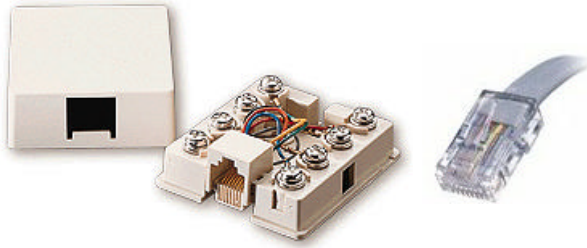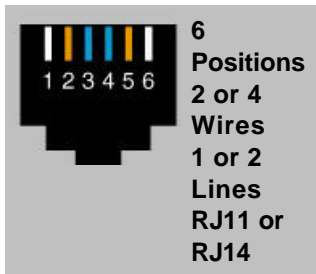# Modular Jacks & Plugs

Jacks and plugs are wired to conform to Uniform Service Ordering Code ("USOC") numbers, originally developed by the Bell System, and endorsed by the FCC. One specific piece of hardware can be wired in different ways, and have different USOC numbers. USOC has become an acronym, pronounced "you-sock," and jack wiring schemes are generally referred to as "USOC codes."
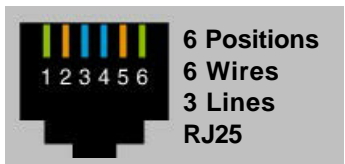
The 8-position modular jack (above) is commonly and incorrectly referred to as "RJ45". The 6-position modular jack is commonly referred to as RJ11, which may or may not be correct. Using RJ terms often leads to confusion since the RJ designations refer to very specific USOC wiring configurations. The designation 'RJ' means Registered Jack, and should be used only for jacks that are connected directly to phone company circuits.

Each of the basic jack styles can be wired for different RJ configurations. For example, the 6-position jack can be wired as an RJ11C (1-pair), RJ14C (2-pair), or RJ25C (3-pair) configuration. An 8-position jack can be wired for configurations such as RJ61C (4-pair) and RJ48C. The keyed 8-position jack can be wired for RJ45S, RJ46S, and RJ47S. The fourth modular jack style is a modified version of the 6-position jack (modified modular jack or MMJ). It was designed by Digital Equipment Corporation (DEC) along with the modified modular plug (MMP) to eliminate the possibility of connecting DEC data equipment to voice lines and vice versa. (This paragraph is based on info from Siemon, a supplier of much of the telecom hardware we use and sell.)
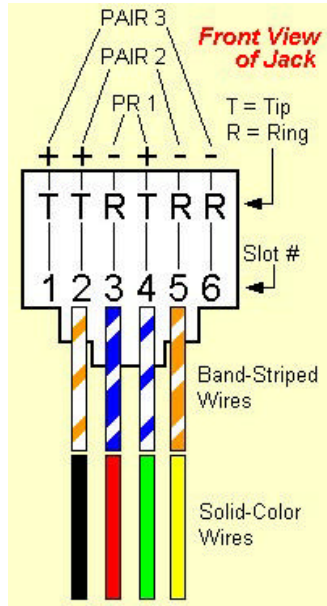
In the diagrams below, you are looking into the opening of the jack. Internal wiring in the jack may have different colors from the wiring that goes to the jack.

6 Positions 2 or 4 Wires 1 or 2 Lines RJ11 or RJ14

Jack Positions	USOC RJ11	USOC RJ14
2		wht/org
3	blue/wht	blue/wht
4	wht/blue	wht/blue
5		org/wht

6 Positions 6 Wires 3 Lines RJ25

Jack Positions	USOC RJ25
1	wht/grn
2	wht/org
3	blue/wht
4	wht/blue
5	org/wht
6	grn/wht

Wires inside most phone jacks are usually solid-colored, not striped.

Until a few years ago, it was customary to use "quad" solid- color wire, that matched the wires inside a jack.

If you are installing a new jack, it's best to use "twisted-pair" wire, with stripes.

8 Positions 4 or 8 Wires 4 Lines RJ61 & others

Jack Positions	USOC RJ61	T568A	T568B (AT&T)	10BASE-T (LAN)
1	wht/brn	wht/grn	wht/org	wht/blue
2	wht/grn	grn/wht	org/wht	blue/wht
3	wht/org	wht/org	wht/grn	wht/org
4	blue/wht	blue/wht	blue/wht	
5	wht/blue	wht/blue	wht/blue	
6	org/wht	org/wht	grn/wht	org/wht
7	grn/wht	wht/brn	wht/brn	
8	brn/wht	brn/wht	brn/wht	

Note: If you are going to re-use jacks previously installed for a Merlin or other ATT/Lucent/Avaya phone system that uses the T568B wiring scheme, you will either have to re-arrange the wires inside the jack, or connect the circuit that would normally go on the white/orange wire pair, to the white/green pair.

Note: 8-position jacks and plugs used in Local Area Networks ("LANs") are commonly referred to as RJ45. This is incorrect, because RJ designations apply only to jacks connected to phone company circuits, not PCs or network hubs.

The black diagrams and some of the info above came from Hubbell, a maker of top-quality wiring devices. We thank them.

phone wiring color codes
Multi-Pair Wire & Cable

Base color/ Stripe color	Polarity (Tip is Positive)	Pair #	Pin # in 25-pair "Amphenol" Connector	Row # in 66 or 110 Punch-down Block
White/Blue Blue/White	Tip 1 Ring 1	Pair 1	26 1	1 2
White/Orange Orange/White	Tip 2 Ring 2	Pair 2	27 2	3 4
White/Green Green/White	Tip 3 Ring 3	Pair 3	28 3	5 6
White/Brown Brown/White	Tip 4 Ring 4	Pair 4	29 4	7 8
White/Slate Slate/White	Tip 5 Ring 5	Pair 5	30 5	9 10
Red/Blue Blue/Red	Tip 6 Ring 6	Pair 6	31 6	11 12
Red/Orange Orange/Red	Tip 7 Ring 7	Pair 7	32 7	13 14
Red/Green Green/Red	Tip 8 Ring 8	Pair 8	33 8	15 16
Red/Brown Brown/Red	Tip 9 Ring 9	Pair 9	34 9	17 18
Red/Slate Slate/Red	Tip 10 Ring 10	Pair 10	35 10	19 20
Black/Blue Blue/Black	Tip 11 Ring 11	Pair 11	36 11	21 22
Black/Orange Orange/Black	Tip 12 Ring 12	Pair 12	37 12	23 24
Black/Green Green/Black	Tip 13 Ring 13	Pair 13	38 13	25 26
Black/Brown Brown/Black	Tip 14 Ring 14	Pair 14	39 14	27 28
Black/Slate Slate/Black	Tip 15 Ring 15	Pair 15	40 15	29 30
Yellow/Blue Blue/Yellow	Tip 16 Ring 16	Pair 16	41 16	31 32
Yellow/Orange Orange/Yellow	Tip 17 Ring 17	Pair 17	42 17	33 34
Yellow/Green Green/Yellow	Tip 18 Ring 18	Pair 18	43 18	35 36
Yellow/Brown Brown/Yellow	Tip 19 Ring 19	Pair 19	44 19	37 38
Yellow/Slate Slate/Yellow	Tip 20 Ring 20	Pair 20	45 20	39 40
Violet/Blue Blue/Violet	Tip 21 Ring 21	Pair 21	46 21	41 42
Violet/Orange Orange/Violet	Tip 22 Ring 22	Pair 22	47 22	43 44
Violet/Green Green/Violet	Tip 23 Ring 23	Pair 23	48 23	45 46
Violet/Brown Brown/Violet	Tip 24 Ring 24	Pair 24	49 24	47 48
Violet/Slate Slate/Violet	Tip 25 Ring 25	Pair 25	50 25	49 50