Is Your Interface a DTE or a DCE?

One of the stickiest areas of confusion in data-com is over the terms "transmit" and "receive" as they pertain to DTE (data terminal equipment) and DCE (data communication equipment). In synchronous communication, this confusion is particularly acute, because more signals are involved. So why is it that you sometimes send data on TD, and other times you send data on RD? Is this just a cruel form of mental torture? Not really. The secret lies in adopting the proper perspective. In data-com, the proper perspective is always from the point of view of the DTE. When you sit at a PC, terminal or workstation (DTE) and transmit data to somewhere far away, you naturally do so on the TD (transmit data) line. When your modem or CSU/DSU (DCE) receives this incoming data, it receives the data on the TD line as well. Why? Because the only perspective that counts in data-com is the perspective of the DTE. It does not matter that the DCE thinks it is receiving data; the line is still called "TD". Conversely, when the modem or CSU/DSU receives data from the outside world and sends it to the DTE, it sends it on the RD line. Why? Because from the perspective of the DTE, the data is being received! So when wondering, "Is this line TD or RD? Is it TC or RC?" Ask yourself, "What would the DTE say?"

The T1 fiber unit has DTE wired interface which is made to hook up to a DCE. When the T1 fiber converter/extender extends a T1 line from a Teleco demark/connection the Teleco connector is wired as DCE. This makes the Teleco to T1 fiber unit a straight through cable. Now the equipment at the far end of the fiber run that is connected to the T1 one fiber t1 extender may be Router or other DTE type device which will make for a problem unless a cross over cable is used– normally you would connect a DTE to DCE with a straight through cable but it you have to interface a DTE to a DTE wired interface the cable will have to be a cross over cable.

T1 RJ-45 Pin Assignment – straight through cable
the teleco end will be called a RJ-48 (which is a 8 pin RJ connector)

pin 1—Rring	pin 1--RRing
Pin 2—Rtip	Pin 2--RTip
pin 4—Tring	pin 4--TRing
pin 5--TTip	pin 5—Ttip

T1 RJ-45 Pin Assignment – cross over cable
the teleco end will be called a RJ-48 (which is a 8 pin RJ connector)

pin 1—Rring	pin 4—Tring
Pin 2—Rtip	pin 5-- TTip
pin 4—Tring	pin 1—Rring
pin 5-- TTip	Pin 2—Rtip

Please review http://www.arcelect.com/RJ48C_and_RJ48S_8_position_jack_.htm

     please review next pages for more info

RJ48C, RJ48S, RJ48X - T1 Jacks - Cable

RJ48C and RJ48S RJ48X 8 position jack pin out for T1 cable termination and local area data channels/subrate t1 digital services

Pin outs for T1 Cable and cross over cable
T1 Cable can be a RJ48 or a simple RJ 8 pin
depending on the correct wiring

RJ48C

UNIVERSAL SERVICE ORDER CODE (USOC): RJ48C

Mechanical Arrangement: Miniature 8-position jack. Typical Usage: 1.544 Mbps digital services.
Electical Network Connection: T&R, T1 R1, conductors 7 and 8 provide cable shield integrity.
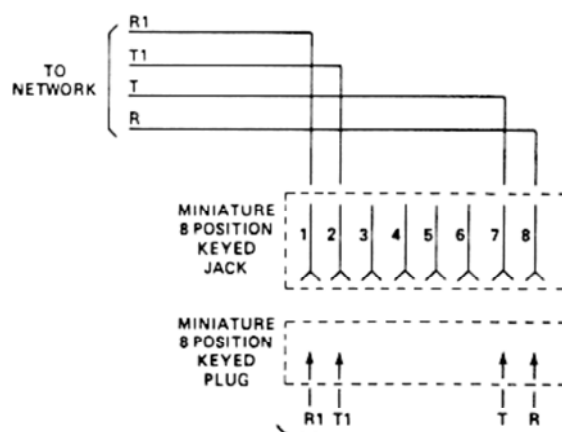Conductors 3 and 6 are reserved for future use.
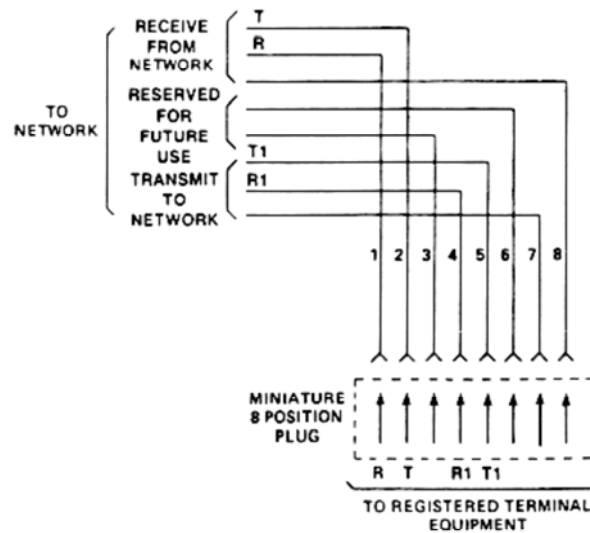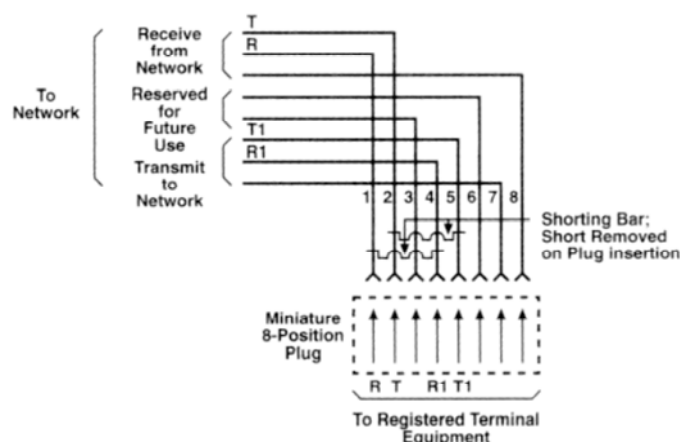

RJ48S
DDS Telco on RJ45

UNIVERSAL SERVICE ORDER CODE (USOC): RJ48S

Mechanical Arrangement: Miniature 8-position keyed jack.
Typical Usage: Local area data channels/subrate digital services.
Electrical Network Connection: One or two line T&R or T&R, T1.

RJ48X

Understanding USOC and what those RJ codes really mean. The Universal Service Ordering Code (USOC) system was developed by the Bell System and introduced by AT&TO in the 1970s to connect customer premises equipment to the public network. These codes, adopted in part by the FCC, Part 68, Subpart F, Section 68.502, are a series of Registered Jack (RJ) wiring configurations for telephone jacks that remain in use today.

Registered Jack numbers end with a letter indicating the wiring or mounting method being used.

"C"—Identifies a surface or flushmounted jack.

"W"—Identifies a wallmounted jack.

If you (the telephone subscriber) want to have a standard jack other than the RJ-11W or RJ-11C installed, you should specify the appropriate USOC when requesting the installation.

"S"—Identifies a single-line jack.

"M"—Identifies a multiple-line jack.

"X"—Identifies a complex multiline or series-type jack.
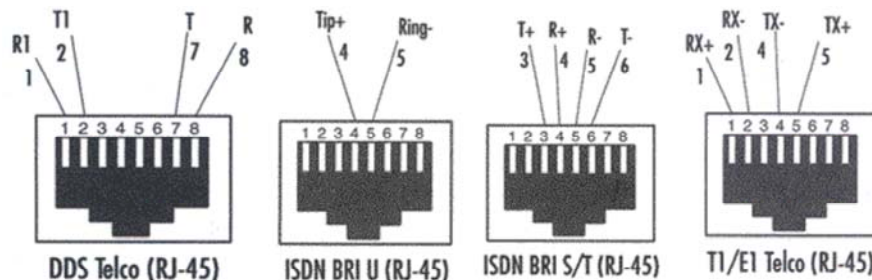
You'll also often see these terms associated with USOC:

"T/R"—Denotes connections to the tip and ring wires of a telephone communications line, trunk, channel, or facility.

"A/A1"—Signifies connections to the hold functions of key telephone systems. The "A" lead corresponding to a particular telephone line is shorted to the "A1" lead when that line is off-hook in order for that line's "hold" functions to operate correctly.
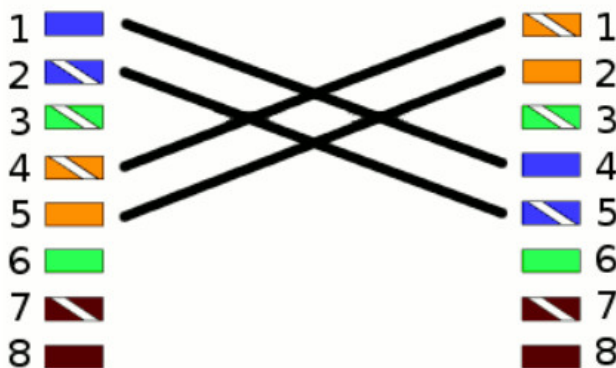
"Bridged"—Signifies a parallel connection.

"Data"—Data configurations use jacks that incorporate components to limit signal power levels of data equipment.

USOC	Type of Jack	Electrical Network Connection	Mechanical Arrangement	Typical Usage
RJ-11C	Surface- or flush-mounted jack	Single-line bridged tip and ring only	Miniature 6-position jack	Single-line, non-key telephones and ancillary equipment
RJ-11W	Wallmounted jack	Single-line bridged tip and ring only	Miniature 6-position jack	Single-line, non-key telephones and ancillary equipment
RJ-48X	Surface-, flush-, or wallmounted jack	T&R, T1 R1; Conductors 7 and 8 provide cable shield integrity; Conductors 3 and 6 are reserved for future use	Miniature 8-position jack	1.544-Mbps digital services
RJ-45M	Surface-, flush-, or wallmounted jack	Multiple-line bridged tip and ring	Up to 8 miniature 8-position keyed jacks in multiple mounting arrangements	Multiple installations of programmed types of data equipment
RJ-45S	Surface-, flush-, or wallmounted jack	Single-line bridged tip and ring	Single miniature 8-position keyed jack for surface mounting	Programmed data equipment
RJ-48C	Surface-, flush-, or wallmounted jack	T&R, T1 R1; Conductors 7 and 8 provide cable shield integrity; Conductors 3 and 6 are reserved for future use	Miniature 8-position jack	1.544-Mbps digital services
RJ-48S	Surface-, flush-, or wallmounted jack	One- or two-line T&R or T&R, T1 R1	Miniature 8-position keyed jack	Local area data channels/ subrate digital services

Comparing USOC Jacks

DDS Telco (RJ-45)   ISDN BRI U (RJ-45)   ISDN BRI S/T (RJ-45)   T1/E1 Telco (RJ-45)

T1 Crossover Cable, Loopback Plug 🔒

T1 crossover cable

T568B

1
2
3
4
5
6
7
8

1 The image displayed shows the cross-over cable
2 pinout for a standard T1. This cable should be
3 plugged into your Smartjack (provided by the Carrier)
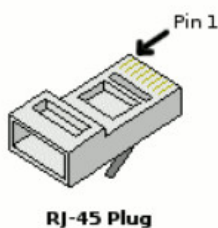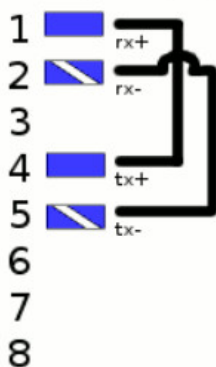4 and your PBXtra 's PRI card (Sangoma A10X model of
5 cards).

6 Alternatively, Smartronix (example ☍) sells T1/E1 or
7 ISDN/PRI crossover adapters (same wiring, different
colors - one is pale greenish-white or mint, the other
8 is yellow).

If purchasing an adapter, make certain you get at
least one crossover adapter. Loopbacks are for
testing.

Pin 1

RJ-45 Plug

T1 loopback plug

1 rx+
2 rx-
3
4 tx+
5 tx-
6
7
8

Wireball was here.
(this is a subliminal message)

ARC ELECTRONICS

1-800-926-0226

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