



Xmultiple Technology

RJ Connector Performance Testing

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RJ45 Connector Testing

During these tests the connecting hardware was mated for 250, 500 and 750 cycles using 100-meter long patch cord cables with electrical load. Testing was conducted on RJ45 Connectors used for magnetic connectors and non magnetic connectors. Testing was repeated with RJ45 connectors with 6U", 15U", 30U" and 50U" gold plating. No difference in the number of mating cycles was observed due to the amount of gold plating.



Key Observation During Testing

Does mating cycle change due to the amount of gold plating?

- Most important parameter is connector **contact durability**
- Stability over various environmental conditions:
 - Temperature
 - Humidity
 - Vibration



Background & Goal Of Testing

- Goal was **NOT:**
 - To thoroughly test all specification and electrical aspects of the RJ-45 connector.
- Goal **WAS:**
 - to determine if gold plating at 250,500 and 750 mating cycles would determine if connector maintains its integrity.
 - Characterize actual performance in a typical “real-world” situation of RJ45 connectors and the number of mating cycles at the 250, 500 and 750 level.



RJ45 Connector Specifications

Xmultiple Performance Criteria

- General criteria for all tests:
 - 40 connectors of each Xmultiple Series were tested
 - 250 mating cycles performed on each connector
 - 500 mating cycles performed on each connector
 - 750 mating cycles performed on each connector
 - 10 connectors had 6U" gold plating
 - 10 connectors had 15U" gold plating
 - 10 connectors had 30U" gold plating
 - 10 connectors had 50U" gold plating



RJ45 Connector Specifications

Xmultiple Performance Criteria

- Durability
 - 250 cycles, mating and un-mating
 - 500 cycles, mating and un-mating
 - 750 cycles, mating and un-mating
- Tester Machine Used:
 - Internally design mating cycle machine capable of 500 cycles/hour



RJ45 Connector Specifications

Xmultiple Performance Criteria

- Pull
 - Cables, w/ plugs attached, loaded with 17 lbf, mated to jacks
 - Jacks rotated 45 deg in each direction.



Xmultiple 250 Mating Cycle Results:

No visible damage to any connectors after testing at 250 cycles was observed.

At 250 mating cycles with 6U' gold plating .07% of the gold plating was worn

250 mating cycles with 15U' gold plating .05% of the gold plating was worn

250 mating cycles with 30U' gold plating .0% of the gold plating was worn

250 mating cycles with 50U' gold plating .0% of the gold plating was worn



Xmultiple 500 Mating Cycle Results:

No visible damage to any connectors after testing at 500 cycles was observed.

At 500 mating cycles with 6U' gold plating .08% of the gold plating was worn

500 mating cycles with 15U' gold plating .06% of the gold plating was worn

500 mating cycles with 30U' gold plating 0% of the gold plating was worn

500 mating cycles with 50U' gold plating 0% of the gold plating was worn



Xmultiple 750 Mating Cycle Results:

No visible damage to any connectors after testing at 750 cycles was observed.

At 750 mating cycles with 6U' gold plating .09% of the gold plating was worn

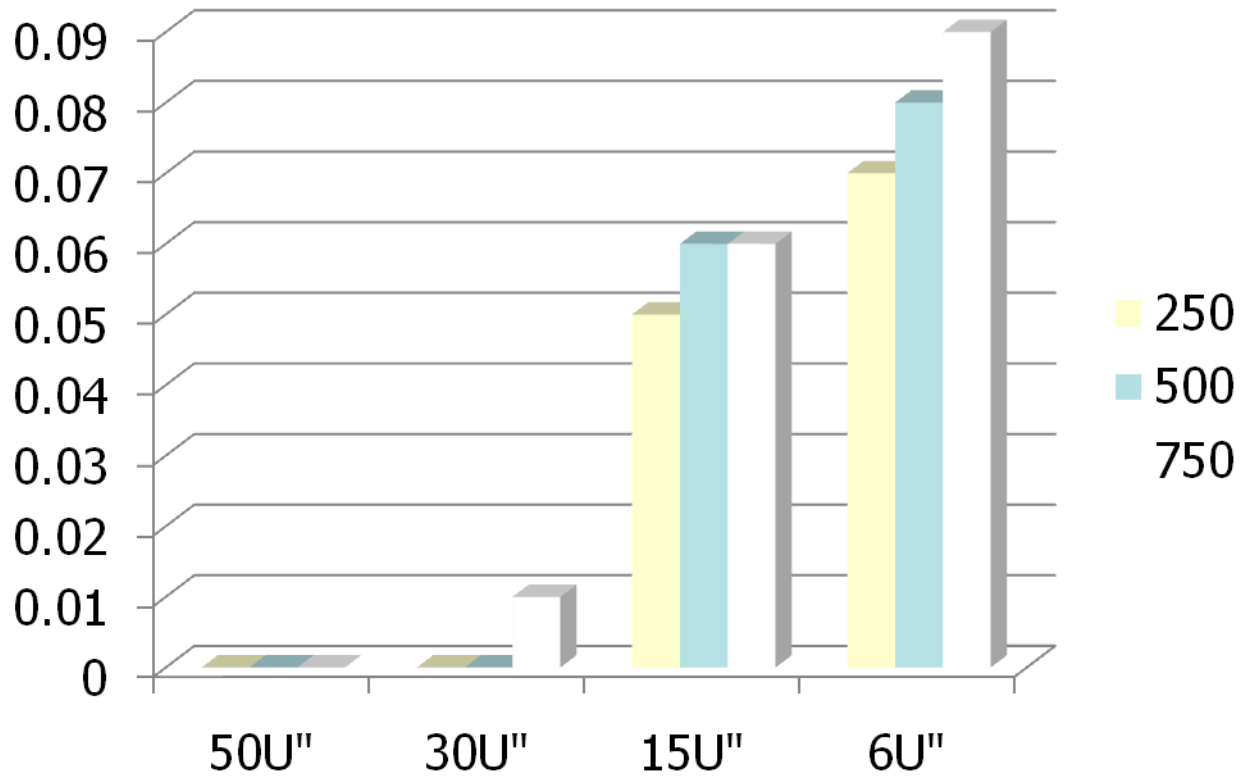
750 mating cycles with 15U' gold plating .06% of the gold plating was worn

750 mating cycles with 30U' gold plating .01% of the gold plating was worn

750 mating cycles with 50U' gold plating 0% of the gold plating was worn



Mating Cycle Chart





Xmultiple Qualification Results:

- Test Results - the “Wiggle Factor”

RJ-45 connectors allow some motion between the mating parts, even when fully seated and locked.

– Tested magnetic and non-magnetic connectors– Typical strain reading changed 2-3 ue as connector is moved; maximum was 5 ue, returned to original value after 1 second.



Conclusions:

Based on our tests, the RJ-45 demonstrates:

- Minimal amounts of gold plating wear at 30U" and 50U" gold plating
- Small amounts of gold plating do wear at 6U" and 15U" at 500 and 750 mating cycles.



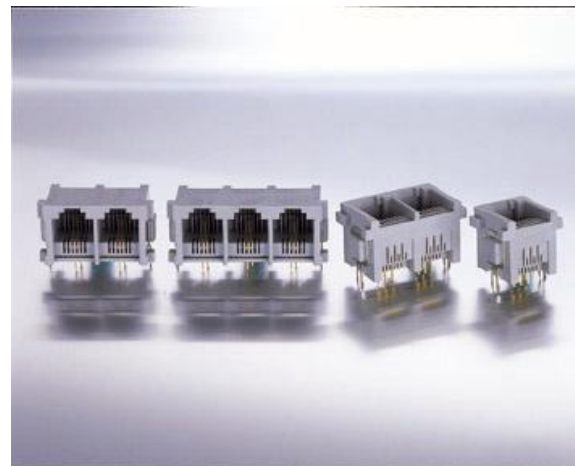
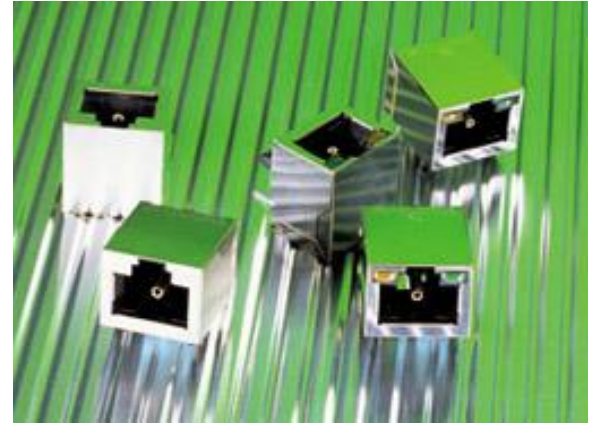
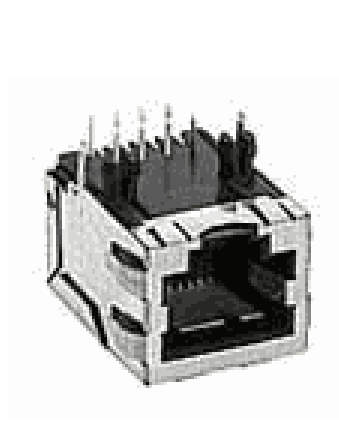
Recommendations for use:

Xmultiple recommends customers purchase good quality connectors; gold-plated. They're not expensive, and therefore you should buy the 30U" and 50U" if your product is used with a high number of mating cycles..

- Minimize strain and vibration of the connector by properly securing the cables. Cable management hardware is available from the telecom industry; see your local IT telecom closet.
- Use the long strain-relief boots with the latch protector.



Xmultiple Products





Xmultiple Products Are Environmentally Friendly

- ❖ International trend to use Non-toxic connectors in future, toxic elements include Cadmium & Lead
- ❖ Seek for qualified suppliers
- ❖ Clear/ Green Identification Mark to Distinguish Non-toxic components & packaging
- ❖ Future – Improve Our Production Processes To Improve Environmental Concerns
- ❖ RoHS



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