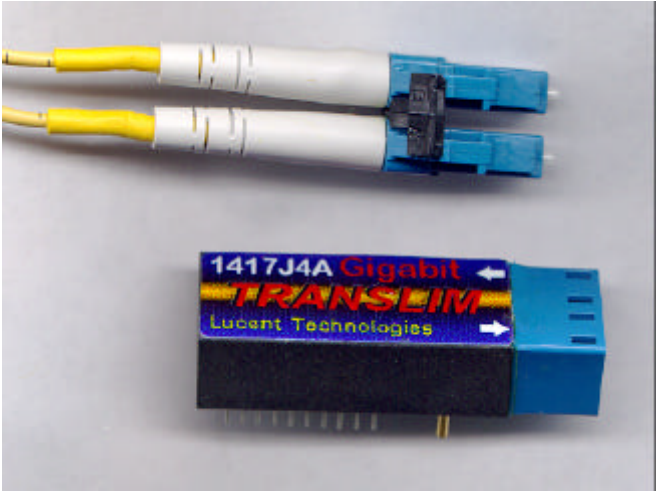
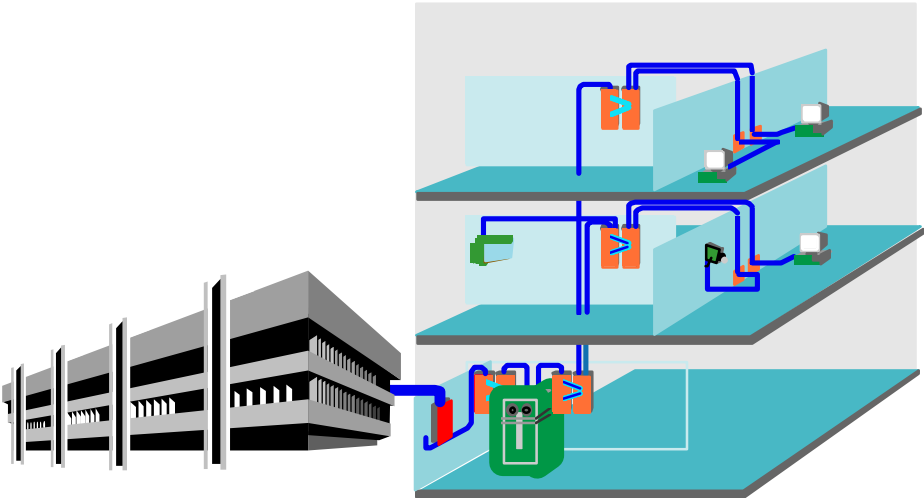




LC Connector

The High Density Standard for Premises Networks



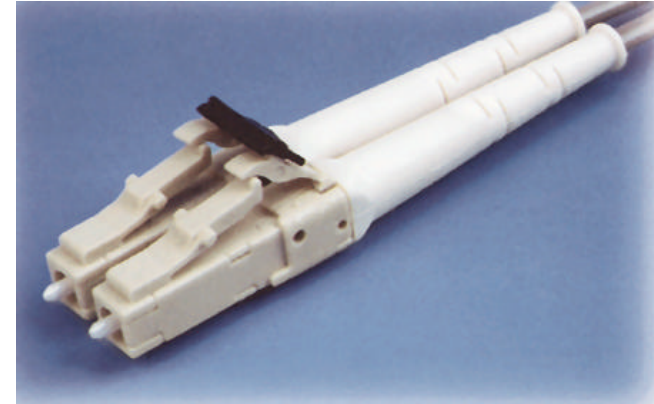
Masood Shariff
Lucent Technologies
IEEE 1394B
December 2, 1997

IEEE 1394B Criteria

Outline



- Availability of Detailed Specifications
- Patent Letter to ANSI/IEEE
- Low System Complexity
- Performance Complies to TIA568
- Size
- Duplex with Polarity
- Physical Safety during Installation and Use
- Ergonomics (Operation & Maintenance)
- Transceiver Integration
- Future Development and Evolution Potential
- Support Speeds up to 4 GBaud



LC Connector

Availability of Detailed Specifications

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- Detailed specification available.
- FOCIS-10 LC Intermatability submitted to TIA 6.3.4 working group.
- LC product and data sheet general availability since 8/97.

LC Connector

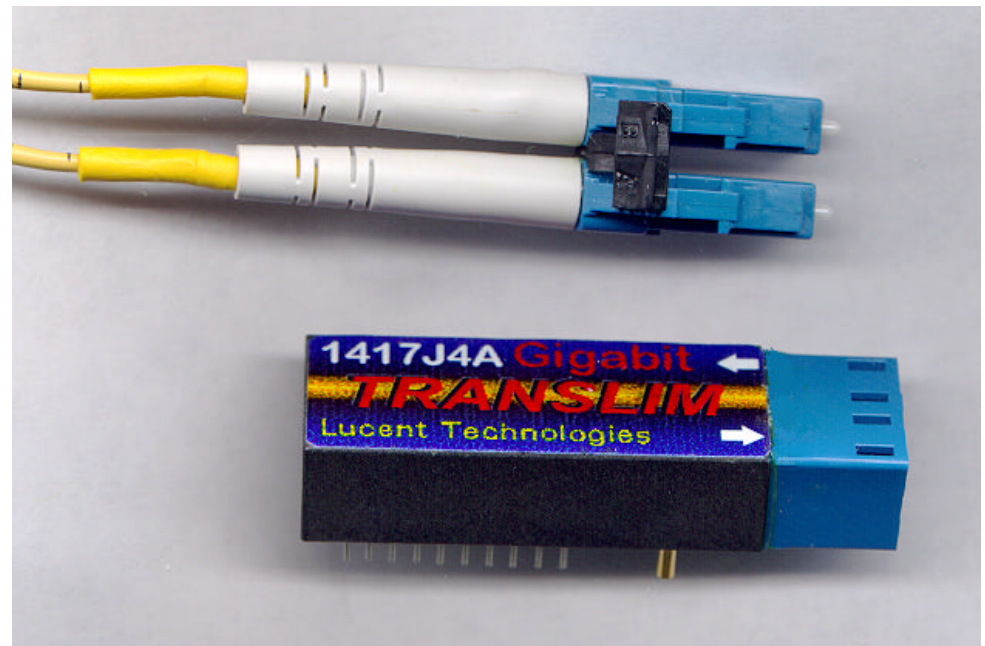
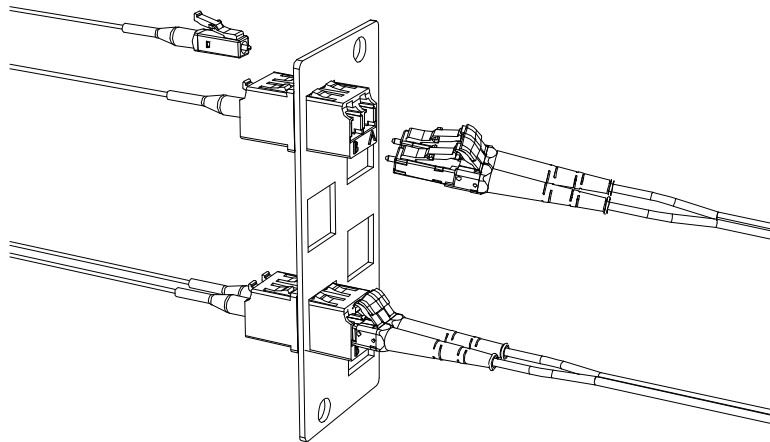
Low Complexity

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Lower **SYSTEM** complexity is **KEY**

- No cost shifting
- No special fiber required
- No special cable required



LC Connector

Low Complexity

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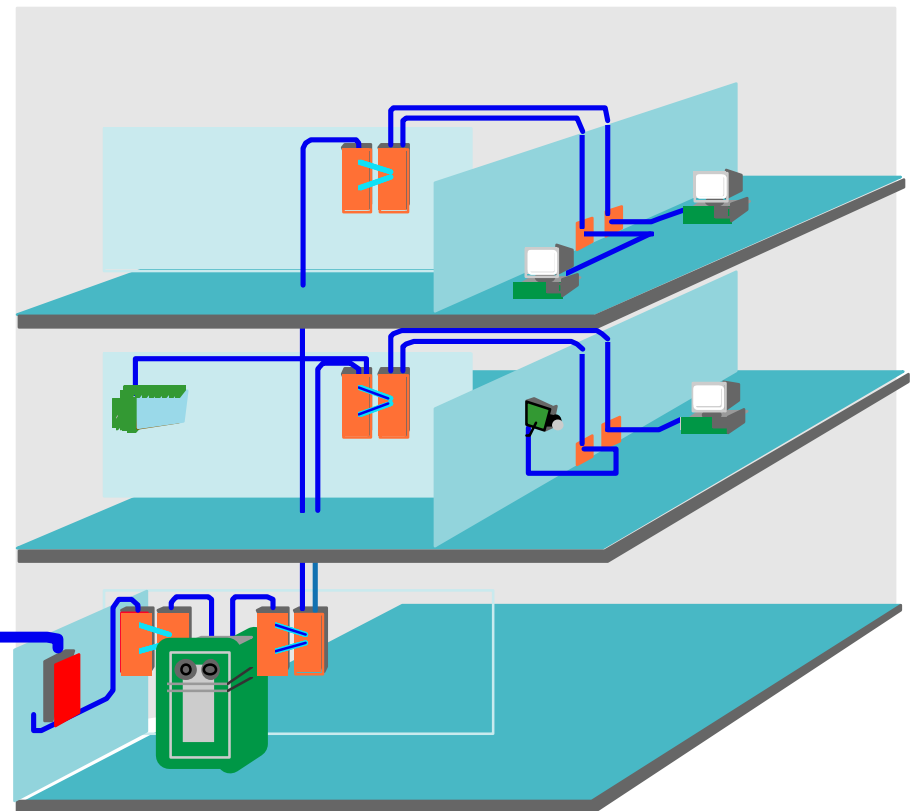
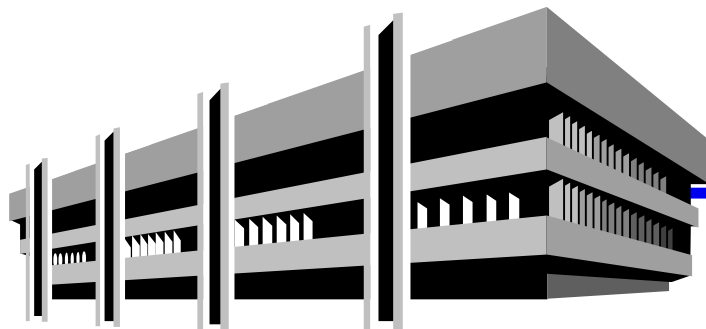
ONE connector for ALL segments:

Commercial

Residential

Public Network

Equipment Interface



LC Connector

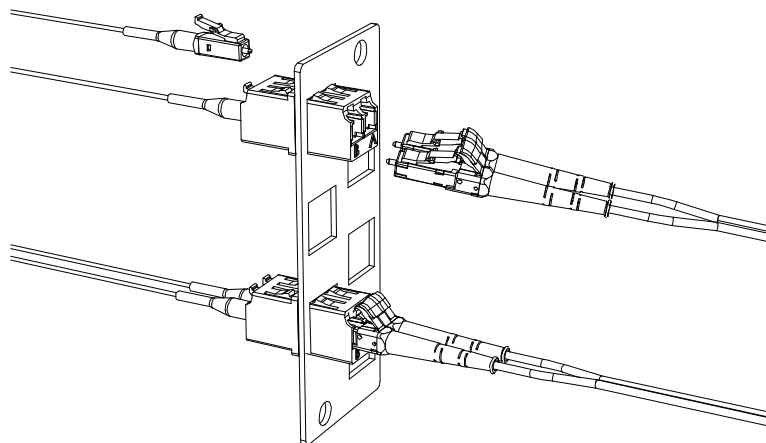
Low Complexity

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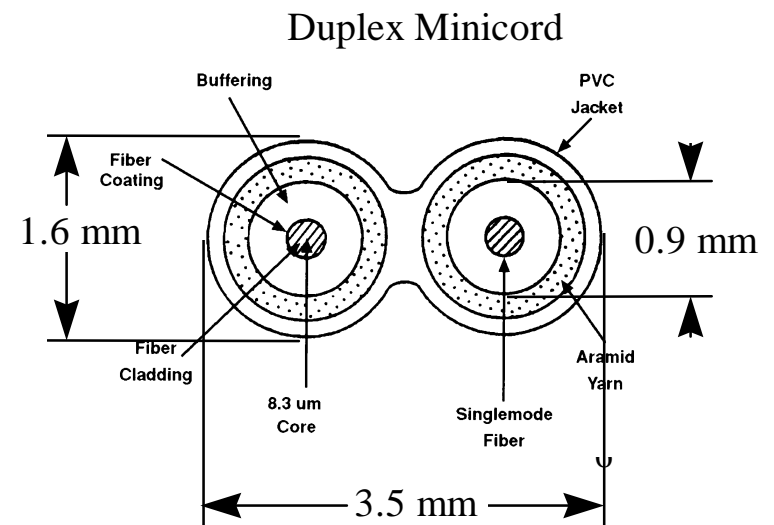


Simplified Components

- **80% less ferrule material than 2.5 mm ferrules**
- **55% less machining than 2.5 mm ferrules**
- **Alternate material ferrules under development**
- **Simple injection molded plastic housing and adapter**
- **60% less material in minicord**



LC Connector



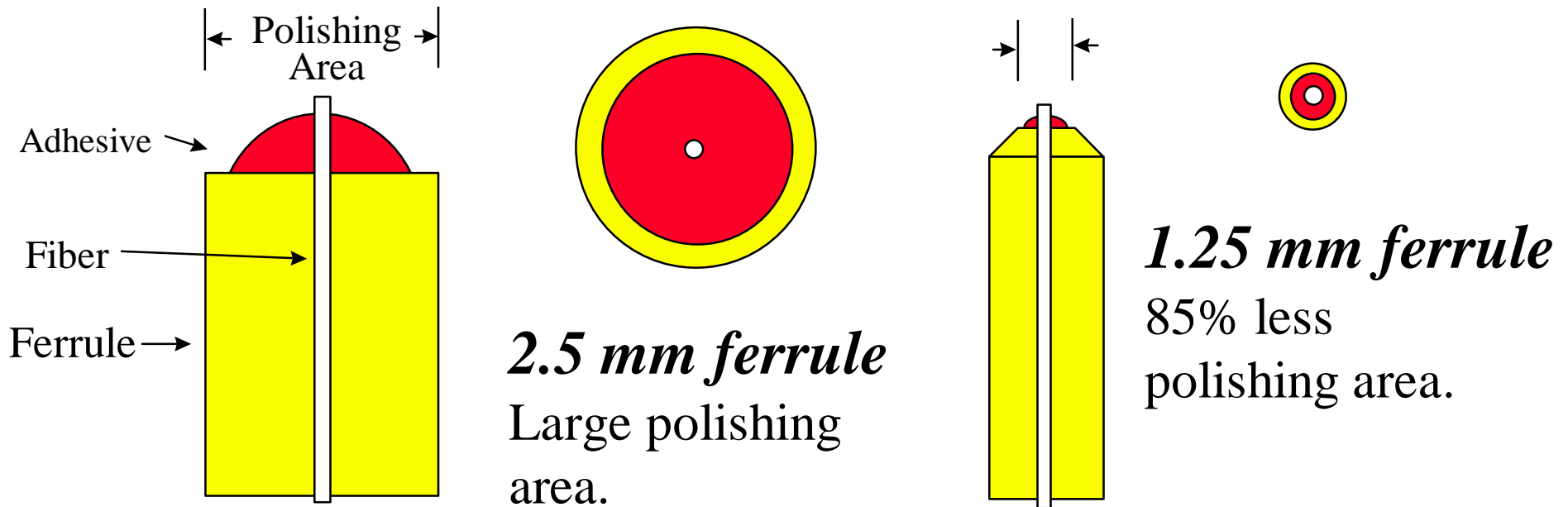
LC Connector

Low Complexity

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Simple field termination for both outlet and BTW



- **Polishing time reduced 80% due to smaller tip area**
- **Familiar process = reduced craft training, greater acceptance**
- **Less opportunity for installation failures and downtime**

LC Connector

Size

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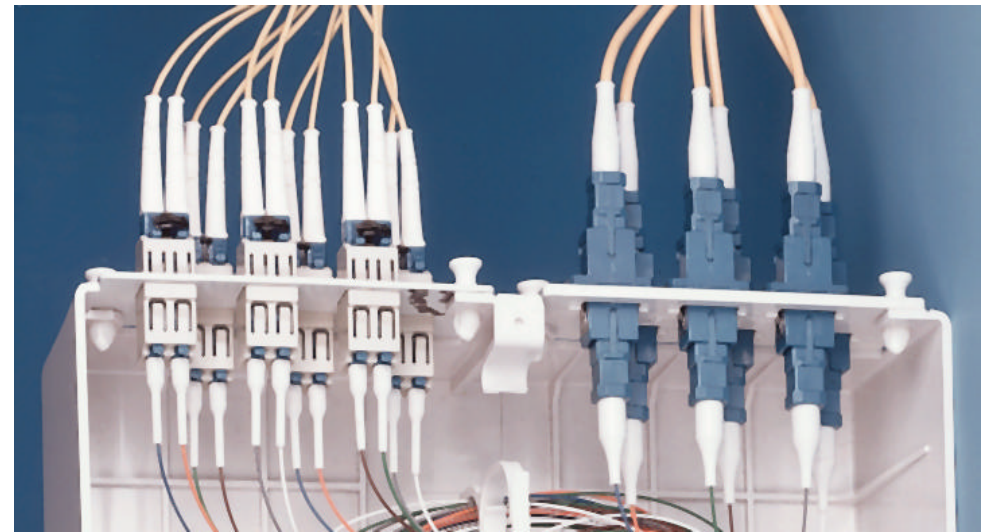
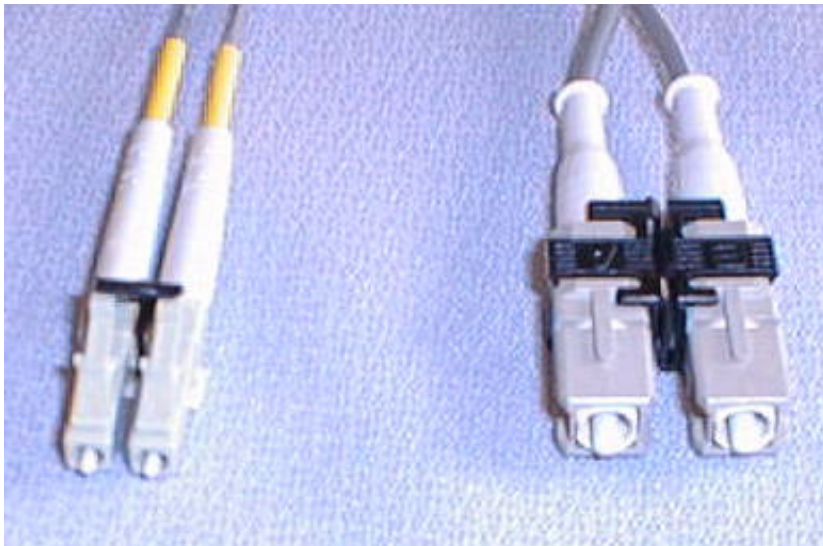


LC

SC

12 LC

6 SC

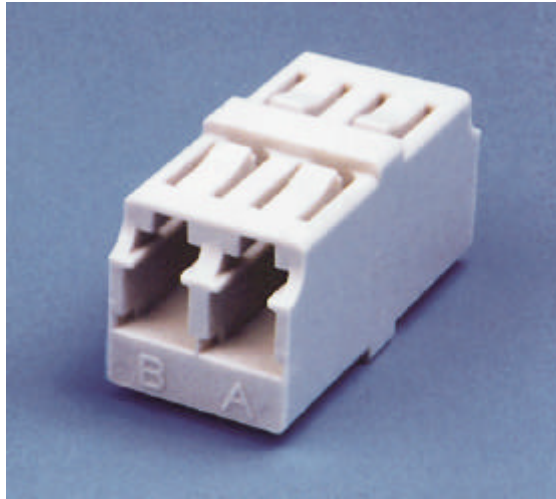


- 51% smaller than SC
- Adapts to copper modular jack openings

LC Connector

Duplex with Polarity

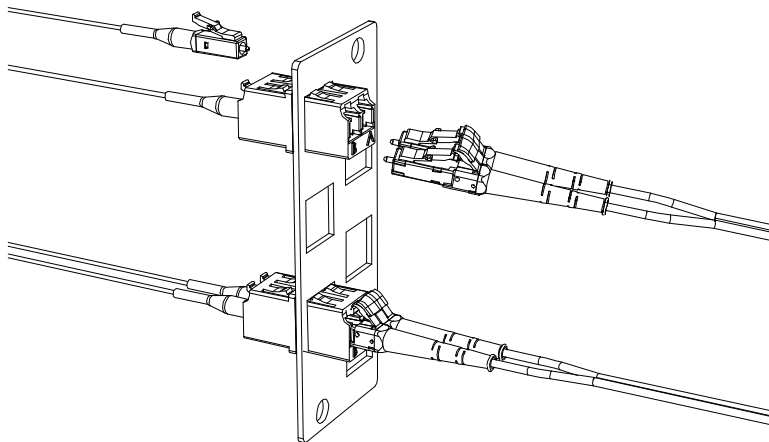
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- Duplex adapter labels meet 568 polarity labeling requirements
- Behind the wall plugs reversible to easily correct polarity problems

LC not limited to hard duplex-
supports more applications:

- Simplex needed for Video Surveillance
- Triplex required for RGB Video



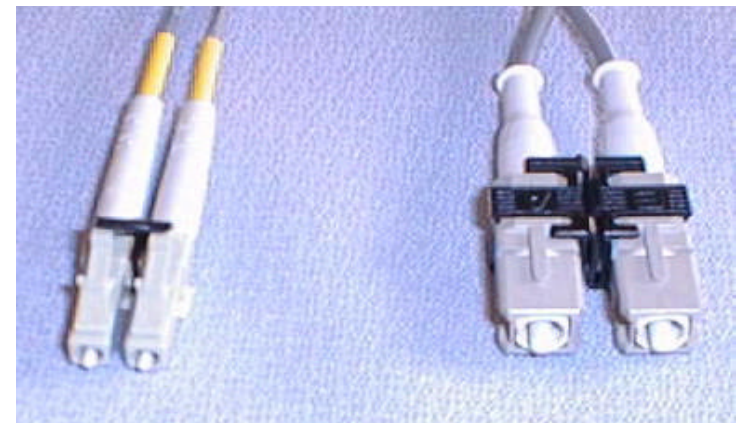
LC Connector

Improvement over SC

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	<u>SC</u>	<u>LC</u>	<u>Improvement</u>
Size - Fiber Spacing <i>(in)</i>	0.500	0.246	51%
MM Insertion Loss <i>(dB Avg)</i>	0.3	0.1	66%
MM Return Loss <i>(dB Avg)</i>	28	33	69%
SM Insertion Loss <i>(dB Avg)</i>	0.2	0.1	50%
Field Install Time <i>(min)</i>	5	3	40%



LC

SC

LC Connector

Multimode Performance

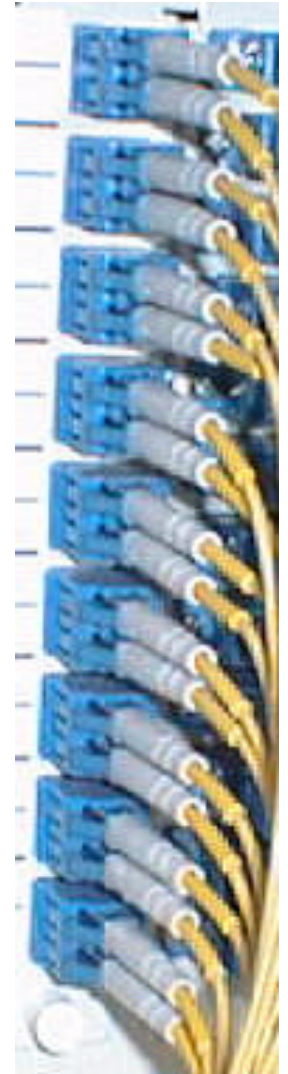
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Unmatched Performance

- 0.1 dB avg. Insertion Loss - MM and SM
 - Gigabit applications** require low loss links.
 - Loss Budgets will shrink by up to 80%
- 33 dB avg. Return Loss - MM

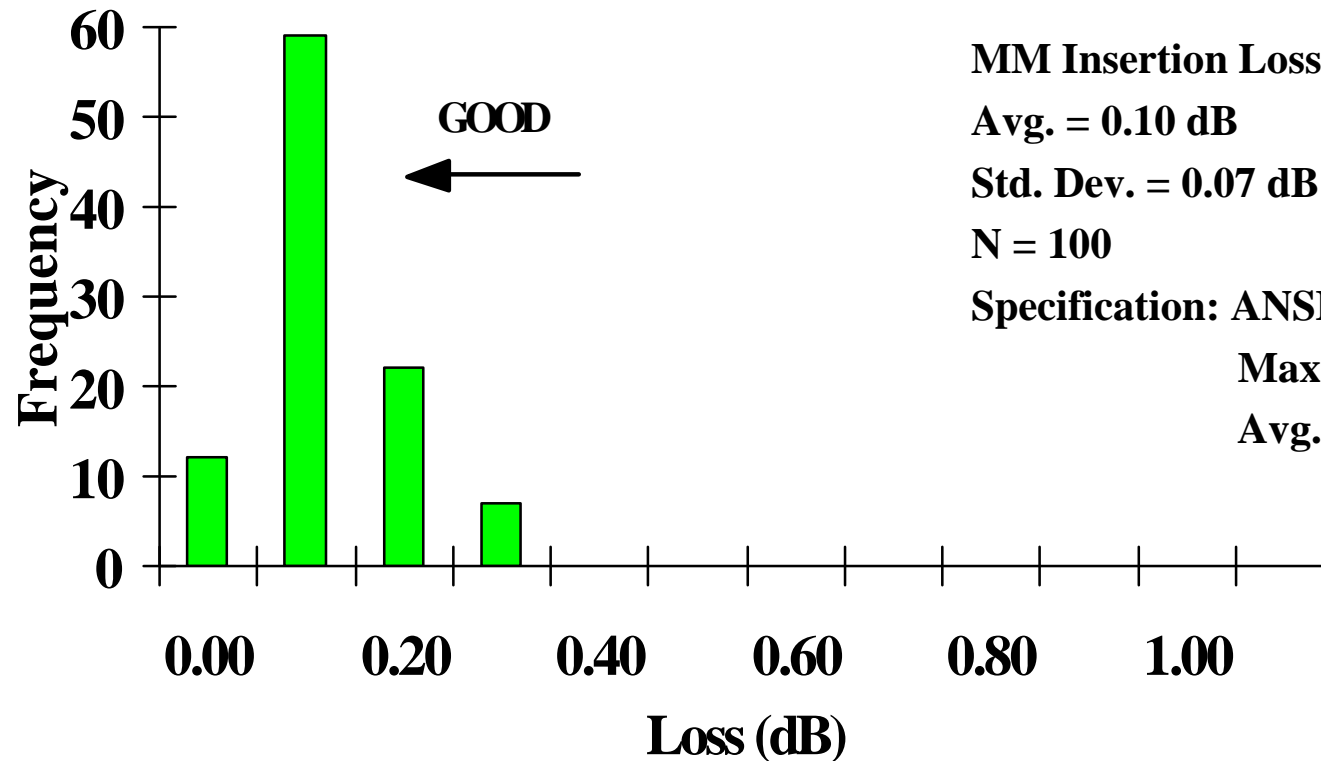
Gigabit Applications can use improved performance



LC Optical Performance

Multimode - Insertion Loss

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MM Insertion Loss

Avg. = 0.10 dB

Std. Dev. = 0.07 dB

N = 100

Specification: ANSI/TIA/EIA-568-A

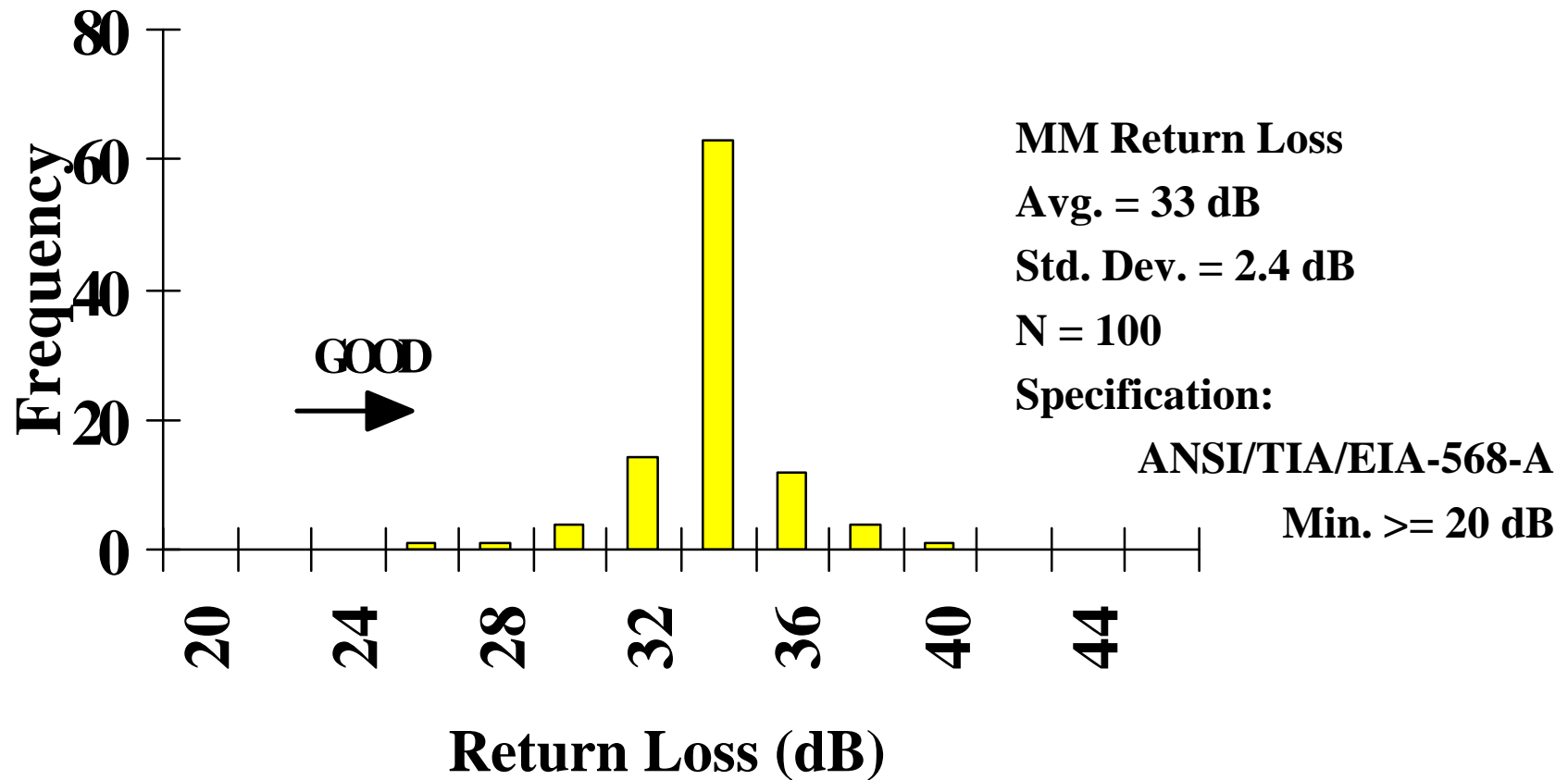
Max. \leq 0.75 dB

Avg. \leq 0.5 dB

LC Optical Performance

Multimode - Return Loss

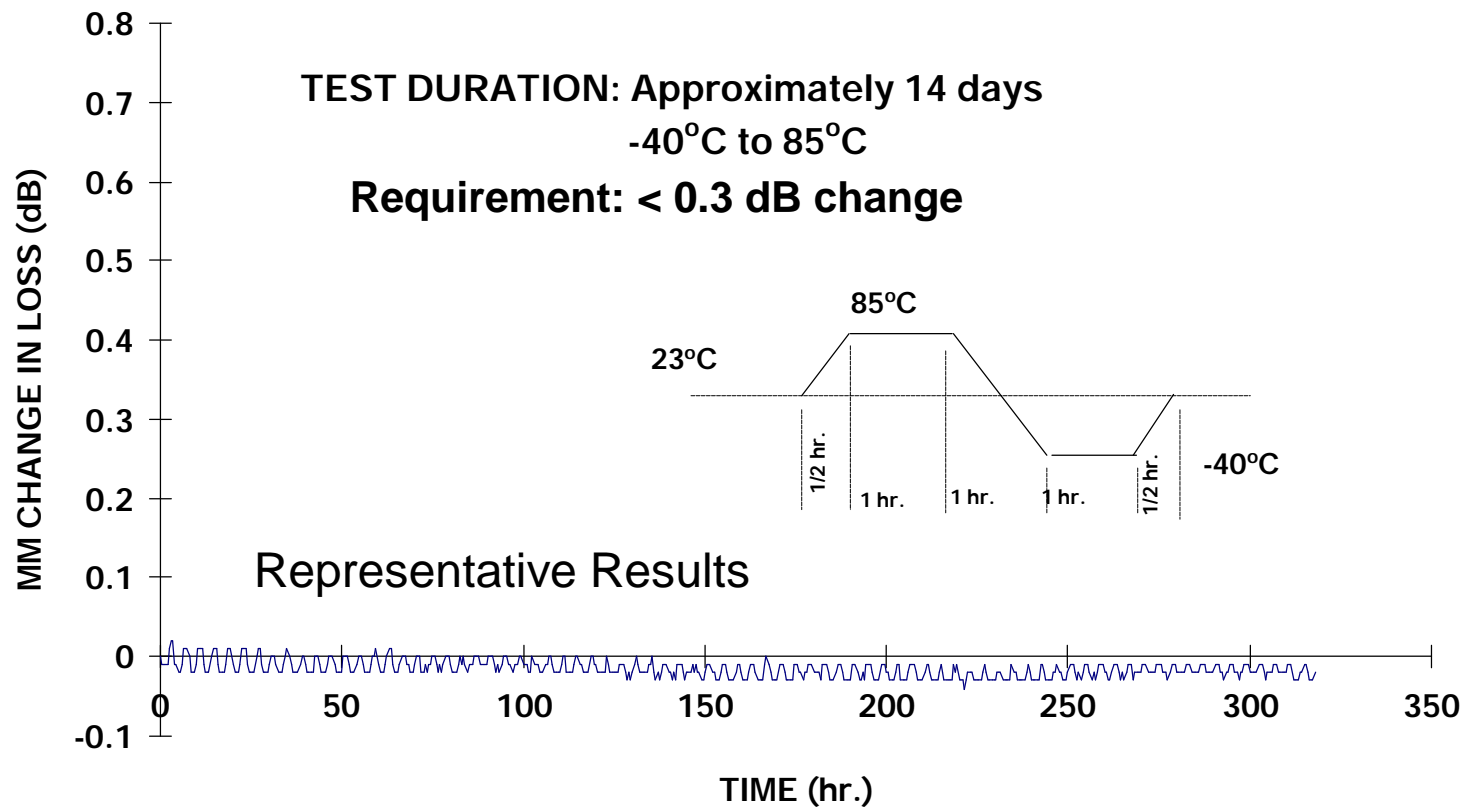
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LC Environmental Performance

Multimode

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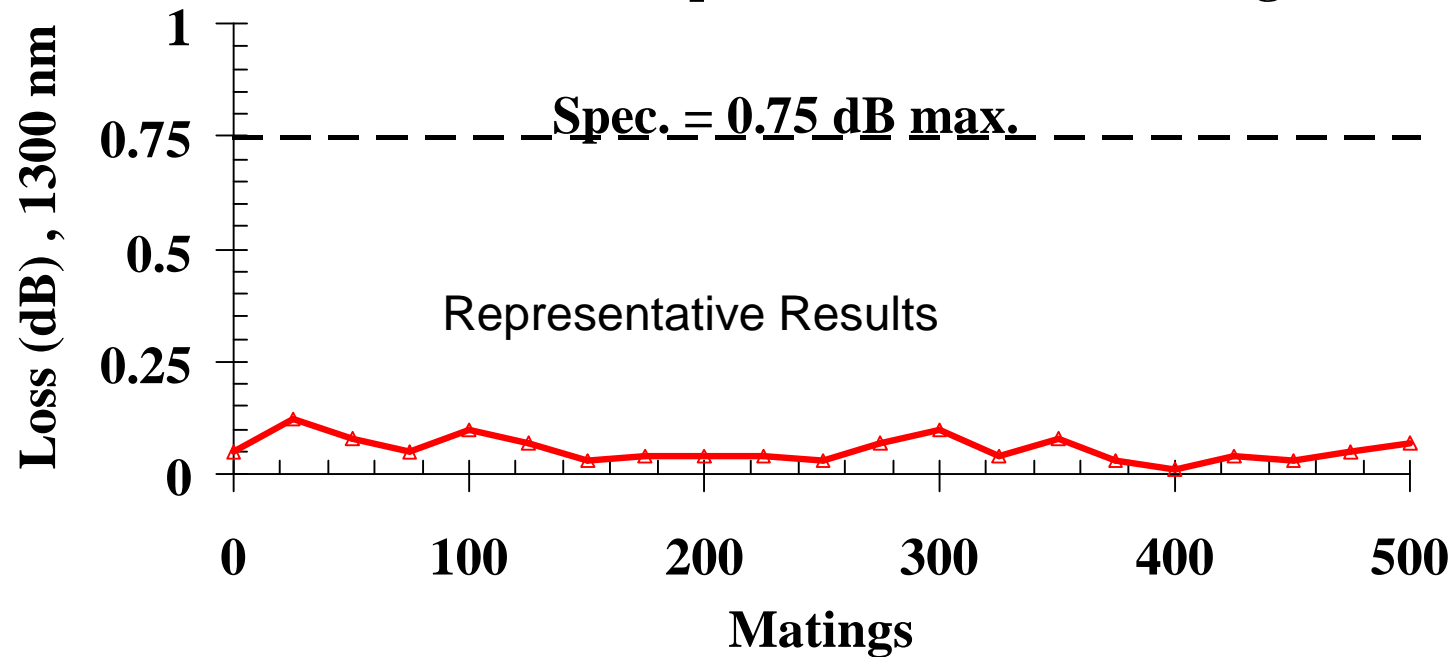
LC Mechanical Performance

Mating Durability

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Multimode 62.5 Micron Fiber
Requirement: < 0.2 dB change



LC Connector *Performance Data*



Performance Comparison

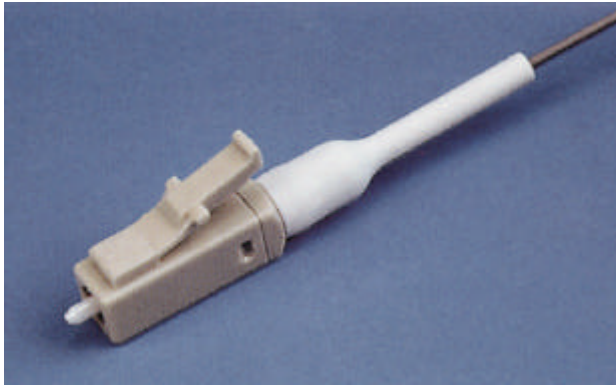
	<u>LC</u>	<u>Volition</u>	<u>Mini-MT</u>	<u>OptiJack</u>	<u>Direct</u>
Loss MM & SM (avg. dB)	0.1	?	?	?	?
Return Loss MM (avg. dB)	33	?	?	?	?

LC best meets the needs of Gigabit Applications.

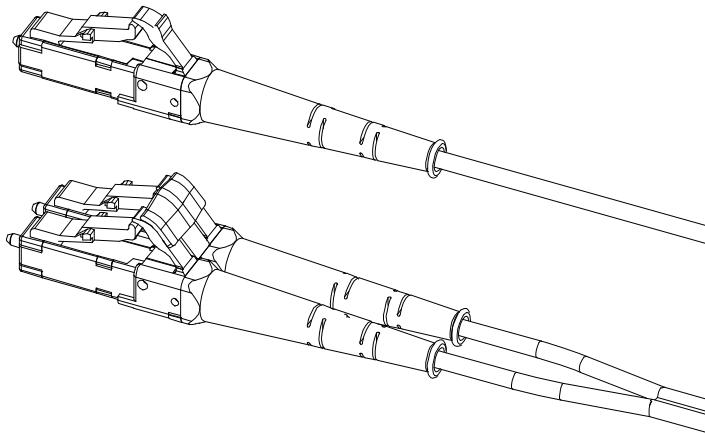
LC Connector

Ergonomics

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- True RJ-45 Style
 - User friendly
 - Familiar copper style thumb latch
 - Intuitively obvious engagement
 - Audible click assures full insertion
 - Improved anti-snag latch
 - No tools required



LC Connector Solution

Dust Protection

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Effective Cleaning crucial to performance

- Easy to wipe endface
- Easy to clean coupling adapter
- Craft familiar with cleaning process
- Dust caps for Adapters and Connectors
- No pins to collect debris
- No exposed fibers to break during cleaning

LC - Suitable as an equipment connector

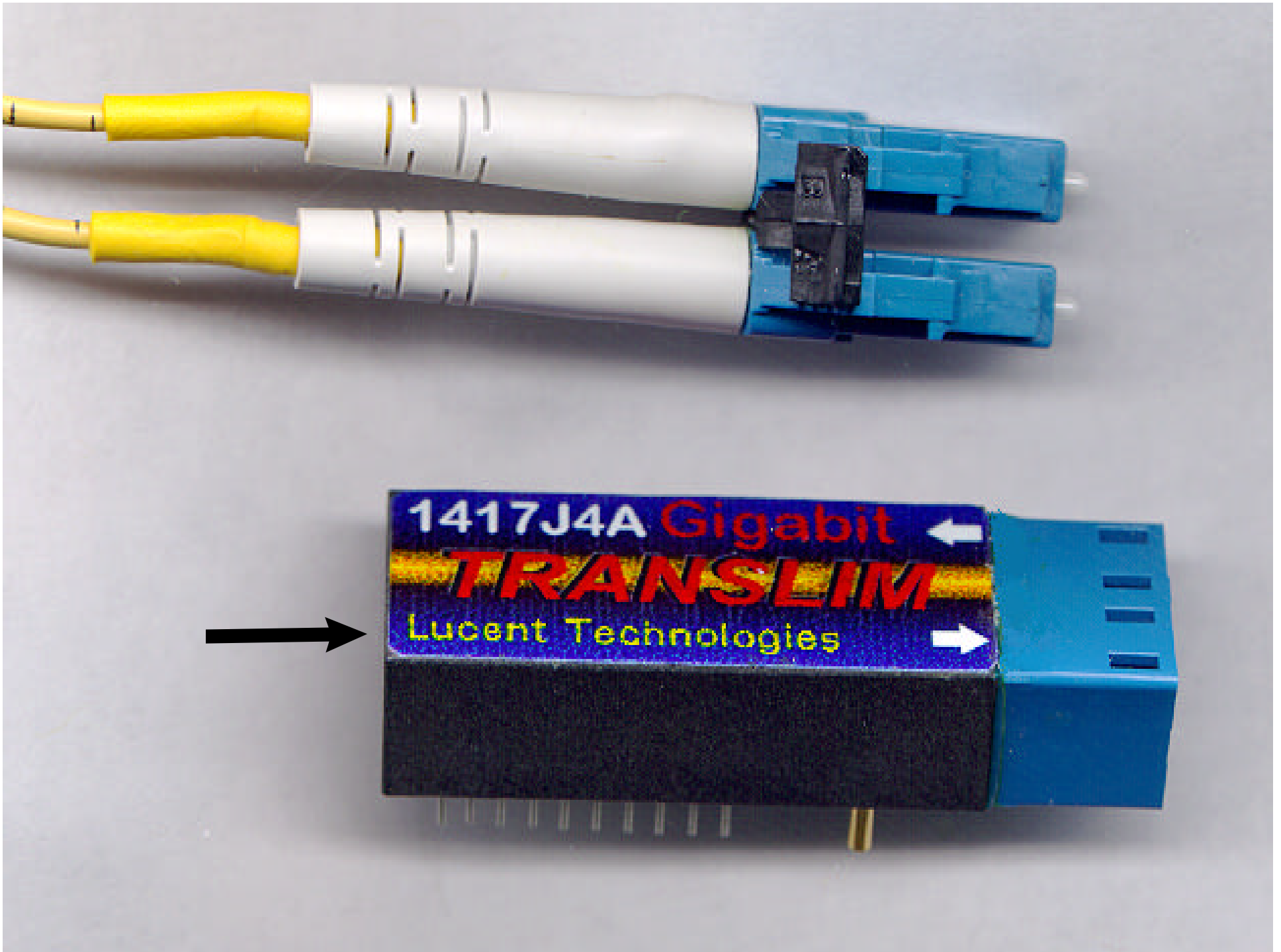


Transceivers in Development

- Lucent Microelectronics
- Working with others

LC interface superior

- Low insertion/withdrawal force
- No interfering pins
- Easy to clean
- Intuitive engagement
- Stable ferrule alignment



1417J4A Gigabit
TRANSFORMER
Lucent Technologies

LC Connector

Evolution and Development

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- **Cleave and Crimp Installation**
- **Porting of 2.5 mm installation Technologies**
- **Support POF**
- **Behind the wall springless version under development**
- **Evolve the LC to suit the needs of IEEE 1394B**

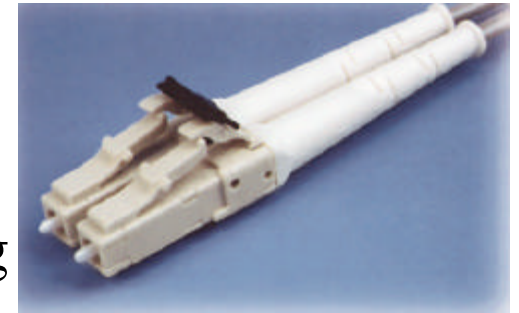
LC Connector

Summary



LC combines

- Proven technology of the ST and SC
- Miniaturized and embodied in a modular plug



Examine all facts from a total system perspective

- Suitable and reliable for all segments
- Lower overall complexity - System and Component
- Craft friendly and familiar
- Performance supports pending Gigabit Applications
- Meets or exceeds IEEE 1394b criteria

The LC is the best choice for IEEE 1394B