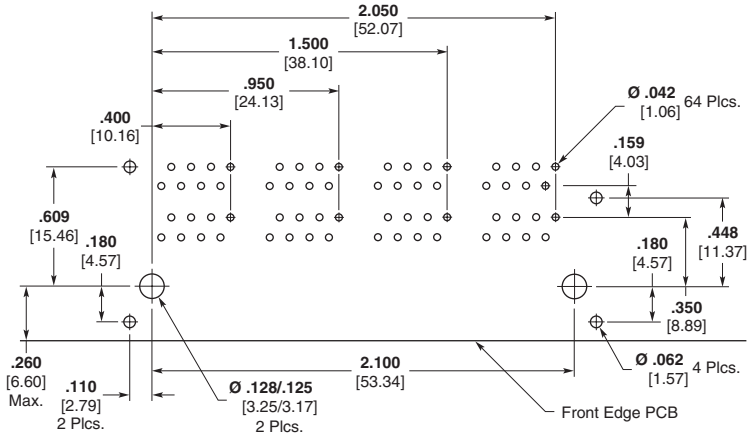
MAG45 Modular Jacks with Integrated Magnetics (Continued)

Stacked (10/100 Base-T)

- Stacked Connector
- UL Recognized
- Without LEDs
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist





PCB Footprint

Stacked

Port Configuration	10/100 Base-T	10/100 PoE
2x1	✓	✓
2x3	✓	✓
2x4	✓	✓
2x6	✓	✓
2x8	✓	✓

Port Configuration	10/100 Base-T
2x4	6615012-1
2x6	6368525-1
2x8	6368526-1

Note: All part numbers are RoHS compliant.

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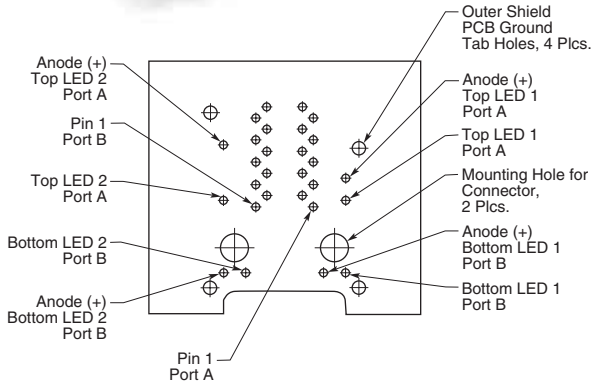
MAG45 Modular Jacks with Integrated Magnetics (Continued)

Stacked (10/100 Base-T, Gigabit & PoE)

- Stacked, Through Hole, Vertical 10-Pin Footprint
- Available with or without LEDs
- UL Recognized
- IEEE 802.3 & ANSI X3.263 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

Stacked*

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
2x1	✓	✓	✓	✓
2x2	✓	✓	✓	✓
2x3	✓	✓	✓	✓
2x4	✓	✓	✓	✓
2x6	✓	✓	✓	✓
2x7	—	—	✓	—
2x8	✓	✓	✓	✓

*multiple LED colors with and without resistors available.

Port Configuration	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
With LED's				
2x1	6368457-1	No**	6368513-1	No**
2x2	6368387-1	No**	6368511-1	No**
2x4	6368400-1	No**	6368507-1	No**
2x6	1840115-1	6615076-1	6368506-1	No**
2x8	6368536-1	No**	6368510-1	No**
Without LED's				
2x1	1840124-1	No**	1840003-1	No**
2x2	No**	No**	6368523-1	No**
2x4	No**	6615072-1	1840155-1	No**
2x6	No**	6615070-1	1840186-1	1840141-1
2x7	No**	No**	1840187-1	No**
2x8	No**	No**	1840188-1	1840142-1

Note: All part numbers are RoHS compliant.

** Contact product management about possibility of adding.

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MAG45 Modular Jacks with Integrated Magnetics (Continued)

MAG45 with PoE Controller

RJ45 + PoE Magnetics + Silicon Power Controller Chip

PoE Product Features

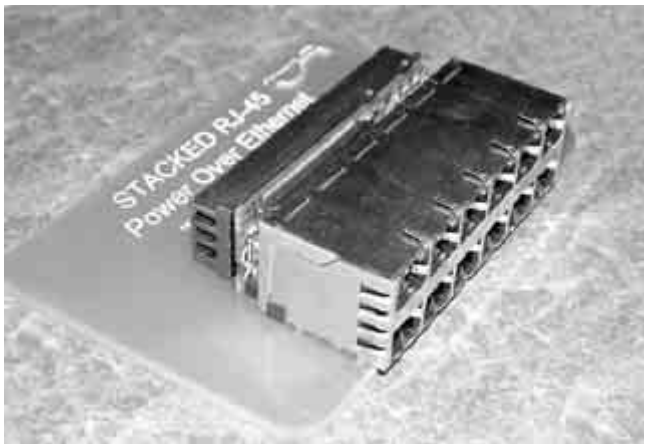
- Integrated Silicon PoE 12-port controller
  - 802.3af compliant
  - Auto and Enhanced mode capable
- Footprint
  - Press-fit configuration
  - Ease of routing on customer PCB
- Pin Assignments
  - Signal integrity benefits vs. standard footprint
- Three options in same footprint:
  - Integrated Magnetics Only
  - Integrated Magnetics, Enabled PoE
  - Integrated Magnetics, Integrated PoE
- 2250Vdc / 1500Vac electrical isolation per 802.3 requirements

Customer Benefits:

- Simplify implementation of full PoE solution
- Board real estate savings
- Reduce board layout issues
- Integrate new and existing technologies into a single connector unit

Why Integrate the PoE Circuitry into the RJ?

- Single package (PoE, LED's, Magnetics, Heat Sink)
- Identical footprint for both Integrated PoE/Enabled and non-PoE
- Single design, single motherboard can be used for both PoE and non-PoE
- Same design can migrate between switches (including blades and fixed)
- Delivered fully tested and qualified, no need to bother with complicated PoE testing



- Reduced layer count/ Reduces cost of motherboard
- No PoE daughterboards
- Isolated PoE voltage provided directly from the power supply
- All per port components embedded in RJ
- Eliminates issues of voltage isolation on motherboard
- Reduces EMI risks

PoE Controller Features

- Power supplied over data contacts 1 & 2 and 3 & 6
- I2C Capability
- PoE chip provides power and command/control circuitry from motherboard power plane/bus
- Provides isolation between earth/building and signal ground
- Real time control of overload, underload, short circuits and under voltage states
- 0.5A current carrying capacity
- Full AC disconnect and classification
- 80V tolerant, surge protected system
- Registers for MIB 8 support and parameters adjustment
- Single voltage feeding (44 – 57VDC)
- Designed to support legacy capacitor detection

How Does PoE RJ45 Work?

- Embedded inside each RJ45 is the Silicon Power PD64012 chip
- Each RJ45 is a 12 port PoE system, communicating with each other to create a system of up to 48 ports
- The Host CPU controls the system via I2C
- Two main operating modes: Automatic/Enhanced Mode to match system customization requirements

For assistance in part selection, please refer to the Tyco Electronics E-Catalog.

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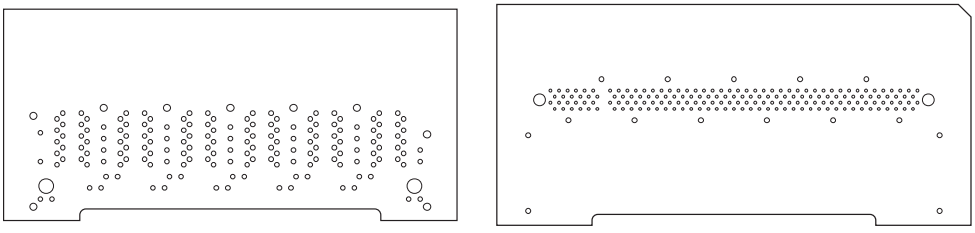
Legacy vs. Press Fit PoE Footprint



Legacy Footprint
Solder Only

Integrated/Enabled/Non PoE Footprint
Press Fit

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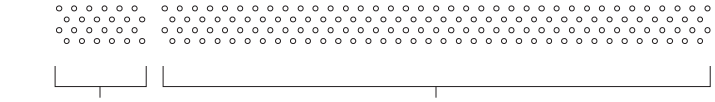
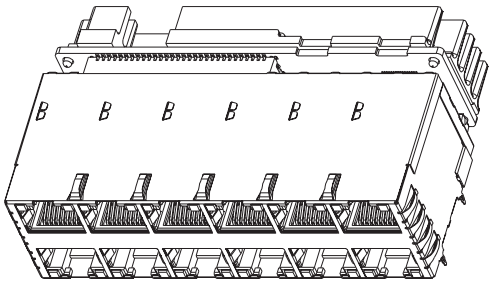
MAG45 Modular Jacks with Integrated Magnetics (Continued)

Part Number Matrix

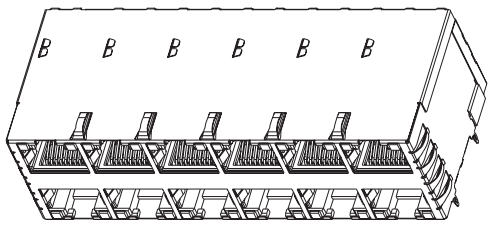
Base Part Number	Integrated Magnetics	Power over Ethernet	PCB Attach Options	LED Options (2 per Port)	Description
1658821	10/100/1000	Integrated	Press Fit	With/Without Yellow/Green	PowerDsine Integrated Chip Set, 802.3af Compliant
1658822	10/100	Integrated	Press Fit	With/Without Yellow/Green	PowerDsine Integrated Chip Set, 802.3af Compliant
1658825	10/100/1000	Enabled	Press Fit	With/Without Yellow/Green	PoE Chip set on Motherboard, 802.3af Compliant
1658826	10/100	Enabled	Press Fit	With/Without Yellow/Green	PoE Chip set on Motherboard, 802.3af Compliant
1658827	10/100/1000	No	Press Fit	With/Without Yellow/Green	
1658828	10/100	No	Press Fit	With/Without Yellow/Green	

Same Mechanical Footprint, all versions.
Same Electrical Footprint, pins 25 – 170, all versions.





Part Number 1658821 – 1658822



Part Number 1658825 – 1658828

Note: All part numbers are RoHS compliant.

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Common Terms

A

Attenuation- A reduction in power. It occurs naturally during signal travel through lines. The amount of attenuation is generally expressed in decibels per unit of length.

B

Bandwidth- The data-carrying capacity of a transmission medium, usually measured in Hz, ex. 100 MHz

C

Cable- Cable can be either flat oval or round containing multiple conductors, either stranded or solid.

Cable assembly- A completed cable and its associated hardware.

Capacitance- The property of an electrical conductor that permits the storage of energy as a result of electrical displacement. Most commonly measured in microfarads (µF) or picofarads (pF).

Category Ratings- Categories are transmission performance criteria defined by the Telecommunications Industry Association for cabling, connectors and installed cabling systems.

Category 3- up to 16 MHz
Category 4- up to 20 MHz
Category 5- up to 100 MHz
Proposed criteria:
Category 6- up to 200 MHz
Category 7- up to 600 MHz

Channel return loss (echo)- The ratio of the reflected signal from the cable to the transmit signal.

Connector- A coupling device employed to connect conductors of one circuit with those of another circuit. Used to provide rapid connect/disconnect with another connector.

Contact durability- The number of insertion and withdrawal cycles that a connector must be capable of withstanding while remaining within the performance levels of the applicable specification.

Contact engaging and separating force- Force required to either engage or separate connectors. Values are generally established for maximum and minimum forces.

Crimp- The final configuration of a connector after the necessary compression forces have been applied to cause a functional union between the contacts and cable conductors.

Crimping dies- A term used to identify the shaping tools that, when moved toward each other, produce a certain desirable deformation to the connector that has been place between them. Crimping dies are often referred to as die sets or as die inserts.

Crimping head- Tooling containing jaws and linkage for use in pneumatic or hydraulic powered units to crimp connectors onto cable.

Crimping tool- A term commonly used to identify a hand held mechanical device that is used to crimp a connector.

Crosstalk- A magnetic or electrostatic coupling which causes the unwanted transfer of energy from one circuit (disturbing circuit) to another circuit (disturbed circuit). (See Near-end crosstalk [NEXT] and Far-end crosstalk [FEXT])

Current rating- The maximum continuous electrical flow of current recommended for a given situation. It is expressed in amperes.

D

dB- Abbreviation for decibel. See decibel.

decibel- A unit expressing the ration of two voltages, currents or powers. It is equal to 20 times the common logarithm of the ratio of two voltages across , or two currents through equal loads, or 10 times the common logarithm of the two powers. One decibel is approximately the smallest change in audible power that can be recognized by the human ear.

Dielectric- A material that serves as an insulator. The amount of resistance to voltage in a given insulation.

Dielectric withstanding voltage (DWV)- The maximum potential gradient that a dielectric material can withstand without failure.

Discontinuity- Rated interconnection: a broken connection (open circuit) or the loss of a specified connection characteristic. Transient phenomena: Short term interruption or unacceptable variation in current or voltage.

Distortion- An unwanted change or addition to a signal or waveform when it is amplified. This definition excludes noise which is an extraneous signal superimposed on the desired signal.

E

Electromagnetic compatibility (EMC)- The ability of an electronic device to operate in its intended environment without its performance being affected by EMI and without generating EMI that will affect other equipment.

Electromagnetic interference (EMI)- Unwanted electrical or electromagnetic energy that causes undesirable responses, degrading performance or complete malfunctions in electronic equipment.

F

Far-end crosstalk (FEXT)- The coupling of received signals on adjacent wire pairs onto the received signal.

I

Insulation Displacement Contact (IDC)- A termination technique whereby an insulated wire is forced into a slot on a contact that pierces the insulation and allows electrical contact with the wire conductor.

Interference- An electrical or electromagnetic disturbance that causes undesirable response in electronic equipment.

Insulation crimp- The area of a connector that has been formed around the insulation of the cable.

Insulation grip- The ability of certain crimped connectors to hold firmly in place both the conductor and a small portion of the insulation. This prevents the conductor from being exposed due to insulation receding away from the connector.

Insulation resistance- The electrical resistance between two conductors separated by an insulating material.

Interface- The two surfaces of a multiple-contact connector that face each other when the connector is assembled.

Inverted latch- A modular jack that when mounted to a printed circuit board has its contacts on the bottom and the latch on the top. See also standard latch.

Invertible jack- A jack which can be mounted on the printed circuit board such that entry can be from either the top or bottom.

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Common Terms (Continued)

J

Jack- A connecting device into which a plug can be inserted to make circuit connections.

M

Mate- To join two connectors in a normal engaging mode.

Modified Modular Jack (MMJ)- A six-wire modular jack with the locking tab shifted off to the right side. Used in the DEC wiring system.

N

Near-end crosstalk (NEXT)- The coupling of transmit signals on adjacent wire pairs onto the received signal.

Noise- An extraneous signal in an electrical circuit, capable of interfering with the desired signal. Classes of noise include burst of popcorn noise, intermediate frequency noise at low audio frequencies, white (thermal) noise, etc.

O

Offset latch- See Modified Modular Jack (MMJ).

P

Panel stop- A feature on a connector which prevents the connector from falling through a panel.

PCB- Abbreviation for printed circuit board.

Plug- A connecting device which is normally inserted into the jack. It is usually the movable male portion of an interface and is generally attached to cable.

Printed circuit board- An insulating board serving as a base for a printed circuit. When the printing process is completed, the board may include printed components as well as printed wiring.

Propagation delay- Time required for an electronic digital device or transmission network to transfer information from its input to its output.

Propagation delay time- The time between the application of a digital input waveform and the corresponding change in input waveform. It is measured between reference points on the waveforms. The time is generally different for positive-going and negative-going waveforms.

Prototype- A model suitable for use in the complete evaluation of form, design and performance.

R

Right-angle jack- A jack that when mounted to the printed circuit board has entry from the side.

Registered Jack (RJ)- Represents codes set up by the telephone industry to standardize interconnections across the system. These codes are part of the USOC (see USOC). Examples are RJ11 has become commonly known as a 6-position modular jack or plug with 4 contacts loaded in the center position while the RJ45 has become commonly known as an 8-position modular plug or jack.

S

Screened Twisted Pair (SCTP)- A cable type, usually 120 ohms impedance, used in CAT 5 applications.

Shield/shielding (cable)- A conducting envelope, composed of metal strands or foil, which enclose a wire or groups of wires so constructed that substantially every point on the surface of the underlying insulation is at ground potential or at some predetermined potential with respect to ground.

Shield/shielding (circuit)- The metal sleeving surrounding the connector to prevent interference, interaction or current leakage. Shielding protects a circuit against crosstalk.

Shielded Twisted Pair (STP)- A cable type, usually 150 ohms impedance, used for CAT 5 applications.

Side entry- See right-angle jack.

Side latch- See Modified Modular Jack (MMJ).

Standard latch- A modular jack that when mounted to a printed circuit board has its contacts on the top and the latch on the bottom. See also inverted latch.

T

TIA/EIA-568-A- A commercial building wiring standard for voice and data communications. This specification was jointly developed by the Telecommunications Industry Association and the Electronic Industries Association.

Tensile- The amount of axial load (longitudinal stress) required to break or pull the wire from the crimped connector.

Tensile strength- The greatest longitudinal stress that a substance or union can bear without tearing or pulling apart. In crimped terminations, it is the greatest longitudinal stress that a connector can bear without the wire separating from the crimped connector.

U

Universal Serial Bus (USB)- an external bus standard that supports data transfer rates of 12 Mbps. A single USB port can be used to connect up to 127 peripheral devices, such as mice, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.

Universal Service Order Code (USOC)- A set of designations for comer-to-customer interfaces (see RJ).

Unshielded Twisted Pair (UTP)- A cable type, usually 100 ohms impedance, used for CAT 5 applications.

V

Vertical jack- A jack that utilizes top entry only.

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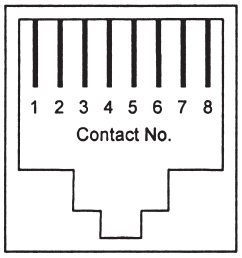
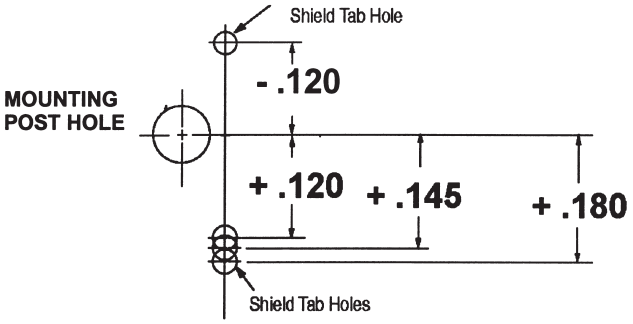
RJ Designations

Contact Numbering/ Shield PCB Ground Tab Location



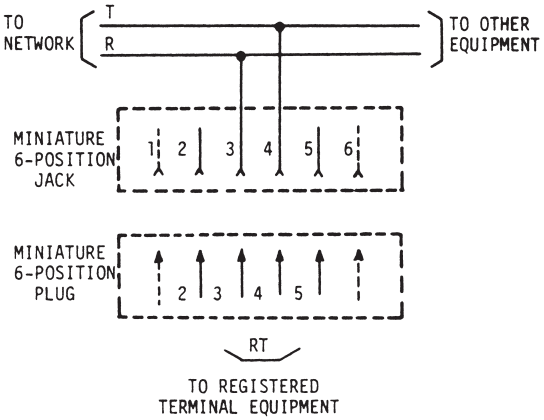


RJ11C
Universal Service Order Code

Mechanical Arrangement— Surface or flush mounted miniature 6-position jack.

Typical Usage— Single line non-key telephones and ancillary devices.

Electrical Network Connection— Single line bridged tip and ring.

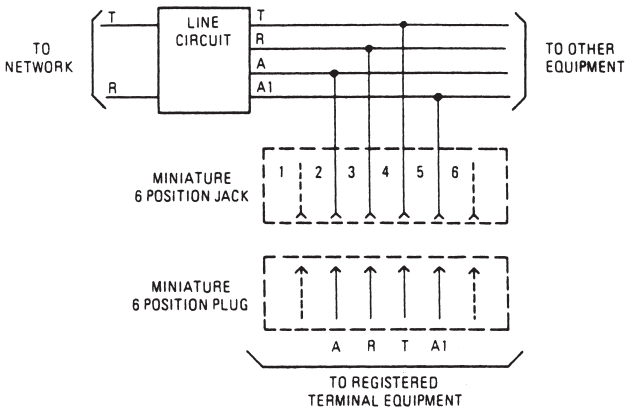


RJ13C
Universal Service Order Code

Mechanical Arrangement— Surface or flush mounted miniature 6-position jack.

Typical Usage— Single line non-key telephone sets and ancillary devices connected to a key system.

Electrical Network Connection— Single line bridged tip, ring, A and A1 leads behind the line circuit of a key system.



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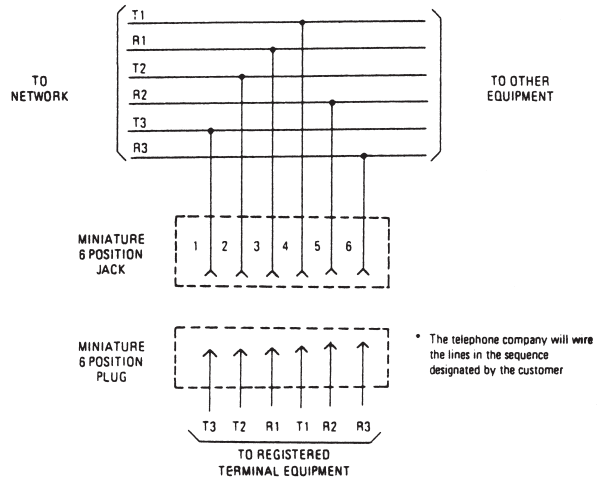
RJ Designations (Continued)

RJ25C
Universal Service Order Code

Mechanical Arrangement—Surface or flush mounted miniature 6-position jack.

Typical Usage—Three line non-key telephone sets, ancillary devices, including message registration, automatic identification, outward dialing, and off-premise station.

Electrical Network Connection—Up to three lines bridged connection.

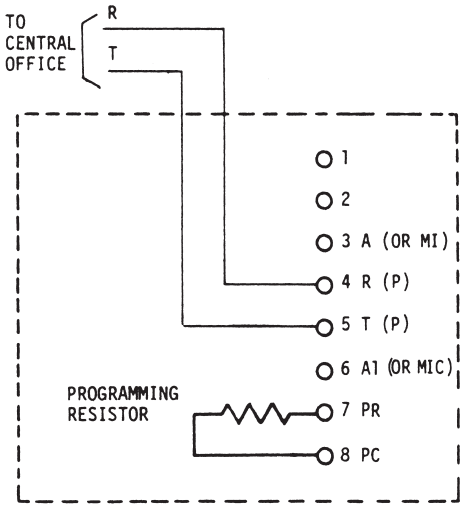


RJ45S
Universal Service Order Code

Mechanical Arrangement—Single miniature 8-position keyed jack.

Typical Usage—Programmed data equipment.

Electrical Network Connection—Single line bridged tip and ring.

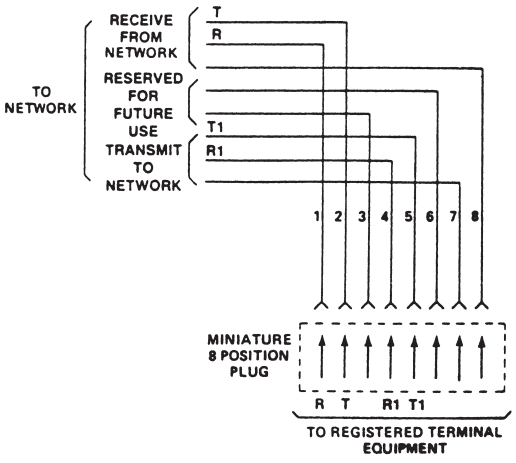


RJ48C
Universal Service Order Code

Mechanical Arrangement—Miniature 8-position jack.

Typical Usage—1.544 Mbps digital services.

Electrical Network Connection—T&R, T1 R1, conductors 7 and 8 provide cable shield integrity. Conductors 3 and 6 are reserved for future use.



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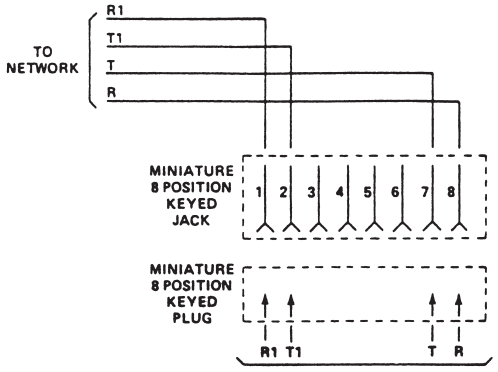
RJ Designations (Continued)

RJ48S
Universal Service Order Code

Mechanical Arrangement—Miniature 8-position keyed jack.

Typical Usage—Local area data channels/subrate digital services.

Electrical Network Connection—One or two line T&R or T&R, T1 R1.

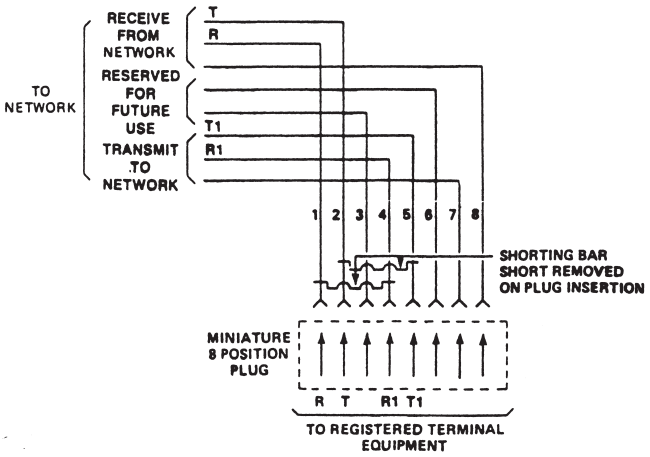


RJ48X
Universal Service Order Code

Mechanical Arrangement—Miniature 8-position jack.

Typical Usage—1.544 Mbps digital services.

Electrical Network Connection—T&R, T1 R1, conductors 7 and 8 provide cable shield integrity. Conductors 3 and 6 are reserved for future use.



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Part Number Index

Note: This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

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