

Switches

A coaxial switch is used to alter the path of a coaxial transmission line by either opening or closing it, or changing its direction. The coaxial switch is used in the microwave field due to the inherent properties of the structure, which has high isolation and low loss energy transmission, over extremely wide bandwidths. These characteristics plus high RFI and EMI shielding make them ideal for all types of systems such as antenna switching, receivers and many more communications applications.

There are many parameters involved to fully specify a coaxial switch. Listed below are the more important ones:

1. **Frequency Range** - This is the operational bandwidth in which the unit must meet the electrical specification. RLC offers DC- 18 GHz frequency range as standard on many switches with extended bands of operation available. Larger switches have a more limited frequency range.
2. **VSWR** - The Voltage Standing Wave Ratio is a measure of the switch impedance compared to that of the transmission line in which it is placed. A VSWR of 1.0:1 would be theoretically perfect. All microwave components have VSWR greater than 1.0:1.
3. **Insertion Loss** - The loss of power incurred by placing the switch between two connectors of the transmission line is the insertion loss and is measured in decibels. All microwave components have insertion loss greater than zero.
4. **Isolation** - The resistance to RF leakage between the closed path and the open path is the isolation (or crosstalk) and is measured in decibels. Higher isolation in dB, indicates a lower (or more desirable) level of leakage between paths.
5. **Switching Time** - The time required to the close of the RF contacts after application of the actuating voltage, measured in milliseconds for mechanical types and in microseconds for the solid state type.
6. **Operating Mode** - The characteristic that governs the operation of the switch when the actuating voltage is removed is the operating mode.
 - 6A. **Failsafe** - In the failsafe mode, which is standard on RLC switches, the switch will move to the closed position when actuating voltage is applied and return to the open position when voltage is removed.
 - 6B. **Latching** - In the latching mode, which is optional on many RLC switches, the switch will remain in any switched position when the actuating voltage is removed. Standard RLC latching switches are equipped with a "Cutthroat" solid state circuit, which will automatically cut the actuating current after the switch has changed position. At this time the current is not required since the switch is self-latching, and in a stable condition.
7. **Indicators** - Indicators are a DC circuit isolated from the RF path which allows external monitoring of switch operation and position by passing a DC voltage through the indicator terminals. This option is available on many of the RLC switches and is noted at the bottom of each switch page.
8. **TTL Control Circuit** - Users exercising the option of TTL compatibility can apply the power voltage across a pair of designated power terminals and then control switch operation with a 5 volt control circuit. Normal operation is for the switch to be activated by "high" control voltage and deactivated by "low", but low activated TTL is available, as is BCD.
9. **Arc Suppression Diodes** - Internal arc suppression diodes are available, as options for all switches. Other special circuit features such as steering diodes may be obtained upon request.
10. **Break-Before-Make** - Almost all Coaxial R.F. switches are constructed for Break-Before-Make operation. The open time, between break and make, is on the order of one half the switching time. Because of the high quality gold plated contacts used on these switches, hot switching is not recommended. Maximum power applied during switching should not exceed 1watt cw.

RLC Electronics can ship standard switches from stock and has the ability to produce switches to special specifications, in accordance with your requirements, with minimum delay in delivery. Coaxial switches are ideally suited for such applications as equipment selection, switching antenna feeds, lobing, beam switching, transmitter receiver multiplexing, and many others. RLC Electronics will deliver the best switch for your needs.



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