

Demystifying LanPro Cat3, and Phone plugs.

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This application note sheds some light on the sometimes misapplied voice-data-video plugs commonly called the RJ-11, their usage as Cat3 compliant and the RJ-45 used in telephone applications.

Cat3 is speed limited to 16Mbps data rates when carrying data. Phone and audio connections use this range too.

Cat5e and above will go up to ten Gbps speed, so they will be easily down compatible with Cat3 applications.

Telephone applications use 4P and 6P plugs in most of the applications. Only when there is a need to connect 4 phone line pairs to a phone apparatus, the 8P plug and jack named RJ45 is used.

We have divided this application note based on the number of positions of these plugs namely 4P, 6P and 8P.

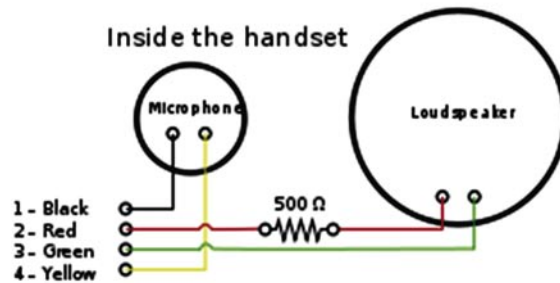
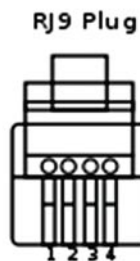
• **4P**

The 4P4C Plug is normally used for connecting the telephone handset to the telephone apparatus and is called a Telephone Handset Plug or RJ9 4P4C plug.



RJ09(4P4C)
LP-RJ094P4C-TL-US

It is popularly called as the RJ9 plug, but in reality, there is no RJ registration number for it because it was not intended to connect directly to the POTS (Plain Old Telephone System) telephone line. It is used to connect the earphone and the microphone to the telephone apparatus.



A variation of this connector, the RJ9 4P2C, uses the two central contacts of the four available positions. It can be used in other applications, not necessarily for telephone lines, that require only one pair of wires to be connected.



RJ09(4P2C)
LP-RJ094P2C-TL-US

• 6P

The six positions 6P plug was developed mostly for telephone line applications and has been traditionally and erroneously called RJ11 in its several variations.

The 6P2C is the real RJ11, the one that uses the two center pins only in a single POTS pair (Tip and Ring), entering the telephone apparatus. The RJ11 can be used in Cat3 applications also as it complies the TIA/EIA 568-B standard.



RJ11(6P2C)
LP-RJ116P2C-CT-US

The 6P4C or RJ-14, the most used telephone application of the 6P, is used to connect the POTS phone line directly to the telephone apparatus in which 4 of the 6 positions are utilized.

It can be used to bring up to 2 phone lines from the POTS to the telephone device, but is commonly used in replacement of the RJ11 by using the two center pins only, and leaving the two outer ones unused.

The RJ14 can also be used in Cat3 applications too.



RJ14(6P4C)
LP-RJ146P4C-CT-US



RJ25(6P6C)
LP-RJ256P6C-TL-US

The last variation of this 6P connector is the 6P6C, or RJ25 in which the 6 pins are used. In telephone applications it enables the use of up to 3 phone lines entering the POTS telephone apparatus.

This 6P6C cannot be used for Cat3 applications, mostly because the TIA/EIA 568-B standard is not compatible with it, hence it hasn't been included as usable in Cat3. The 6P6C plug can be used instead of the 6P4C and 6P2C. Hence, it covers all applications.

- **8P**

The Cat3 RJ45 is a 8P8C plug which uses the 8 positions available. Its Jack accepts the 6 position telephone/ Cat3 plugs too but only the RJ11 and RJ14 are compatible with the TIA/EIA-568-B scheme.

The Cat5e, Cat6 are down compatible with Cat3 RJ45 and accept the telephone and Cat3 plugs, except the RJ09 plug, which requires an RJ09 jack because it doesn't fit well in the larger one.



RJ45(8P8C) Cat5e
LP-RJ458P8C-CE-US



RJ45(8P8C) Cat6
LP-RJ458P8C-C6-US