

Fermilab CD/DCI Tech Note

Cable, STP-TN-001.3

The following are construction requirements for Fermilab Computing Division Data Communication **shielded** Category 5 (and/or higher) patch/drop cords. Users should always purchase cords from recommended vendors only, to ensure compliance with tech notes. Call Fermi CD/Data Comm. for a list of qualified vendors or visit our web page at <http://computing.fnal.gov/dci/Document-pdf-Files/Cable-Assy-Houses.pdf>. Use the Fermi part number(s) on Purchase Requests when ordering cables, unless directed otherwise. Red sidebar indicates most recent change to this Tech Note. Orange sidebar indicates previous change.

1. CABLE

=====

a.) Stranded Wire

- 1.) Standard shielded stranded riser Category 5 cords must be made from blue Belden ?????? cable.
- 2.) Standard shielded shielded plenum Category 5 cords must be made from blue Belden ?????? cable.
- 3.) When requested, shielded stranded riser Category 5e cords can be made from blue Quabbin 2906 cable.

b.) Solid Wire

- 1.) Standard shielded solid riser Category 5 cords must be made from blue Belden 1624R cable
- 2.) Standard shielded solid plenum Category 5 cords must be made from blue Belden 1624P cable.
- 3.) Standard shielded solid riser Category 5e cords must be made from blue Belden 1533R cable
- 4.) Standard shielded solid plenum Category 5e cords must be made from blue Belden 1533P cable.

2. CONNECTORS

=====

a.) Stranded Wire Plugs

- 1.) Standard RJ45 plugs for stranded wire must be AMP 5-569552-2 High Performance.

Fermilab CD/DCI Tech Note

Cable, STP-TN-001.3

b.) Solid Wire Plugs

- 1.) Standard RJ45 plugs for solid wire must be AMP 5-569550-3.

3. DESIGN

=====

a.) Straight-Through (Strait-Thru)

- 1.) In a straight-through patch cord, both ends must be wired EIA568A. (i.e. RJ45 pins 1, 2, 3, 4, 5, 6, 7, & 8 on one end must connect to pins 1, 2, 3, 4, 5, 6, 7, & 8 on the other end respectively. Pins 1 & 2, 3 & 6, 4 & 5 and 7 & 8 must be twisted pairs end-to-end with white-blue on pin 5, blue-white on pin 4, white-orange on pin 3, orange-white on pin 6, white-green on pin 1, green-white on pin 2, white-brown on pin 7 and brown-white on pin 8. A standard straight-through cord must have **white** snagless boots.

b.) Cross-Over

- 1.) A "cross over" (null) patch cord must be wired per [TIA/EIA-854](#) "PHY/MDI Pin Out w/crossover" where RJ45 pins 1, 2, 3, 4, 5, 6, 7, & 8 on one end connect to pins 3, 6, 1, 7, 8, 2, 4, & 5 on the other end respectively. Pins 1 & 2, 3 & 6, 4 & 5 and 7 & 8 must be twisted pairs end-to-end. All "cross over" cords must have **white with-red-band** snagless boots.

4. PERFORANCE

=====

- a.) All Cat5e cords must meet **ANSI/TIA/EIA-568-B.2** performance specifications.
- b.) **All Cat6 cords must meet ANSI/TIA/EIA-568-B.2-1 performance specifications.**



5. MECHANICAL

=====

- a.) Cords must have proper strain relief such that tugging forces are not exerted directly on the individual conductors. See [AMP Application Specification 114-6016](#).

Fermilab CD/DCI Tech Note

Cable, STP-TN-001.3

6. LABELING

=====

- a.) Cables must be labeled flag-style, three inches from the RJ45 connector, on both ends.
- b.) All cable labels must contain the following information: the vendor name, the vendor part number and a unique serial number. Serial numbers must be in one of the following formats:

1.) Purchase Orders

The serial number shall be derived from the Purchase Order number and be in the following format: XXX-YYYYYY, where XXX is a number that begins from 001 and increments by 1 up to the total number of cables being made by that vendor for that Purchase Order (regardless of whether the Purchase Order includes other assembled cables which are not Cat5 cords) and YYYYYY is the Purchase Order number.

2.) Computing Division ProCard Orders

The serial number shall be derived from the ProCard number and be in the following format: SN: XXX-PRNZZZZZ, where XXX is a number that begins from 001 and increments by 1 up to the total number of cables being made by that vendor for that ProCard Order (regardless of whether the ProCard Order includes other assembled cables which are not Cat5 cords); ZZZZZ is the PRN number of the ProCard order.

3.) Non-Computing Division ProCard Orders

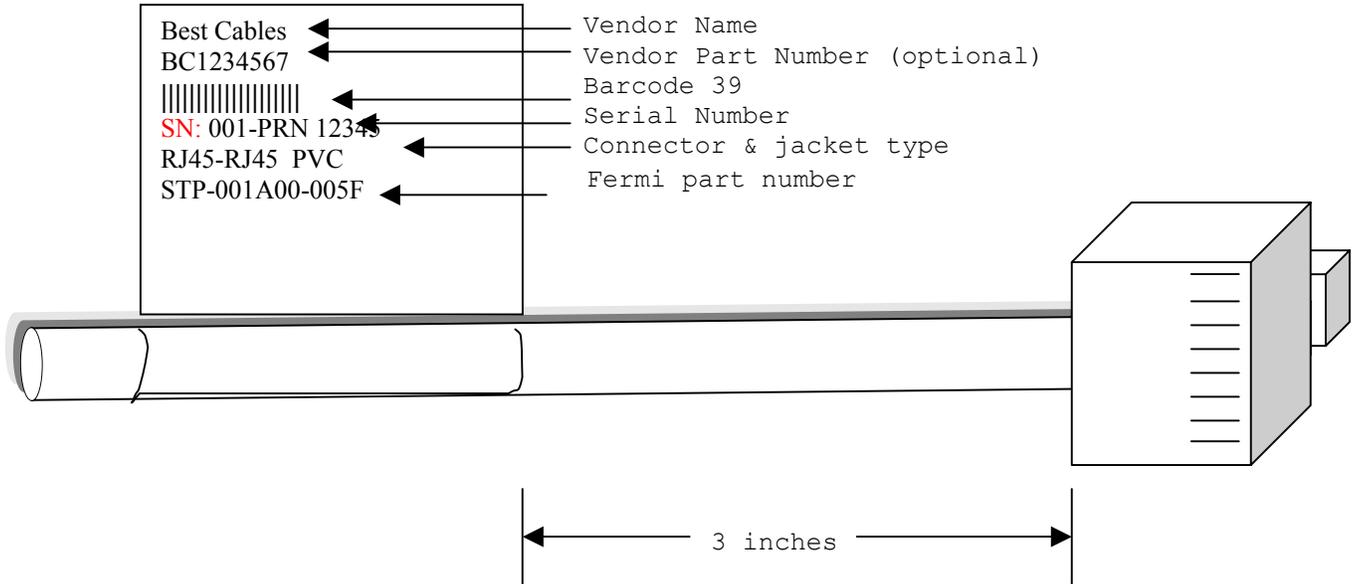
The serial number shall be derived from the ProCard number and be in the following format: XXX-ZZZZ-MMDDYY, where XXX is a number that begins from 001 and increments by 1 up to the total number of cables being made by that vendor for that ProCard Order (regardless of whether the ProCard Order includes other assembled cables which are not Cat5); ZZZZ are the last four digits of the ProCard number and MMDDYY is the month, day and year of the ProCard order.

- c.) Vendors shall keep track of order numbers so that they do not get reused in future serial numbers, thereby preventing any two cables from having the same serial number.
- d.) The label shall also include the cable's wiring and category, i.e. "Strait-Thru Cat5" (or "Null Cat5") and the appropriate part number (Fermi number) dash length of the cable in feet (F) or meters (M).

Fermilab CD/DCI Tech Note

Cable, STP-TN-001.3

The following is an example of the label:



- e.) The labels must be Kroy 2556701, Panduit LS5-10 or equivalent.
- f.) The labels must be laminated such that the information on the labels does not smear, fade or become unreadable under normal handling and installation conditions.
- g.) The font size **must** be 8-point or greater. Tiny, blotchy, smeared or otherwise unreadable characters will not be accepted.

7. FERMI PART NUMBERS

Fermilab#	Description
STP-001A00	Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Stran,Cat5e,PVC (Cable: 1.a.x. Connectors: 2.a.1. Design: 3.a.1)
STP-001A01	Cable,STP,RJ45(EIA568A)-RJ45 TIA/EIA-854 Null,Stran,Cat5e,PVC (Cable: 1.a.x. Connectors: 2.a.1. Design: 3.b.1)
STP-001A02	Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Solid,Cat5,PVC (Cable: 1.b.1. Connectors: 2.a.1. Design: 3.a.1)
STP-001A03	Cable,STP,RJ45(EIA568A)-RJ45 TIA/EIA-854 Null,Solid,Cat5,PVC (Cable: 1.b.1. Connectors: 2.a.1. Design: 3.b.1)



Fermilab CD/DCI Tech Note

Cable, STP-TN-001.3

- STP-001A04 Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Solid,Cat5,PLN
(Cable: 1.b.2. Connectors: 2.a.1. Design: 3.a.1)
- STP-001A05 Cable,STP,RJ45(EIA568A)-RJ45 TIA/EIA-854 Null,Solid,Cat5,PLN
(Cable: 1.b.2. Connectors: 2.a.1. Design: 3.b.1)
- STP-001A06 Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Solid,Cat5e,PVC
(Cable: 1.b.3. Connectors: 2.a.1. Design: 3.a.1)
- STP-001A07 Cable,STP,RJ45-RJ45,EIA568A, TIA/EIA-854 Null,Solid,Cat5e,PVC
(Cable: 1.b.3. Connectors: 2.a.1. Design: 3.b.1)
- STP-001A08 Cable,STP,RJ45(EIA568A)-RJ45 TIA/EIA-854 Null,Stran,Cat5,PVC
(Cable: 1.a.3. Connectors: 2.a.1. Design: 3.b.1)
- STP-001A09 Cable,STP,RJ45(EIA568A)-RJ45 TIA/EIA-854 Null,Stran,Cat5,PLN
(Cable: 1.a.x. Connectors: 2.a.1. Design: 3.b.1)
- STP-001A10 Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Stran,Cat5,PVC
(Cable: 1.a.3. Connectors: 2.a.1. Design: 3.a.1)
- STP-001A11 Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Stran,Cat5,PLN
(Cable: 1.a.x. Connectors: 2.a.1. Design: 3.a.1)
- STP-001A12 Cable,STP,RJ45-RJ45,EIA568A,Stait-Thru,Solid,Cat5e,PLN
(Cable: 1.b.4. Connectors: 2.a.1. Design: 3.a.1)
- STP-001A13 Cable,STP,RJ45-RJ45,EIA568A, TIA/EIA-854 Null,Solid,Cat5e,PLN
(Cable: 1.b.4. Connectors: 2.a.1. Design: 3.b.1)

