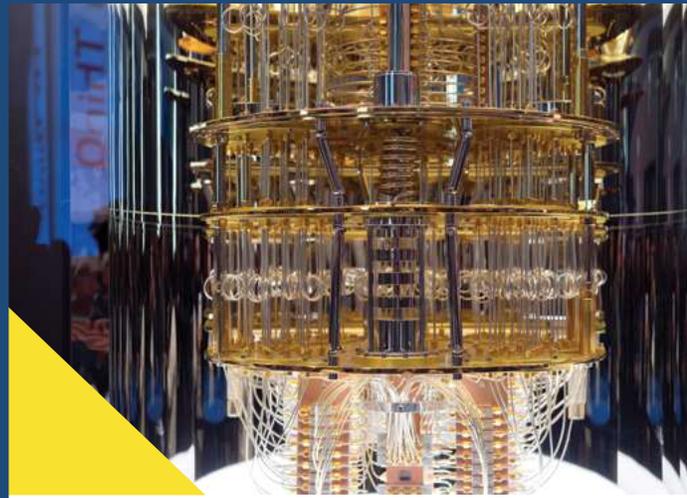


RF INTERCONNECT SOLUTIONS FOR QUANTUM COMPUTING

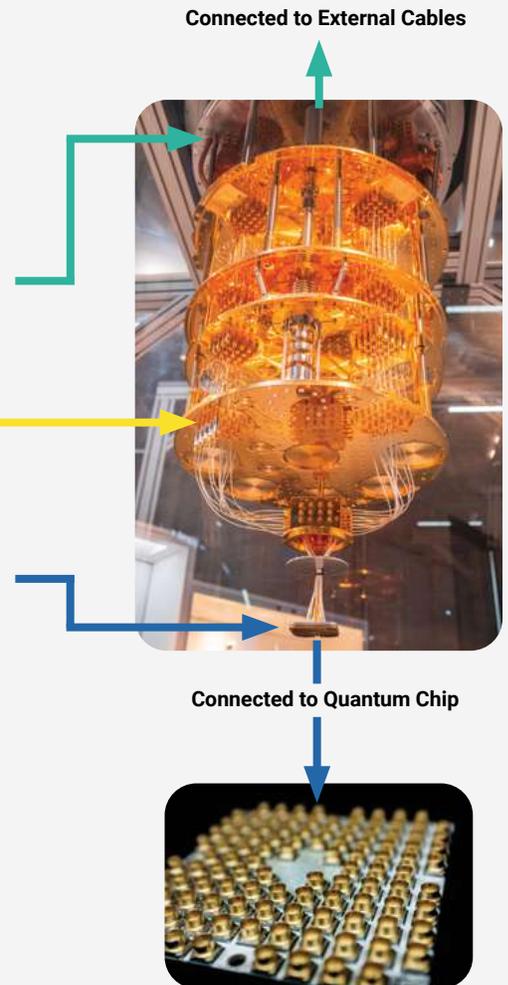
Unlike classical computers that rely on bits set to 0 or 1, quantum computers use qubits that can exist in multiple states at once. This requires advanced interconnect solutions that maintain signal integrity and enable precise system performance. RF cable assemblies and connectors play critical roles in both processing and transferring quantum data. As quantum systems scale and the number of qubits increases, the demand for reliable RF components will continue to grow. Amphenol RF provides interconnect solutions designed for next-generation quantum architectures, supporting the future of high-performance quantum computing.



HARDWARE STRUCTURE OF A QUANTUM COMPUTER

Quantum computing can be divided into three main components.

Structure	Role	Components	Products
Wiring & Interconnects	Transfer signals, power and data between computers and the quantum chip	RF cables, non-magnetic RF connectors, fiber optics cables	 SMP  SMPM
Microwave & Signal Processing	Process microwave signals before/after reaching the qubits	RF cables, RF connectors, attenuators, amplifiers	 Cable Assemblies
Quantum Processor	Perform the actual quantum computation	Quantum chip, chip packaging, chip mount or module	 SMA  SMPM



 **RF cable assemblies and interconnects** play a key role in processing and transferring quantum data.

QUBIT SIGNAL READOUT SYSTEMS

Readout systems transmit qubit signals from the inside to the outside of the quantum computer



Amphenol RF's proprietary AFI-Dart interface is tested and approved for quantum computing applications

- Designed for room temperature read-out electronics
- Single-ended interconnect solutions for density/pitch of 4.5 mm
- Excellent electrical performance up to 10 GHz
- Highly tooled and scalable for high-volume production
- Tested and approved for return and insertion loss

CORE COMPETENCIES

- Waterproof IP67/68 sealed solutions
- Lightweight, compact connector designs
- Custom cable assemblies and sub-systems
- High-density connectors solutions for efficient multi-channel connections
- Low insertion and return loss cabling and connectors for high-fidelity transmission
- Custom material selection to ensure reliable performance across extreme temperature ranges

DESIGN FEATURES



IP-Rated Waterproof

Waterproof sealed solutions are engineered to protect your application from outside elements and are fully tested to IP67 or higher specifications in the mated and unmated condition.



Non-Magnetic

Non-magnetic RF connectors ensure optimal performance and safety in environments where magnetic interference is a concern.



Vibration-Resistant

One-piece bodies and other design considerations are taken into account to provide a more robust option for applications where there are concerns for the security of the locking interface due to extreme conditions.