HAWKE International

# FIBRE Ex CONNECTORS

*For Harsh & Hazardous Environments*



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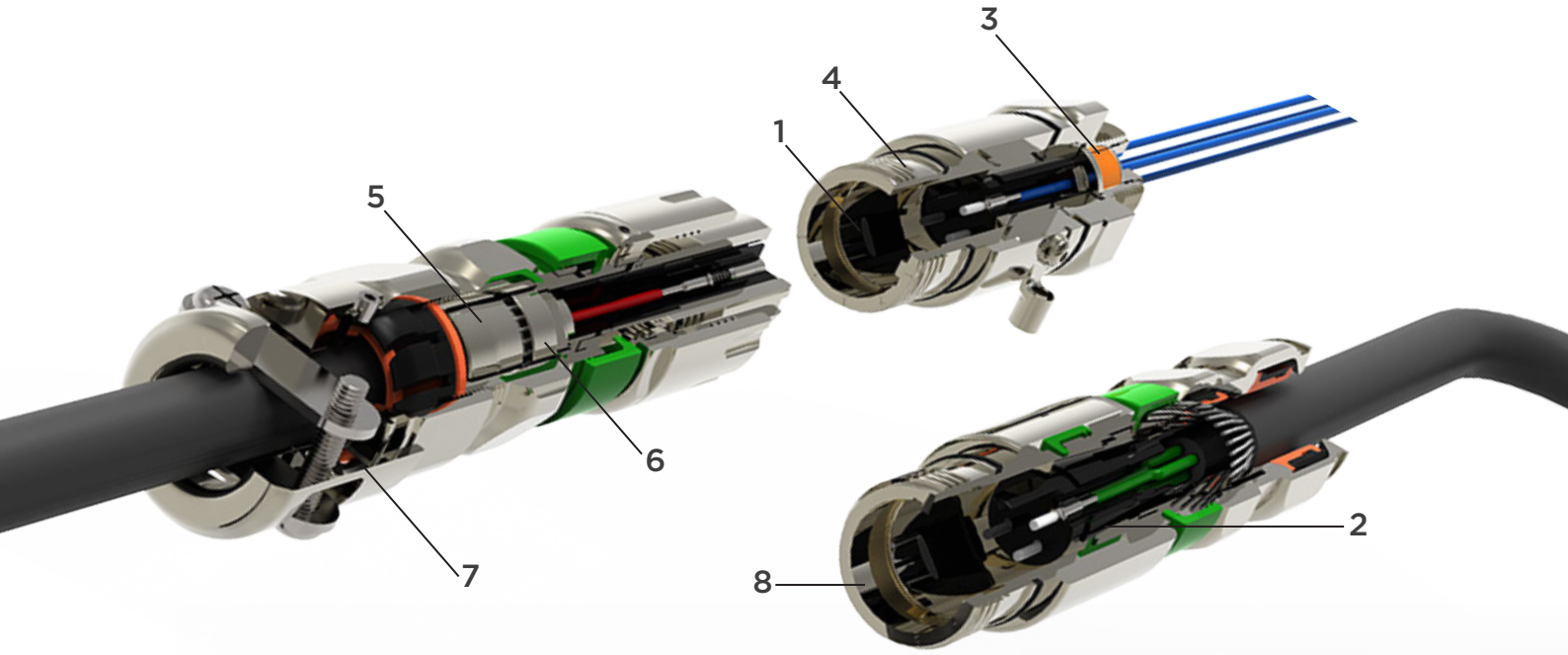
MADE IN BRITAIN



# Introducing Hawke's **Fibre**Ex range of Connectors

Our fibre connector combines the strength of our market-leading connection range with the latest in Ex Fibre Optic specifications. Designed to meet the latest BS EN 60079-28:2015 standard for protection of equipment using fibre optics in explosive atmospheres; the Fibre Ex offers an easy-to-install solution that will keep your network running, even in the world's most arduous environments.

Dedicated to providing our customers with complete solutions,  we've united with of the most prominent Fibre Termination services in the world, Acal BFi. Acal will provide a custom cable jumper termination service with our Fibre Ex connectors, so that you can install the FibreEx without the need for costly fibre termination engineers.




# More Benefits

## Fibre Technology

Available in both single and multi-mode option, in 4 and 8 way configurations.

## Ex Certified

Ex op pr and Ex op is options available.

## Termination Service Available

Hawke have united with one of the most prominent Fibre termination services in the world, Acal BFi to offer you a complete solution. Acal will provide a custom cable jumper termination service for our FibreEx Connector so that you can install our leading-edge connector without the need for expensive fibre termination engineers.



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FIBREEX



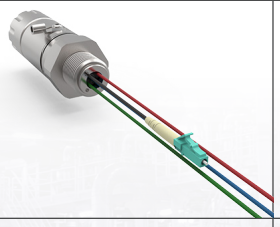
## 1 Keyed Positions

The insert keyway of the FibreEx connector guarantees correct alignment, every time. This prevents pin damage and expands the Fibre Ex's lifespan which reduces associated costs.



## 2 Integral Keyring

Our machined keyway ensures perfect connector alignment without damage to pins or contacts for fast installation and a longer product lifespan. The 5 positions for OP-PR and a unique 6th position for OP-IS prevents cross-mating between two protection concepts.



## 3 Pre-Terminated

All BR connectors are supplied pre-terminated with encapsulated tails to suit your requirements.
CP and CR connectors are also available pre-terminated.



## 4 Quick Connect

Our unique 4 start ACME thread offers a smooth and quick fully mating action in less than two turns, for fast and simple installation. Earth continuity is achieved via a 360° contact clip.



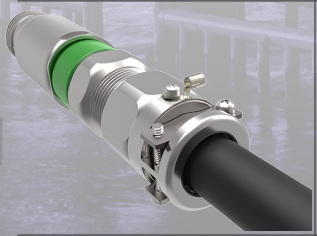
## 5 Original Reversible Clamp

Our, industry-leading, RAC clamping system provides a fully inspectable method of accommodating a variety of different armour or braided cable types.



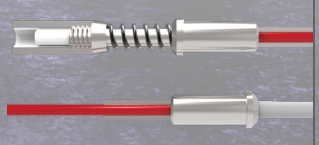
## 6 Anti Rotation

The FibreEx's profiled spigot and connector body prevent cable rotation to eliminate cable damage for an increased product lifespan.



## 7 Cable Clamp

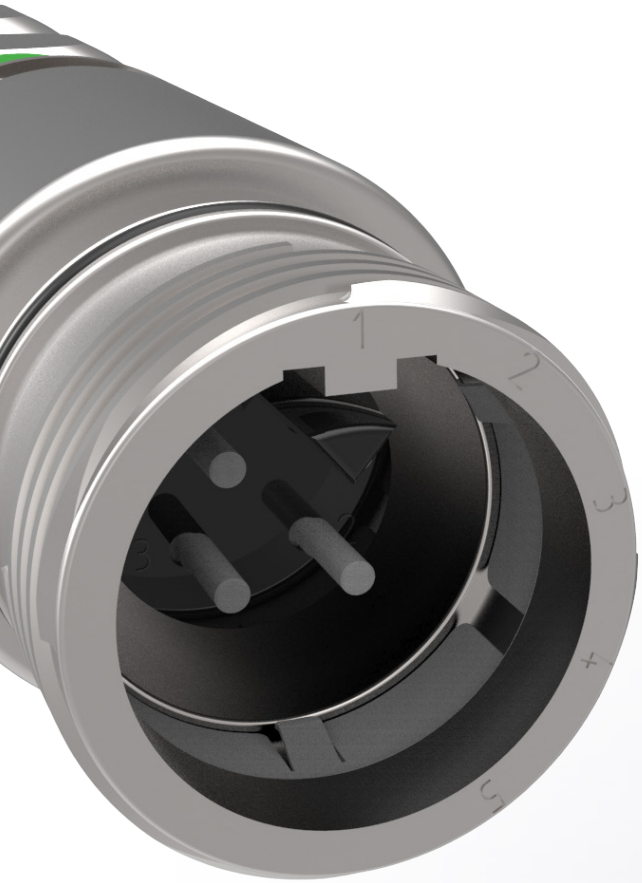
A cable clamp, in the material selected will be supplied with every Connector Plug and Connector receptacle to maintain cable pullout requirements.



## 8 Contacts

The M29504 series pin and socket termini utilises proven, harsh environment ceramic ferrule technology and a ceramic alignment sleeve to reduce insertion (signal) loss in some of the world's most arduous environments.

*Product design and specifications are subject to change without notice. Please check the Hawke website for latest specifications.*



# Acal and Hawke
# A match made in heaven

## Who are Acal BFi?

Acal BFi have been providing custom, cost-effective solutions for specialist electronic applications since 1986. They offer strategic design consultancy advice, bespoke manufacturing and custom solutions for a variety of sectors. This includes: medical, military, defence, communications, transportation, industrial and renewable energy.

## Fibre Optic Innovation

With over 20 years experience in the design and manufacture of both fibre only and hybrid fibre / copper cables, Acal have a long standing reputation as market leaders for fibre optic innovation. Having designed, produced and installed cable assemblies for many diverse environments including nuclear submarines, oil exploration vessels, trains, open cast mines and roadside traffic gantries, Acal are more than equipped to tailor make solutions for your unique needs.

## Connection and Termination

Acal BFi is built upon three primary objectives: to consult, design and integrate solutions for their customers. The integration segment is where Hawke and Acal's partnership was borne. Whilst Hawke can provide a connector designed and utilised in some of the world's toughest environments, Acal's 20 years of termination experience can ensure that your connector is installed safely, securely and without the need for costly termination. This partnership is a part of Acal and Hawke's determination to provide a complete solution for our customers.

acal bfi HAWKE International



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# Connectors Order Codes

## Order Code Builder

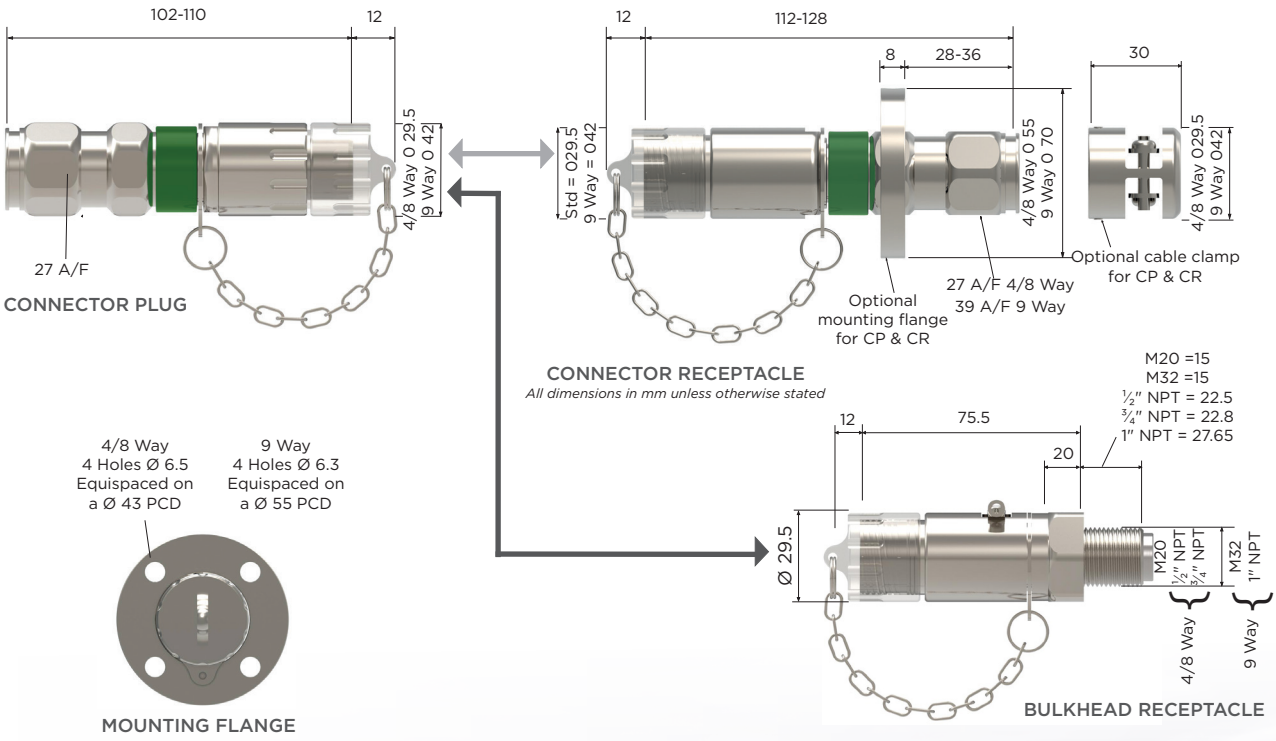
FibreEx Connector

| | | |
|---|---|---|
| Protection Concept | Protected Radiation | PR |
| | **Inherently Safe** | **IS*** |
| Number of Contacts | 4 Way | 4 |
| | 8 Way | 8 |
| Material | Nickel Plated | N |
| | Stainless Steel | S |
| Connector Style<br>*** for Hawke terminated PR certified CP/CR state the key position. ie CP1* | Connector Plug | CP** |
| | Connector Receptacle | CR** |
| | Flanged Receptacle | FR** |
| | Bulkhead Receptacle Position 1 | BR1 |
| | Bulkhead Receptacle Position 2 | BR2 |
| | Bulkhead Receptacle Position 3 | BR3 |
| | Bulkhead Receptacle Position 4 | BR4 |
| | Bulkhead Receptacle Position 5 | BR5 |
| | Bulkhead Receptacle Position 6 (IS* only) | BR6 |
| Bulkhead Entry Thread | Metric - M20 4 way, M32 8 way | M |
| | NPT - 1/2" (4 way) / 1" (8 way) | N |
| | NPT - 3/4" (4 way) / 1 1.4" (8 way) | R |
| | N/A for CP and CR | X |
| Contact Type | Pin | P |
| | Socket | S |
| Bulkhead Connector Type | LC | 1 |
| | SC | 2 |
| | ST | 3 |
| | Flying Leads | 4 |
| | Custom | C |
| | N/A for CP and CR | X |
| Cable Type<br>*OM1 & OS1 cable as std. Other options are available on request.* | Singlemode | S1 |
| | Multimode | M1 |
| Cable Length (Metres)<br>State 1 - 100 | Per metre | 100 |
| | N/A Non factory terminated CP & CR | X |
| Cable Jumper Specification<br>*Connector to connector jumper cable etc for Hawke terminated assemblies* | Connector Plug with Pins | 1 |
| | Connector Plug with Sockets | 2 |
| | Connector Receptacle with Pins | 3 |
| | Connector Receptacle with Sockets | 4 |
| | None | 5 |
| | N/A for Bulkhead Receptacle and Non factory terminated CP & CR | X |
| Bulkhead Terminated Contacts<br>*All contact will be terminated for CP and CR configurations* | All | A |
| | Customer Specific. Drawings needed | C |
| | N/A All CP & CR | X |
| Certification | ATEX/IECEx/UKEx/EAC | A |

**IS protection concept has a standard rating of T6, this is limited to 15mW radiated power and 5mW/mm2 Irradiance.*
*Other options available on request*

*Product design and specifications are subject to change without notice. Please check the Hawke website for latest specifications.*
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# Dimensions & Technical Specifications




# Additional Product Features

The Pin and Socket has been designed to incorporate the latest in fibre technology and precision engineering to provide and easy-to-install and reliable solution.

Take a closer look

- Precision fiber optic ceramic ferrules
- Pre-radius ferrule design
- Precision “press fit” stainless steel design
- Accurate ferrule alignment system
- Solid reliable connectivity through a wide range of harsh environmental conditions
- Fast termination and polish time
- Reliable, repeatable and durable connections
- Easy to clean



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# Testing Data

| Technical Data | |
|---|---|
| Contact Technology | Low loss ceramic PC technology<br>in both multi-mode and single-mode |
| Shell Materials | Nickel Plated or Stainless Steel |
| Attenuation/Insertion Loss | 0.45 typical (measured with 62.5/125mm fiber @ 1310nm |
| Back Reflection | Better than -40dB - PC polish |
| Fibre Types | Single-mode 9/125µm<br>Multi-mode 50/125µm<br>Multi-mode 62.5/ 125 standard<br>Other options available on request |
| Termination Method | Anaerobic as standard |
| Mating Durability | 500 cycles |
| Ingress Protection | IP66/67 |
| Ambient Temperature Range | -40°C to + 60°C |
| **Certification** | |
| Protection Concepts | Ex II 2GD Ex op pr IIC T6 Gb, Ex tb IIIC T85°C Db (Tamb -40°C to +60°C) IP66/67<br>Ex [db eb] op pr IIC T6 Gb - for bulkhead/box mount version<br>Ex [op is] IIC T* Ga - with separately certified 'op is' source (CP/CR Version) |
| ATEX Certificate No | CML 23 ATEX 1056X |
| IECEx Certificate No | IECEx CML 23.0023X |
| UKEX Certificate No | CML 23 UKEX 1057X |
| Additional Certifications | EA3C KZ 7100841.01.01.03126<br>DNV: TAE000040B<br>BV: 43523/B2 |
| T Ratings at different power | T6 + 60 |

| Properties to QFCI NEK TS 606 (62.5/125) | |
|---|---|
| **Tensile Strength (OEC 6074-1-21, E1)** | |
| Max tensile load during installation | 1500N |
| Max tensile load during operation | 500N |
| Crush (IEC 60794-1-21, E3) | 3000 N/10cm |
| Impact (IEC 60794-1-21, E4) | 30J |
| Torsion (IEC 60794-1-21, E17) | -±1 turn/1m |
| **Cable Bending** | |
| Minimum bending diameter | -250mm |
| Cable Bend (IEC 60794-1-21, E11) | <0.1dB/-+5 turn |
| Temperature window (IEC 60794-21-22, F1) | |
| Operation | -40°C to +70°C |
| Installation | -10°C to +70°C |
| Storage | -40°C to +70°C |
| **Fire and Smoke Classifications** | |
| IEC 60331-25 (750°C, 90 minutes | |
| Upgraded IEC 60331-25 (1000°C, 3 hours) | <1.0 dB excess loss |
| IEC 60331-1 (830°C, 120 minutes incl. hammer shock, followed by water jet acc. to BS 8491:2008) | <1.5 dB excess loss |
| IEC 60331-2 (830°C, 90 minutes incl. hammer shock) followed by water spray acc. to EN50200 | <1.5 dB excess loss |
| IEC 60331-2 (830°C, 90 minutes incl. hammer shock) | <1.5 dB excess loss |
| IEC 61034 | <1.5 dB excess loss |
| IEC 60332-3-22 (Cat A) | |
| IEC 60332-3-24 (Cat C) | |
| IEC 60754-1 | |
| IEC 60754-2 | |
| **Chemical Resistance** | |
| Mineral oils IRM 902 (IEC60811-404) | 7 days/23°C 4 hours/70°C |
| Diesel - IRM 903 (IEC60811-404) | 7 days/23°C 4 hours/70°C |

# Hawke Connectors Range

Utilising the most advanced technology, Hawke connectors are designed for quick and easy termination. Boasting market-leading features like the complete elimination of cross-mating, high reliability contacts and much more, the Hawke Connector range guarantees innovation, safety and reliability.

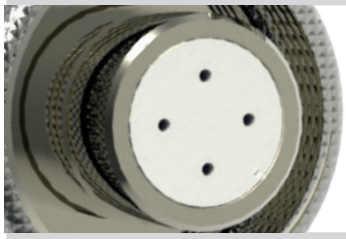
The range is ideal for use in dust and gas hazardous areas commonly found in Oil and Gas exploration and production and chemical process plants. Hawke connectors may also be used in explosive dust environments and hostile non-explosive environments.

The Hawke Connector range has been designed for four electrical application areas: Instrumentation, Control, Power and Fibre. Take a closer look at our range, below.



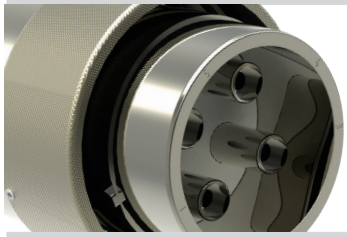
## InstrumEx

The revolutionary InstrumEx allows for the live mate and de-mating of signal and low power in hazardous areas safely and quickly.



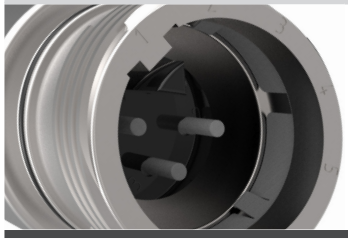
## ControlEx

ControlEx is ideal for use in control and low/ medium power applications. Front loaded design allows for easy assembly and installation of Exd compound barriers during termination.



## PowerEx

The PowerEx range has been designed specifically for the extremely demanding requirements of higher power applications up to 780A and 750V as standard. Other voltages are available on special request.



## FibreEx

The FibreEx from Hawke and Acal BFi combines the strength of Hawke's market-leading connection range with the latest in Ex Fibre-Optic specifications.



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