



MT-RJ

**MT-RJ Interface for
100Mbps & 1000Mbps
Token Ring**

**November 11, 1998
Albuquerque, NM**

AMP Incorporated
Ken Hall

MT-RJ

MT-RJ

True End-to-End Design

Commercially Available Fiber Cable

To Transceivers
on Hub



On board @
NICs/Hubs



Commercially
Available Fiber
Cable

MT-RJ



Overview

- **Singlemode & Multimode.**
- **Transceivers available in 10Mbps-1000Mbps.**
- **Based upon field proven 2-fiber ferrule design pioneered by NTT from 2-12 fiber -(FttH, Data Centers).**
- **Polarized similar to 568SC.**
- **No-polish, No-epoxy, Re-terminatable field connection.**
- **Plug - Jack combination available.**
- **Meets and/or exceeds ANSI/TIA/EIA-568 testing criteria.**
- **Designed to replace the RJ-45, not just the Duplex SC.**
- **Performing well in backbone & FttD sites.**
- **Meets ANSI/TIA/EIA and IEEE requirements for Patents and Licensing**

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ANSI/TIA/EIA TR41.8.1

- MT-RJ was the only small form factor duplex fiber optic connector approved to carry forward during the TR41.8.1 meeting November 17-21, 1997 in San Antonio, TX. All four others were eliminated.
- February 26, 1998 TIA poll to supplement the ANSI/TIA/EIA-568SC. MT-RJ achieved just less than the required 2/3 approval: 59%.
- The MT-RJ team is committed to driving the connector globally to become the new standard.

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Size Does Matter!

- Duplex Plug-Adapter-Plug Interface.
- Specialized Faceplate/Panel cut-outs
- Depth to cable transition = 1.95"
- Surface Mounted interface

568SC

MT-RJ Plug / Jack

- Drop-In replacement for existing 8-position modular connectors
- Depth to cable transition = .926"
- Fits INTO J-Box

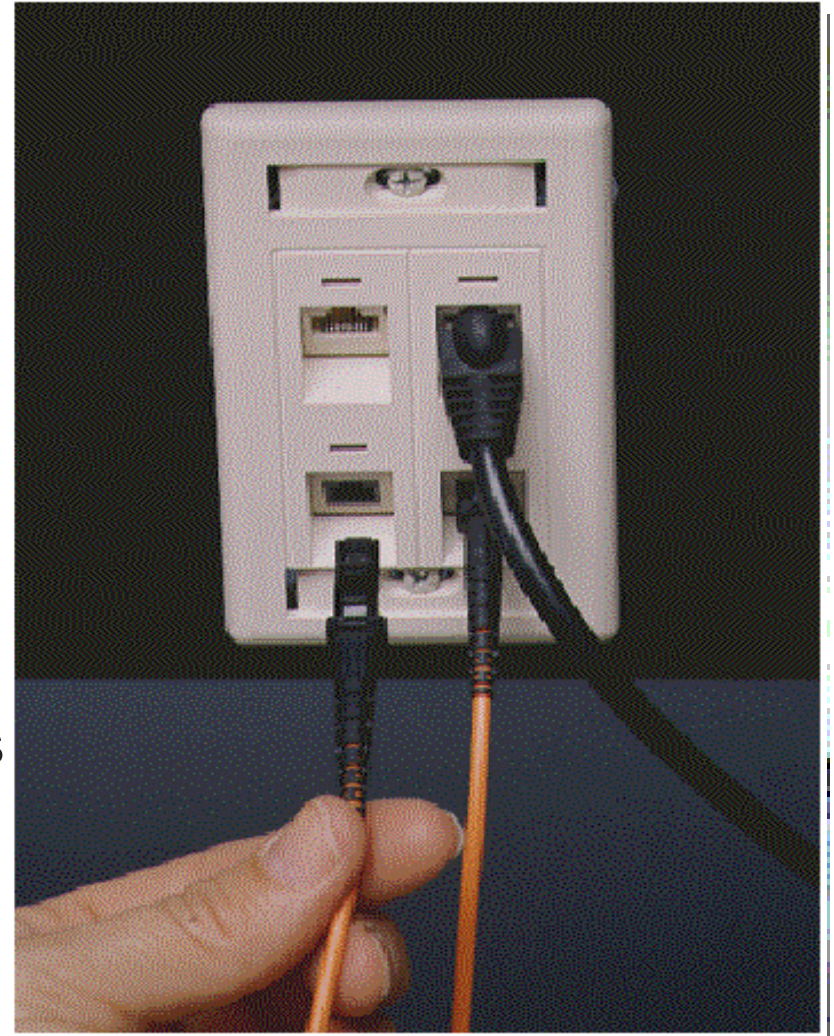
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Ease of Use by Technicians and Users

We listened to the customer

- The *MT-RJ*
 - Field-proven ferrule and alignment mechanisms
 - No training required for user at the desk
 - Snagless latch design without use of large boot
 - Fits everywhere copper does

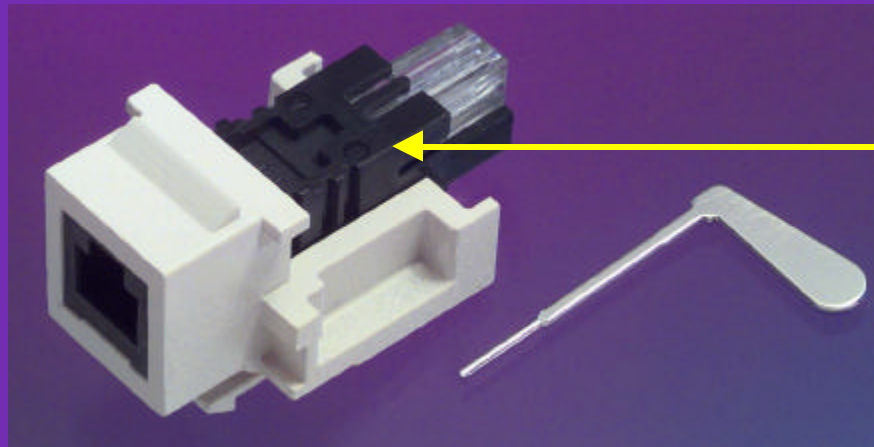


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Field Installation - “Bag of Parts”



Dust Plug



**Embossed:
A/B Positions
&
50,62.5 or SM**

**No-Polish, No-Epoxy
Re-terminatable Jack
& Disposable Key**

MT-RJ

Rotate Key 1/4 Turn

Strip & Cleave Fiber

Insert Key

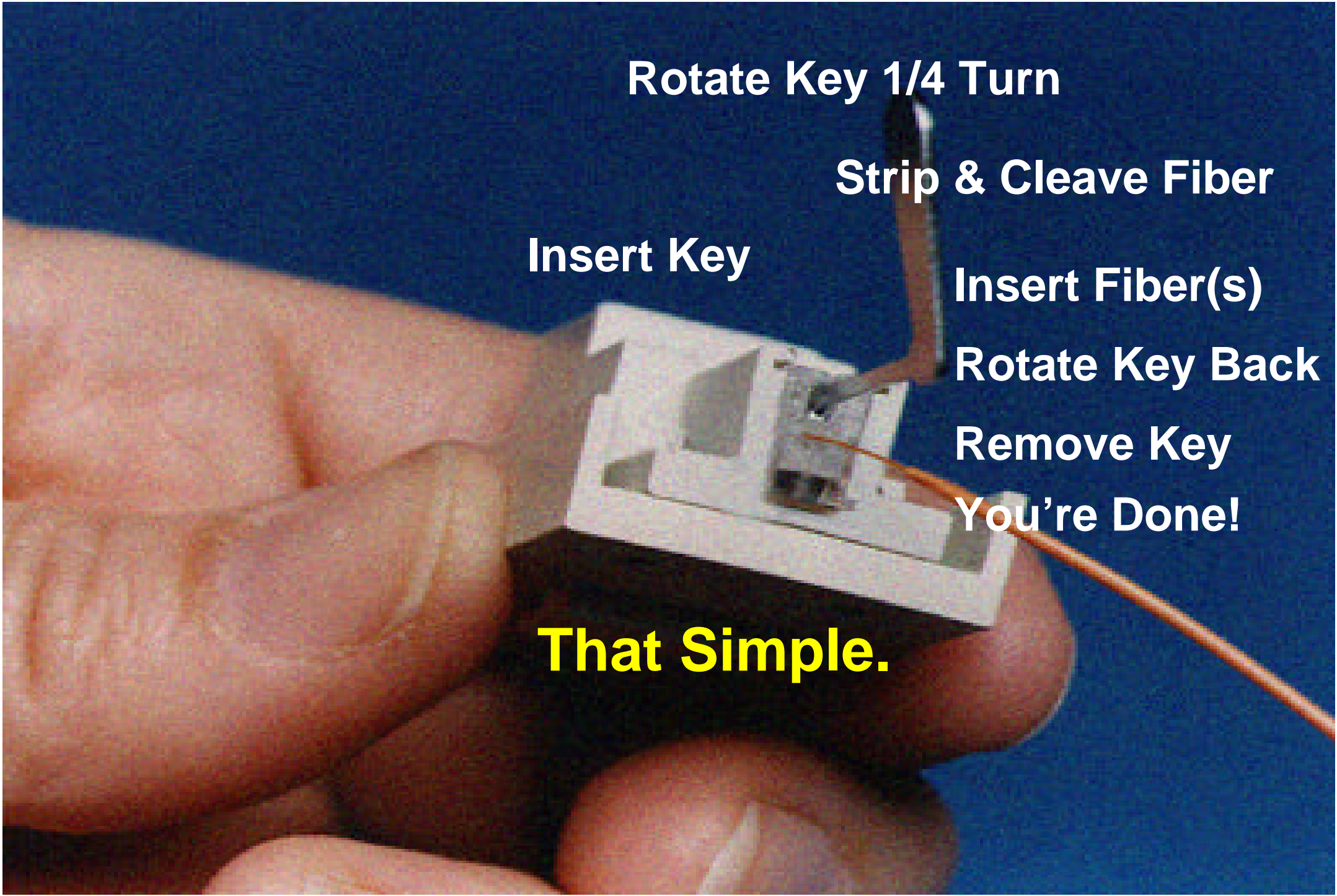
Insert Fiber(s)

Rotate Key Back

Remove Key

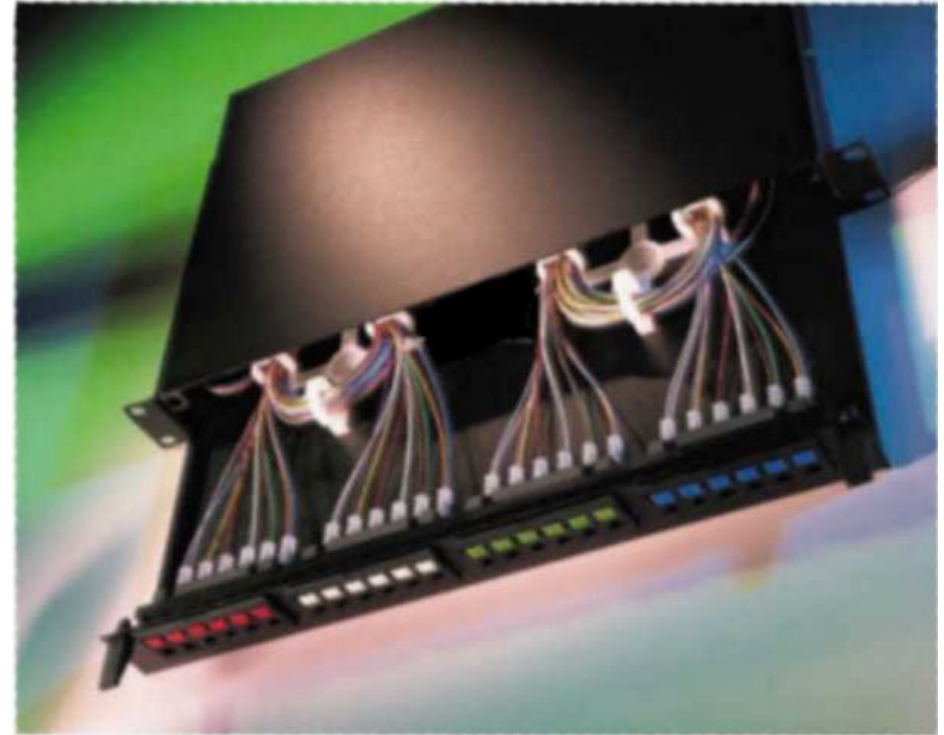
You're Done!

That Simple.



MT-RJ Performance

- Ferrule Technology
 - SM & MM 2-12 strands (MPO)
 - Over 10 year proven reliability
- Mechanical Splice
 - Over 15 year proven reliability (outside plant)
 - Stable index matching Gel
 - Not open to the environment
 - Re-terminatable connection



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Multimode Performance:

Requirements:

- <0.75 dB attenuation
- < -20 dB return loss
- <0.3 dB change Temp Life, Humidity & Low Temp
- <0.5 dB change Cable Retention

Test		Max Delta Change	Final Measurement
FOTP-171 Method B1	Insertion Loss	N/A	0.11 dB typ 0.19 dB max
FOTP 107	Return Loss	N/A	-42.5 dB typ -36.3 dB min
FOTP-2	Impact 8 drops / 1.5 m	N/A	0.14 dB IL -41.3 dB RL
FOTP-1	Flex 0.5 kg	N/A	0.18 dB IL -41.3 dB RL
FOTP-36	Twist 15 N at 0 °	N/A	0.20 dB IL -41.2 dB RL
FOTP-6	Cable Retention 66 N at 0 °	0.06 dB	0.20 dB IL -41.2 dB RL
FOTP-6	Cable Retention 19.4 N at 90 °	0.06 dB	0.19 dB IL -41.2 dB RL
FOTP-185	Coupling Mech 33 N at 0 °	N/A	0.13 dB IL -41.5 dB RL
FOTP-21	Durability 500 cycles	NA	0.11 dB IL -36.3 dB RL
FOTP-4	Temp Life 60°C/14 days	0.01 dB	0.08 dB IL -39.0 dB RL
FOTP-5	Humidity 4 days @ 95%	0.15 dB	.09 dB IL -38.9 dB RL
FOTP-188	Low Temperature -10 °C/4 days	0.22 dB	0.13 dB IL -42.3 dB RL

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Singlemode Performance:

Requirements:

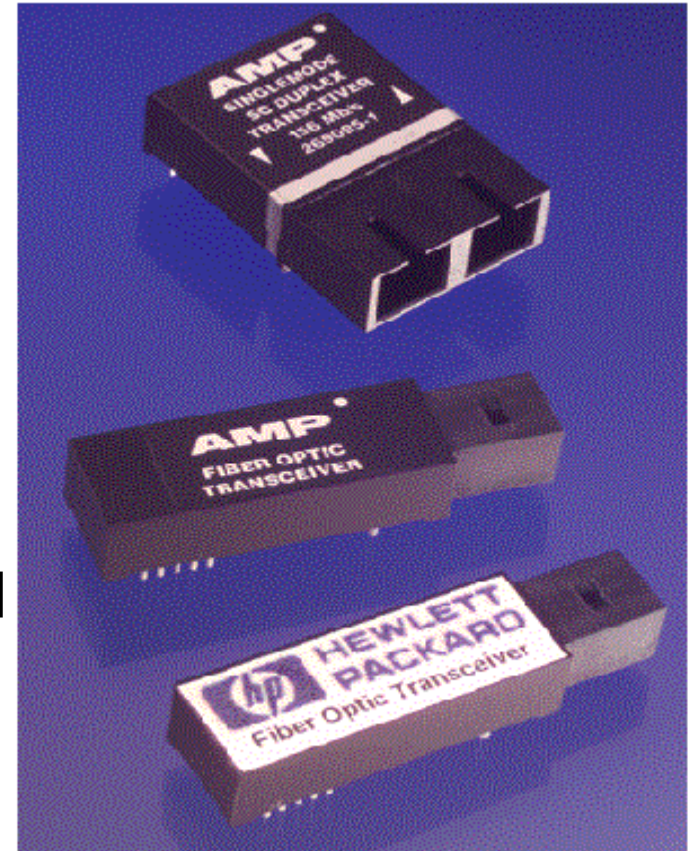
- <0.75 dB attenuation
- < -26 dB return loss
- <0.3 dB change Temp Life, Humidity & Low Temp
- <0.5 dB change Cable Retention

Test		Max Delta Change	Final Measurements
FOTP-171 Method B1	Insertion Loss	N/A	0.24 dB typ 0.52 dB max
FOTP 107	Return Loss	N/A	-44.4 dB typ - 36.2 dB min
FOTP-2	Impact 8 drops/1.5 m	N/A	0.38 dB IL -40.6 dB RL
FOTP-1	Flex 0.5 kg	N/A	0.40 dB IL -40.1 dB RL
FOTP-36	Twist 15 N at 0 degrees	N/A	0.37 dB IL -40.2 dB RL
FOTP-6	Cable Retention 66 N at 0 °	0.20 dB	0.39 dB IL -42.3 dB RL
FOTP-6	Cable Retention 19.4 N at 90°	0.11 dB	0.34 dB IL -43.2 dB RL
FOTP-185	Coupling Mech 33 N at 0 °	N/A	0.37 dB IL -45.0 dB RL
FOTP-21	Durability 500 cycles	N/A	0.35 dB IL -40.5 dB IL
FOTP-4	Temp Life 60 °C/14 days	0.24 dB	0.29 dB IL -44.2 dB RL
FOTP-5	Humidity 4 days @ 95%	0.10 dB	0.30 dB IL -43.9 dB RL
FOTP-188	Low Temperature -10 degrees C	0.18 dB	0.29 dB IL -44.1 dB RL

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MT-RJ Equipment Connector

- Designed in conjunction with transceiver manufacturers
- Drop in replacement to 8-position modular jack
- Same connector used in cabling system
- Doubles the capacity of the hub card relative to the 568SC
- Transceivers meet Gigabit Ethernet PHY requirements and are shipping.



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MT-RJ Evens the Electronics Score



**Doubles port density on fiber hub
cards compared to 568-SC
Fiber Port Count now = Copper Count**

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Transceiver Vendors supporting the MT-RJ Interface

- **Hewlett- Packard Company**
- **AMP Incorporated**
 - **Lytel Division**
- **Fujikura Limited**
- **Molex Fiber Optics**
- **Sumitomo Electric Lightwave**

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Vendors who have licensed the MT-RJ Interface for Connectors

- **Computer Crafts Inc.**
- **FONS (Fiber Optic Network Solutions)**
- **Furakawa Electric Company Ltd.**
- **Fiber Connections Inc.**
- **Krone AG**
- **Molex Fiber Optics Incorporated**
- **Sumitomo Electric Industries Ltd**
- **Superior Modular Products**
- **Senko Advanced Components**

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Vendors supporting MT-RJ Implementation into their LAN Equipment

- Cisco
- 3Com
- Nortel Networks
- Cabletron
- Ascend Communications
- Allied Telesyn International
- Xylan
- Ethercom
- HP ProCurve Networks
- XLNT
- Fore Systems
- Foundry Networks
- Extreme Networks
- Canary Communications
- Transition Networks
- Ethercom Intl
- Gadzoox Networks

These suppliers were listed in the Nov. 10, 1998 Press Release at
Network World InterOp

MT-RJ is also currently in beta testing by other major suppliers.
The list continues to grow.

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MT-RJ The Team

- MT-RJ is the de facto standard
- AMP, Siecor, Hewlett Packard, US Conec, Sumitomo and Fujikura will continue to drive MT-RJ globally!

AMP

 **HEWLETT
PACKARD**

US CONEC

 **SUMITOMO ELECTRIC**
Lightwave Corp.

SIECOR **Fujikura Ltd.**

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Intermateability Standards

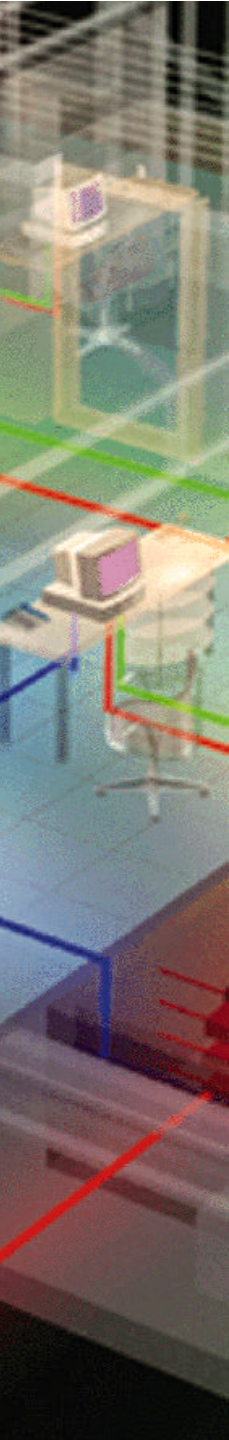
- **MT Ferrule Intermateability**
 - IEC 1754-5 MT Interface 11/96
 - IEC 1754-7 MPO Interface 11/96
- **Mini-MT Intermateability**
 - IEC NWIP submitted 3/97
 - TIA FOCIS for Mini-MT submitted 1/97
- **MT-RJ Intermateability (TIA- FOCIS-12)**
 - In ballot
- **MT-RJ Team actively involved with TIA and IEC**



Summary

- Developed as an end-to-end program.
- The best solution available today.
- Simplest to apply.
- Satisfies performance requirements for singlemode, multimode 50/125 μm , 62.5/125 μm at Gigabit speeds.
- Multiple sources for all components.
- Wide acceptance of the MT-RJ interface.

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The MT-RJ Team respectfully requests
IEEE 802.5 approve the MT-RJ
as an acceptable alternative
to the 568SC.

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