

What are High Voltage Coaxial Connectors?

High voltage coaxial connectors are specialized connectors designed to safely and reliably transmit high voltage signals (hundreds to thousands of volts). They feature enhanced insulation, recessed conducting pins, and safety mechanisms to prevent accidental shocks. Three common types are HN, MHV, and SHV connectors, each with specific voltage ratings and applications.



HN Straight Plugs



MHV Straight Plugs



SHV Straight Plugs



In/Between Series Adapters



Cable Assembly

Type	Coupling Method	Rated Voltage	Withstand Voltage	Frequency Range
HN	Threaded Coupling	1.5kV	5kV	DC - 4GHz
MHV	Bayonet Lock	1.6kV	5kV	DC - 300MHz
SHV	Bayonet Lock	3.5kV	5kV	DC - 2GHz

Note: Rated voltage is for long-term operation, while withstand voltage is a safety margin for short periods (seconds to minutes). Although the connectors appear similar to BNC or N-type connectors, they are NOT compatible and should never be forced together.

Applications by Industry

Key Applications

- Nuclear Physics:** Radiation detectors, scintillation counters, experimental equipment
- Medical:** X-ray devices, medical imaging equipment, radiation therapy
- Industrial:** High-power testing equipment, high-voltage power supplies
- Research:** Particle physics, accelerator systems, high-energy experiments

Safety & Selection Criteria

- Voltage requirements** - Select connectors rated above your system voltage
- Safety considerations** - SHV provides highest safety with recessed pins
- Frequency needs** - HN supports highest frequency range (up to 4GHz)
- Connection type** - Choose between threaded (HN) or bayonet (MHV/SHV)

Connector Type Comparison

HN Connector

High power, high durability connector with threaded coupling mechanism. Originally developed for radar and high-power RF transmission equipment. The robust design makes it ideal for industrial applications where durability and reliability are critical. Common in high-power RF testing, radar systems, and broadcast equipment.

MHV Connector

Miniature High Voltage connector with bayonet coupling mechanism similar to BNC but designed for high voltage applications. Primarily used in nuclear instrumentation, Geiger counters, scintillation probes, and radiation detection equipment. Compatible with standard RG-58/U and RG-59/U cables for easy integration.

SHV Connector

Safe High Voltage connector with highest voltage rating (3.5kV) and enhanced safety features. Features recessed pins and additional insulation to prevent accidental shock. Commonly used in nuclear research, photomultiplier tubes, radiation detectors, and high-energy physics experiments where maximum safety is required.