



HAZARDOUS LOCATIONS

Serving hazardous-area approved hermetic electrical solutions to the Oil & Gas Industry.

Douglas Electrical Components manufactures electrical feedthroughs, seals, and wire bushings for hazardous locations in custom and standard packages. Our products include fully packaged and cured epoxy designed for both hermetic vacuum and positive pressure environments. Customers can improve legacy designs using cement-based seals, prone to cracking and failure over time.

Our design capabilities allow us to offer both the mechanical hermetic seal against the explosive atmosphere and reliable process sealing in applications that experience pressurized environments such as compressors, cryogenics, hydraulics, pumps, level transmitters, and instrumentation.

TECHNICAL ADVANTAGES

- Integrate a standard hazardous area approved wire or cable feedthrough or design a custom solution for explosive atmospheres
- Reduce number of connections by providing complete end-to-end connectivity
- Dramatically increase density of conductors passing thru bulkhead when compared to weld in solutions
- High conductor count cables including: Twisted Shielded pairs, coaxial wire, fixed impedance, flex circuits and others
- Specify exactly the connector/wire/cable you require
- All insulations types including: FEP, PTFE, PVC, PE, XLPE, TPR, Neoprene and Others
- Able to seal virtually any connector including military spec, plastics, plated metals, and custom designs
- Offering fully connectorized and basic wire feedthrough solutions
- Able to seal rigid circuits, flex circuits, hybrid circuits, and FFC cable

OPERATING CONDITIONS

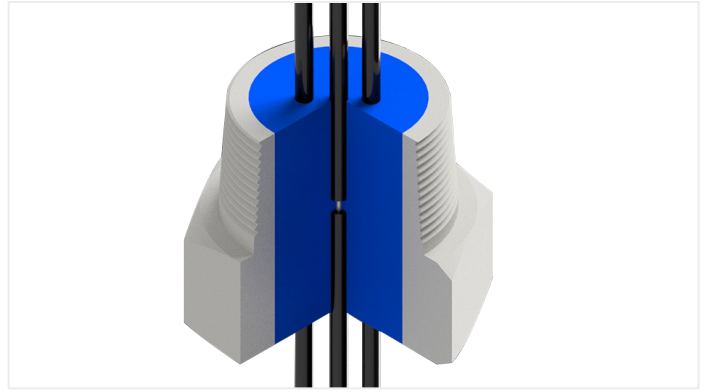
- Operating temperatures range from 4 K (LHe) through high temperatures of 200°C
- Pressures up to 15,000 PSI
- Chemical/Gas/Radiation/Saltwater compatibility is excellent

QUALITY

- 100% quality control testing
- Leak Rate testing: $<1 \times 10^{-9}$ cc-He/sec (std atm temp)
- Electrical testing to customers specifications including point-to-point continuity, insulation resistance, and High pot testing

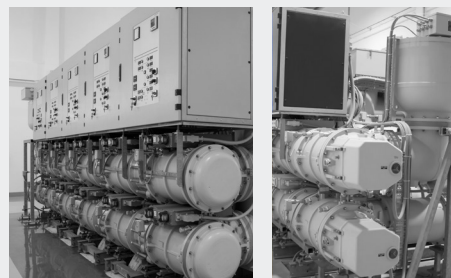
OUR TECHNOLOGY

Hermetic sealing combines epoxy resin and a housing material such as stainless steel to encapsulate an electrical conductor such as a pin, stranded wire, or threaded stud. The conductor feeds through the opening with the epoxy curing to create a hermetic seal. Various types of epoxies can be used, which can yield varying results in hermetic performance, chemical compatibility, and outgassing. Our designs enable customers to increase signal density, mix conductor types, and integrate connectors and terminals for a hermetically sealed connection for power or signal.



EXAMPLE APPLICATIONS

- Upstream monitoring
- Compression, storage, and transportation equipment
- Cryogenic systems
- Sensors & instrumentation
- Analytical systems & controls
- Fiber optic communications
- Marine & offshore equipment



CERTIFICATION CAPABILITIES

Capable of meeting the following international hazardous location standards for flame proof, increased safety, pressurized and oil filled enclosures.

IEC/EN 60079-0, IEC/EN 60079-1, IEC/EN 60079-2, IEC/EN 60079-6 and IEC/EN 60079-7

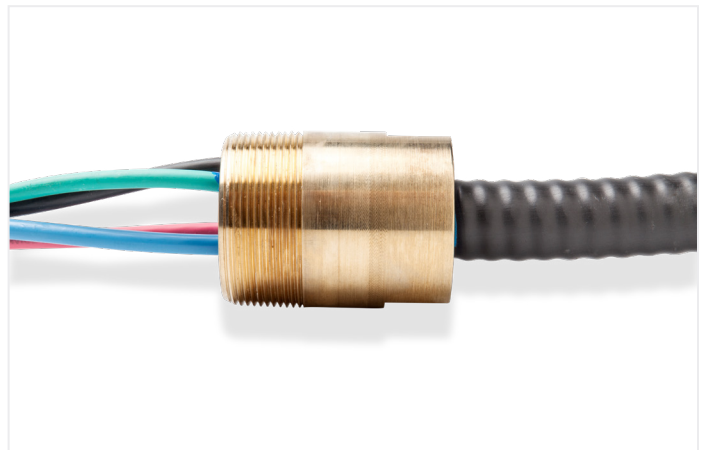
ATEX Ex d, ATEX Ex e, ATEX Ex de, ATEX Ex pD

CSA 22.2, CSA E60079

UL 1203, UL 886, UL 674, UL 913

FM 3611, FM 3615, FM 3620, FM 3610

IP-69 and above, NEMA 6P and above



STANDARD WIRE BUSHINGS
UL1203 CLASS | DIVISION | EXPLOSION-PROOF

Douglas Electrical Components manufactures UL1203 Class I Division 1 Explosion proof NPT feedthrough bushings for hazardous locations. Our standard NPT wire bushings are pre-wired epoxy feedthrough. This eliminates the need for pouring cement or epoxy in the field, ensures a factory-tested seal, and saves time in the field or factory. These feedthroughs are commonly designed into oil and gas applications including wellhead monitoring systems, gas analyzers, compressors, and other instrumentation and controls

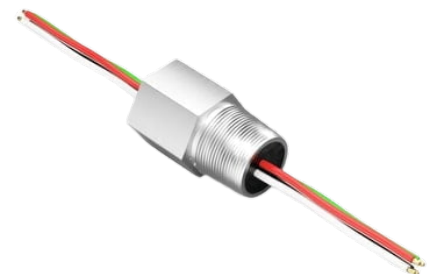


SPECIFICATIONS

Housing Material	Stainless-steel, Brass, or Aluminum
Sealing Material	7113/1481 Epoxy
Wire Gauge	24 AWG to 3/0 AWG
Thread Sizes	1", 1/2", 3/4" NPT; contact factory for hermetic rating
Leak check testing	<1x10-8cc-He/sec (std atm temp). Contact factor for more options.
Operating temperature	-40°F to 225°F (-40°C to 107°C)

COMING SOON: 57754 SERIES

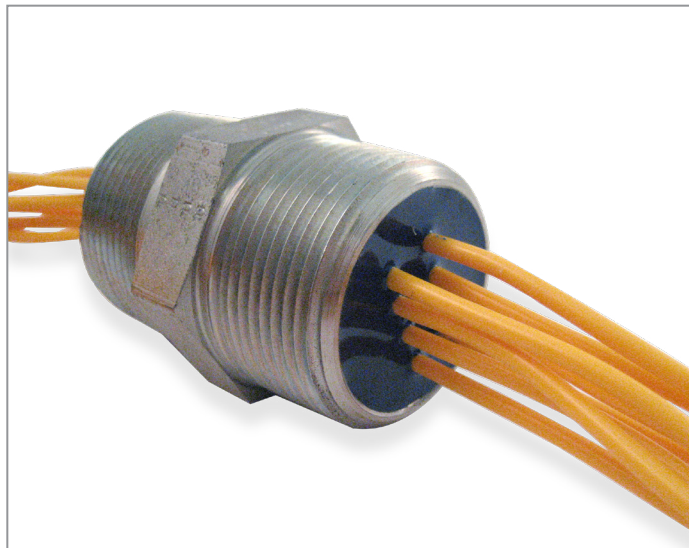
- IECEX/ATEX Ex db IIC Gb certified
- Standard NPT and Metric threads in brass, aluminum, or stainless steel
- Various wire types and temperature ratings
- Certain configurations also available with UL1203 Explosion-proof rating
- Ability to reference file for customized designs



DUCTORSEAL™ SERIES

HERMETIC WIRE FEEDTHROUGHS

- Create high-density hermetic electrical feedthroughs with integral wires, and cables to UL/cUL Class I Div 1 Explosion-proof ratings
- Use the same wire and insulation types already approved for use elsewhere in your system
- High-voltage cables > 30,000 V
- Full cable harness options with connectorization available performed by IPC-620 operators
- Custom bifurcated fiber assemblies with a combination of optical and copper conductors
- Ingress Protection exceeds IP-69K and NEMA 6P with designs rated for cryogenic temperatures



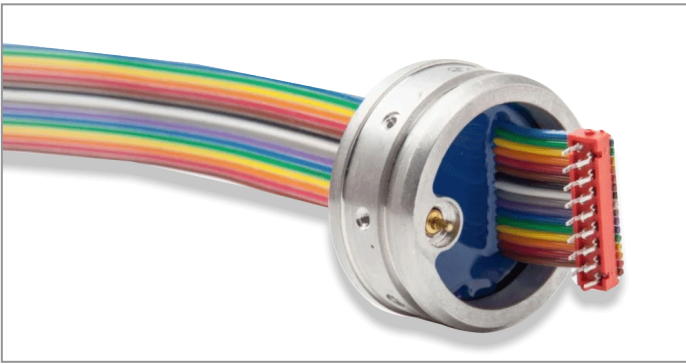
STUDSEAL™ SERIES - HERMETIC POWER FEEDTHROUGHS

- StudSeal Hermetic Terminal Seals and Power Feedthroughs transmit power in applications such as motors and compressors
- Available in standard NPT configurations as well as customized housings and plates
- Suitable for high-current/ampere applications
- Up to 1,000 A and 15,000VAC
- Easy connection points with simple ring terminals
- Operating pressures of 10,000 psi
- Operating temperatures range from -160°C through high temperatures of 200°

OPTISEAL™ SERIES - HERMETIC FIBER OPTIC FEEDTHROUGHS

- $<1 \times 10^{-9}$ cc/sec per feedthrough
- Pressures of 15,000 psi
- Operating temperatures range from 4 K (LHe) through high temperatures of 200°C
- Custom bifurcated fiber assemblies with a combination of optical and copper conductors for complex camera systems
- Achieve a custom hermetic fiber optic seal no matter the cable construction, configuration or jacket the assembly requires
- Combine various types of optical fiber into a single hermetic feedthrough





CIRCUITSEAL™ SERIES - HERMETIC CIRCUIT ASSEMBLIES

- Hermetically seal flex circuit, rigid, flat flex cable (FFC) or terminal headers to create a drop-in hermetic solutions
- Minimize the number of components required to electrically connect between two separate environments.
- Incorporate active and passive components in the assembly

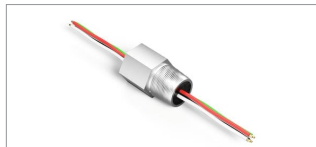
EXAMPLES OF OUR UNIQUE CAPABILITIES



Hermetic NPT Wire bushing
Explosion-proof rated wire bushing with brass fitting and labeled conductors



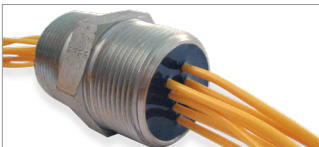
DuctorSeal Wire Feedthru
Multi-conductor hermetic wire feedthrough with NPT Threads



Explosion-proof NPT Wire Bushing
Side view of Explosion-proof NPT wire bushing with standard aluminum housing



Hermetic Coax Wire Feedthrough
Hermetic coaxial feedthrough with NPT threads and coaxial wires



NPT Fiber Optic Wire Bushing
Fiber optic NPT threaded electrical feedthrough conduit seal



Multi-Fiber Type Feedthrough
Hermetic fiber optic NPT feedthrough with SM and MM fiber in the same mechanical interface.



Connectorized NPT Feedthrough
Customized connector / wire feedthrough assembly with NPT bulkhead connection



Turnkey Terminated NPT Cable Feedthrough
Designed for plug-and-play application



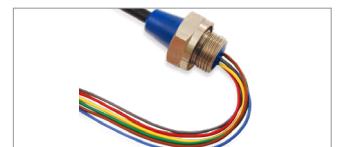
NPT Explosion-proof Cable Assembly
Explosion-proof conduit seal with NPT threads can be designed for hazardous locations including explosion-proof environments.



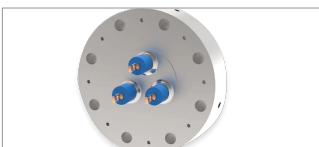
ASME Wire Feedthrough
Hermetic wire feedthrough in custom explosion-proof ASME housing



Oil and Gas Power NPT Feedthrough
Designed with larger gauge wire for power transmission



Fiber Optic Feedthrough with Epoxy Strain Relief Extension
Fiber Optic Feedthrough with Epoxy Strain Relief Extension



Cryogenic Power Feedthrough
Cryogenic Feedthrough design with three power feedthroughs integrated into a custom flange.



Electrical Feedthrough Harness
Customized electrical feedthrough with integral housing, wire, and electrical connection.



Custom Ribbon Cable Feedthrough
Ribbon cable feedthroughs create a simple plug-in design for customers integrating electronics inside a housing.



Sealed Electronics Cavity
Hermetically sealed housing from circuit board to wire assembly



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