

The 10 things every engineer needs to know when specifying a hermetic interconnect



You need to know...





CYLINDRICAL
 • 38999, 26482, 83723, 5015,
 M12 Styles



RECTANGULAR
 • D Sub and Micro D styles



HEADER/FEEDTHROUGH
 • custom form factors

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The common form factors

COAXIAL AND HIGH SPEED
 Matched impedance variants - 50/75 Ω, BNC, SMA, SMB and N types

FILTERED
 System integrity under harsh interference conditions, Point of entry (POE) signal conditioning

VACUUM
 Standard flange forms (e.g. CF : KF), Minimal trapped volumes, Low out gassing, bakable materials

SUBSEA
 Corrosion resistance, Seawater-tight boot with individual pressure energised wire seals

SOCKET VERSIONS
 Peak insert, industry standard interfaces

MATERIAL SELECTION
 Stainless Steel, Titanium, Inconel, Hastelloy

RUGGEDISATION

CUSTOM
 Tailored to a range of functional requirements, often driven by the harshest environments and high end performance demands

STANDARDISED
 Ruggedised product for harsh environments, supplied as qualified product list or commercial equivalent series parts

INDUSTRIAL
 Product not totally ruggedised but offering good performance for non harsh environment applications

LOW-COST
 Basic performance air tight interconnects for high volume, non critical applications

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Ruggedisation vs Functionality vs Applications

APPLICATIONS

SENSING AND PROCESS MONITORING
 Pressure sensors, temperature sensors, vibration sensors, gas analysers, trace detection

AEROSPACE ENGINES Pressure Sensors, Temperature Sensors, Torque Sensors, ECU's, APU's
AVIONICS Actuation, Air Data Systems, Bulkhead Feedthrough, Fuel Utility Systems, Hydraulic Systems, Proximity Sensors

AEROSPACE ENGINES Pressure Sensors, Temperature Sensors, Torque Sensors, ECU's, APU's
SPACE Propulsion Systems, Imaging Systems, Cryogenic cooling, Instrumentation Calibration, Ignition Systems

DEFENSE Landing gear, Optical Systems, Inertial Guidance, Battery Lids, Fuzes, Umbilical's,

MARINE AND SUBSEA Asset monitoring systems, Hull penetrators, ROV optical systems, Subsea cable termination, Secondary containment seals

ENERGY, OIL & GAS System integrity monitoring, Wire line tools, Down hole instrument, Containment/Fire barriers

MEDICAL Autoclaves, Cryogenic Imaging Systems

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The electrical performance available

HOW MANY CONDUCTORS?

WHAT ARE THE ELECTRICAL REQUIREMENTS?

Consider including a number of redundant conductors to accommodate any system developments you have planned for the future, or to comply with specified growth provisions.

Work out a steady state and peak requirement for both the current and voltage.

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The functionality for a range of environmental factors

ARE THERE ANY ENVIRONMENTAL FACTORS?

WILL YOUR GTMS BE UNDER ANY PRESSURE?

If your application will be operating in a harsh or hostile environment (exposed to shock, vibration, thermal changes or extreme temperatures, for example) these will need to be factored into the design.

Depending on the medium (for example, oil, water or a vacuum) there may be a pressure differential to consider. GTMS can be supplied in multi-pin preforms or, for high pressure applications (up to 60,000 psi /400 MPa), in individual glass beads.

HOW WILL YOUR FEEDTHROUGH OR CONNECTOR BE ATTACHED?

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The mounting and termination options

For a connector, will it be secured with a basic flange mount, for example, or jam nut or welded in place?

For a feedthrough, will it be secured with a standard O ring, for example, or welded in place? Or will you need a custom-designed mounting arrangement for optimum system integration?

WHAT ARE YOUR CABLE INTERFACE REQUIREMENTS?

Options include crimp and solder. Note that gold plated solder contacts should either be desoldered before installation, or appropriate plating thickness specified, to avoid solder embrittlement.

WHAT ARE YOUR PLATING REQUIREMENTS?

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The common plating finishes for hermetics

We offer a wide range of in-house plating options, including tin, nickel, hard and soft gold.

We can also customise the plating to meet any special or unique requirements.

Note that gold plated solder contacts should either be desoldered before installation, or appropriate plating thickness specified, to avoid solder embrittlement.

DO YOU REQUIRE CUSTOM FUNCTIONALITY?

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The custom functionality that can be incorporated

If you have any specific requirements, such as electromagnetic compatibility (EMC) filters or printed circuit board (PCB) mounting, make sure they are included in your design specification.

Also think about any additional markings your product will need (over and above those required by any relevant standard) such as a bar code.

ARE QUALIFICATION TESTS REQUIRED?

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Typical testing and qualification options

If qualification tests are required, these should be discussed and specified during the design phase.

Martec is able to perform most qualification tests on the appropriate levels of assembly.

Test examples include leak testing, pressure test, geometrical and electrical testing; including breakdown, hvoltage and insulation resistance of finished parts.