HAWKE International

INSTRUMEx CONNECTORS

For Harsh & Hazardous Environments



www.hubbell.com/hawke

HUBBELL



MADE IN BRITAIN



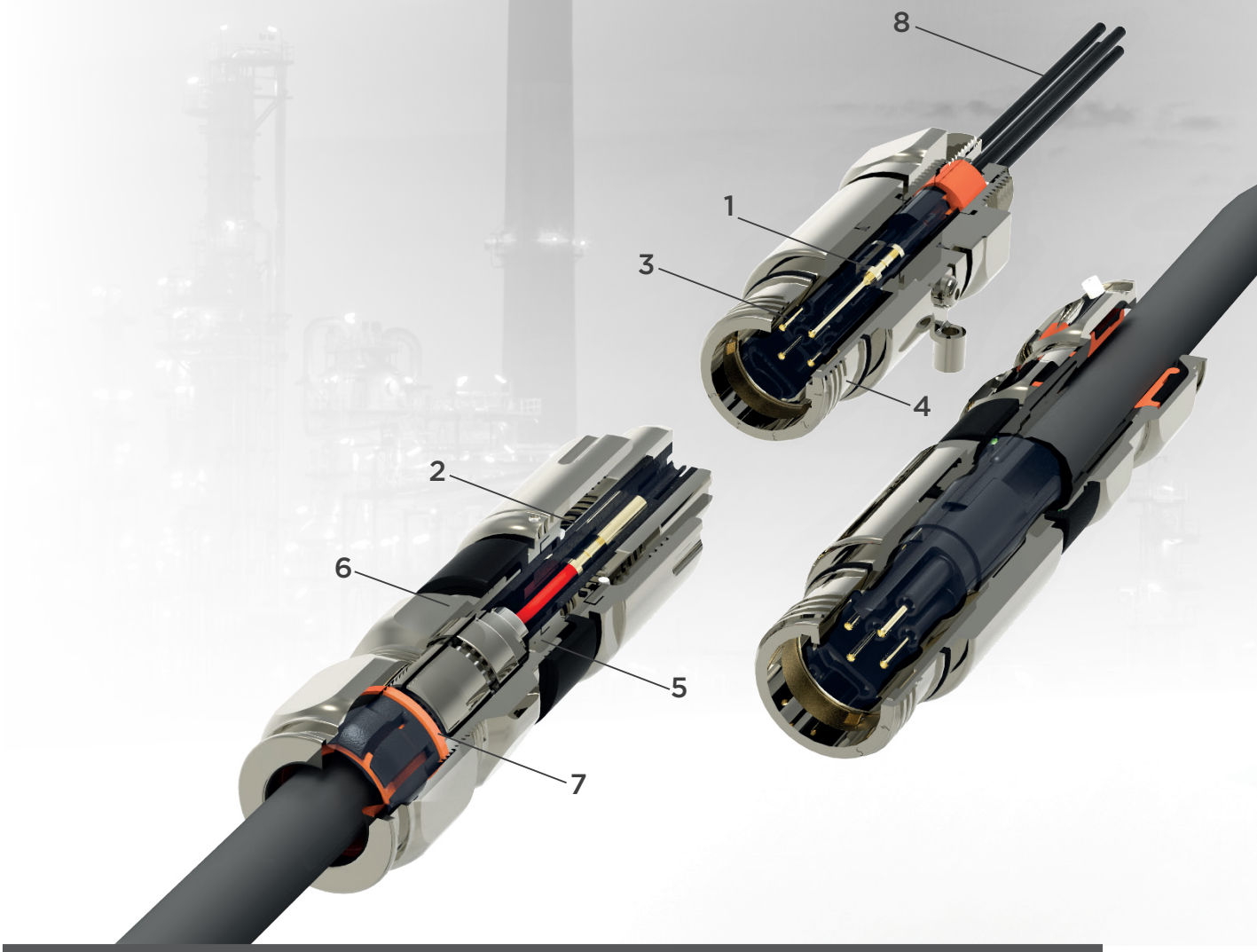
Introducing Hawke's **Instrum**Ex range of Connectors

This revolutionary design allows the live mate and de-mating of signal and low power in hazardous areas safely and quickly. The InstrumEx connector is available in two sizes. The 4-way and the 9-way options will accept cores ranging between 0.5mm^2 and 2.5mm^2 and can operate up to a maximum current of 10A (AC1) at 250V AC and 2.5A (DC1) 60V DC. The 8-way option, designed predominantly for Ethernet applications, will accept cores ranging between 0.14mm^2 and 0.37mm^2 and can carry 1A (AC1) at 60V AC and 0.5A (DC1) 60V DC. InstrumEx Connectors include an integral Hawke cable gland for easy termination of both armoured and un-armoured cables.

The InstrumEx range of connectors is ideal for use in hazardous areas.

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International Approvals



Technical Data

Material Options	Nickel Plated Brass and 316L Stainless Steel
Ingress Protection	IP66 67
Deluge Protection	to DTS01
Ambient Temperature Range	-40°C to +60°C
Mating Durability to EN 61984	On Load: 150 cycles Off Load: 500 cycles
Recommended Storage Ambient:	-50°C to +70°C
Applications	Suitable for use in Zone 1, Zone 21, Zone 2 and Zone 22

Global Approvals

Protection Class	Ex II 2GD Ex db eb IIC T6 Gb, Ex tb IIIC T80°C Db IP66/67
ATEX Certificate No	CML 23 ATEX 1062X
IECEx Certificate No	IECEx CML 23.0024X
UKEX Certificate No	CML 23 UKEX 1063X
Construction & Test Standards	IEC/EN 60079-0, 1, 7, 31
Marine Approvals	ABS: 17-LD1653736-PDA BV: 43523/B0 DNV: TAE00003RX
Additional Certifications	EAC: EA3C KZ 7100841.01.01.03126 EQM: 20-11-27224/Q20-11-000979/NB0007 Inmetro: IEx 14.0217X PESO: P410134

NEC/CEC Approvals

NEC Protection Class	Class I, Zone 1, AEx db eb IIC Gb T6, AEx tb IIIC T80°C Db
CEC Protection Class	Ex db eb IIC Gb T6, Ex tb IIIC T80°C Db
c CSA us Certificate	2633583
Construction & Test Standards	UL1977, CSA/UL 60079-0, 1, 7, 31

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INSTRUMEX



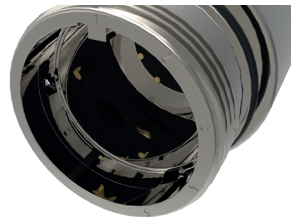
1 Electrical Insert with Key

Easy to assemble electrical insert allows crimped or soldered connections.



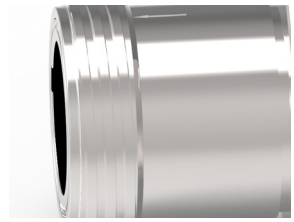
2 Keyed Positions

Secondary keying on the actual insert bodies guarantees contact alignment, preventing pin damage.



3 Integral Keyring

Machined key and keyway ensures connector alignment. Unique 5 position insert keying system prevents cross-mating.



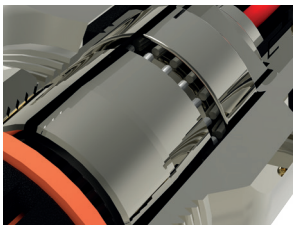
4 Quick Connect

Unique 4 start ACME thread offers a smooth, quick fully mating action in less than two turns. Earth continuity is achieved via a 360° contact clip.



5 Anti-rotation

Profiled Spigot and connector body prevent cable rotation, eliminating cable damage.



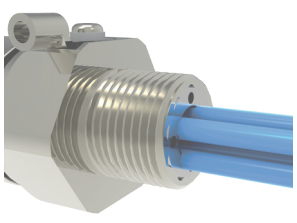
6 Reversible Armour Clamp

The InstrumEx incorporates Hawke's proven and patented armour termination method to accommodate different types of armour or braid.



7 Versatile LSFZH Rear Seal

Accommodates a wide range of cable sizes and provides highly effective cable grip and ingress protection.

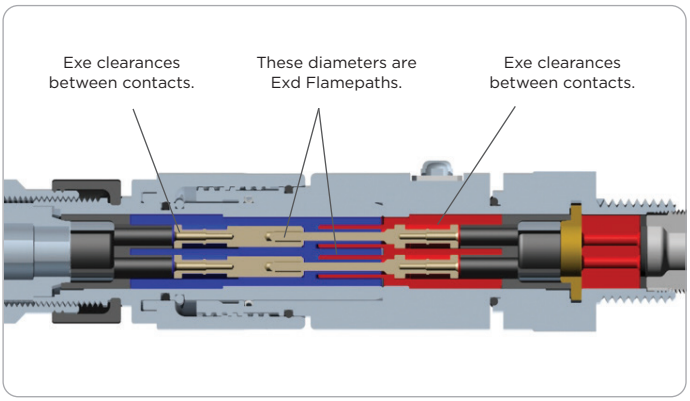


8 Pre-terminated

All BR connectors are supplied with pre-terminated tails to suit your requirements.

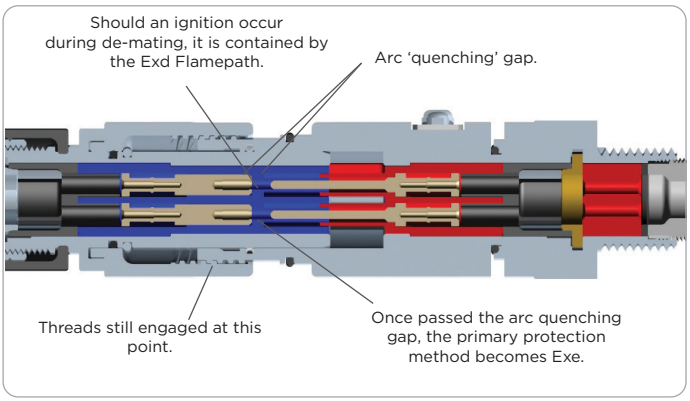
How It Works

InstrumEx Connectors are designed to provide ease of installation and speed of use whilst providing a flexible, safe and reliable method for mating and disconnection of circuits which are energised.



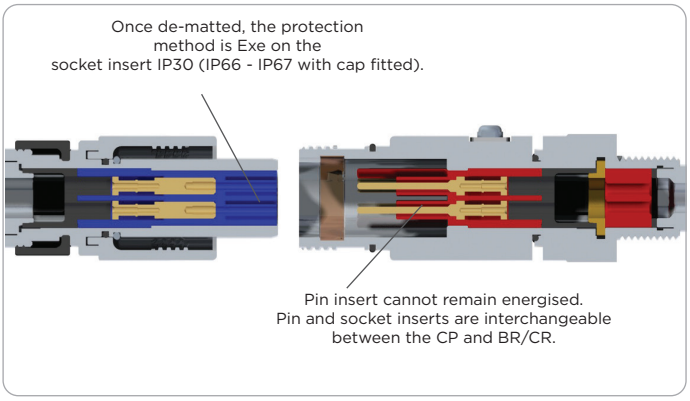
Stage 1

The two mating halves are easily engaged and disengaged by two full turns of the ACME custom engaging thread, during which time the pins and socket are protected by the Exd flameproof protection concept. The outer shell of the connector combined with the integral Hawke cable gland seal ensure that the internal connections are protected to the Exe increased safety protection concept.



Stage 2

During connector engagement and disengagement any sparking of the contacts is contained within an arc 'quenching section' which is housed within the Exd flamepath areas.



Stage 3

When the connector halves are disengaged, the socket section is protected to IP30 and must have the protective cap fitted immediately to restore the full Exe increased safety requirements and IP rating. The pins and socket inserts are interchangeable between all three connector components: i.e. Bulkhead receptacle, in-line receptacle and connector plug. **In all installations, the "live" side of the connector must always contain the socket insert.**

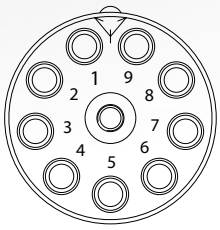
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InstrumEx Inserts

Front View
Socket Insert

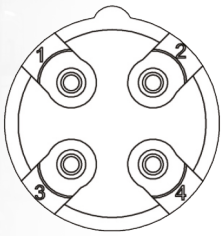


4 x 0.5 - 1mm²
4 x 1.5 - 2.5mm²

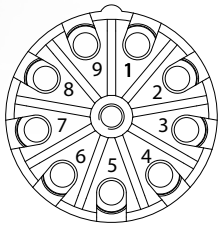


9 x 0.5 - 1mm²
9 x 1.5 - 2.5mm²

Back View
Socket Insert

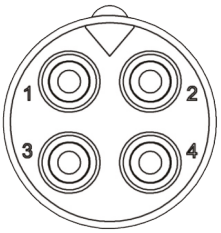


4 x 0.5 - 1mm²
4 x 1.5 - 2.5mm²

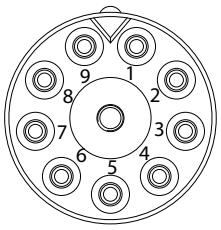


9 x 0.5 - 1mm²
9 x 1.5 - 2.5mm²

Front View
Pin Insert

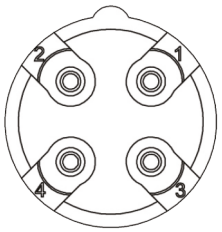


4 x 0.5 - 1mm²
4 x 1.5 - 2.5mm²

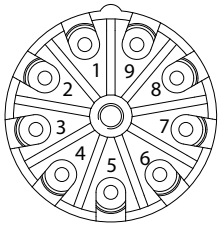


9 x 0.5 - 1mm²
9 x 1.5 - 2.5mm²

Back View
Pin Insert

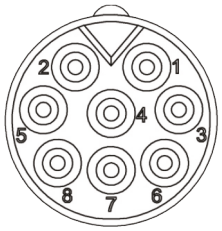


4 x 0.5 - 1mm²
4 x 1.5 - 2.5mm²



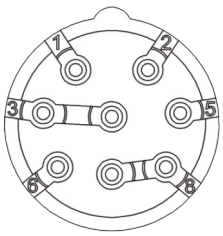
9 x 0.5 - 1mm²
9 x 1.5 - 2.5mm²

Front View
Socket Insert



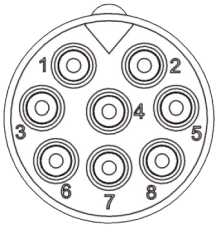
8 x 0.14 - 0.37mm²

Back View
Socket Insert



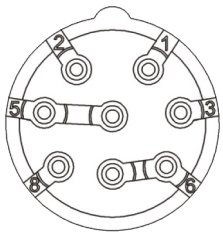
8 x 0.14 - 0.37mm²

Front View
Pin Insert

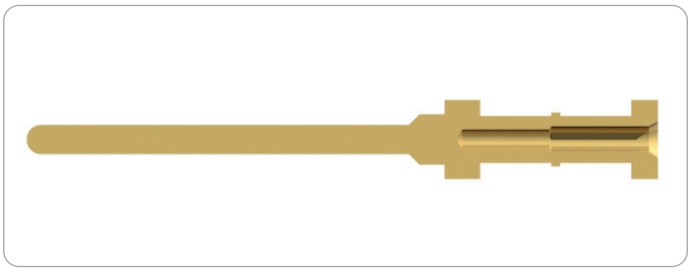


8 x 0.14 - 0.37mm²

Back View
Pin Insert



8 x 0.14 - 0.37mm²



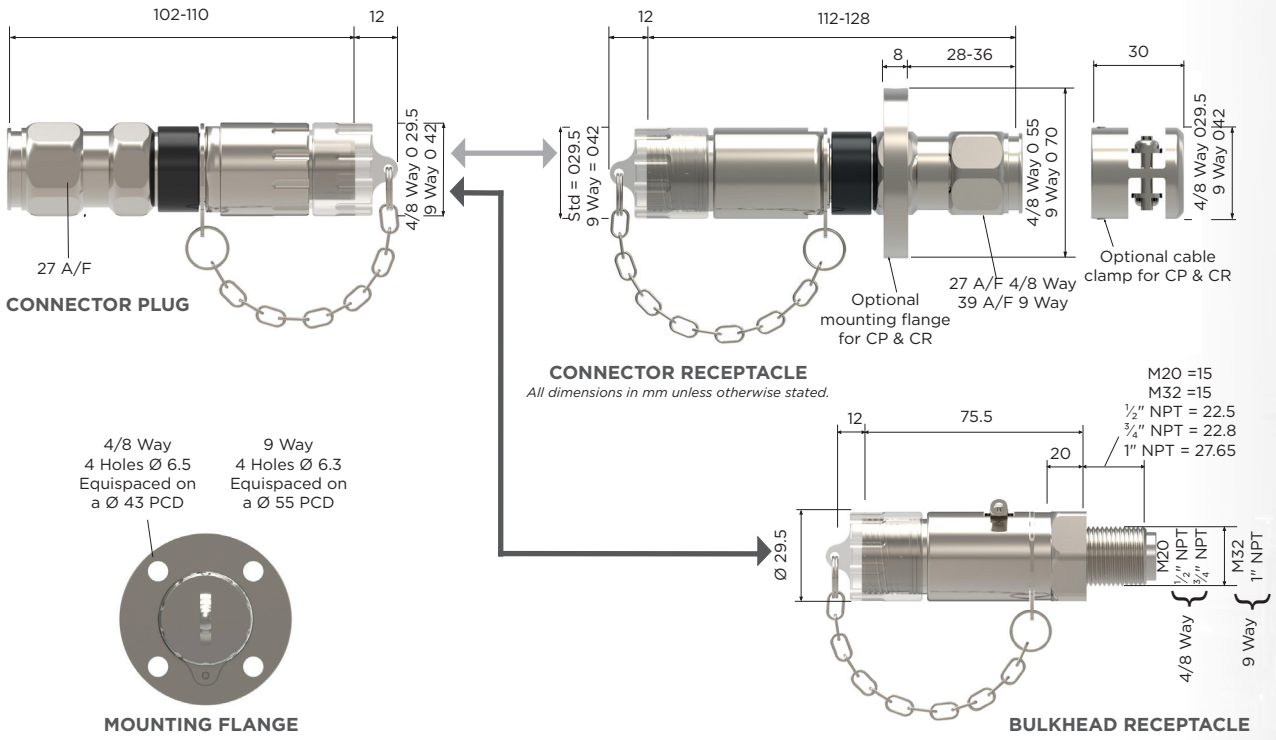
Dual Crimp

Two crimping locations on the 4 & 9 way contacts allow for only two contact sizes to cover a far greater range than conventional contacts. This allows termination of cores ranging between 0.5 and 2.5mm². Contacts must be crimped using the Hawke supplied crimping tool part No. HCT1.

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International Approvals

Dimensions & Technical Specifications



Electrical Ratings

Parameter	4-Way / 9-Way	8-Way
DC Voltage	60V	60V
DC Current to 60947-4-3 DC21	2.5 A	0.5 A
DC Current to 60947-4-1 DC1	2.5 A	0.5 A
DC Current to 60947-4-1 DC3	0.5 A	0.1 A
AC Voltage	250V RMS	60V RMS
AC Current to 60947-4-3 AC21	10 A	1 A
AC Current to 60947-4-1 AC1	10 A	1 A
AC Current to 60947-4-1 AC3	1 A	0.1 A
Frequency	50/60 Hz	50/60 Hz
Power Factor	0.9	0.9
Fuse Rating	10A without thermal protection 20A gL with thermal protection	0.5A without thermal protection 1A gL with thermal protection

Armour Clamping Ring Size Selection

Size Ref	Code	Orientation 1	Orientation 2
O	S - Standard Ring	0.8- 1.25	0.0 - 0.8
A	S - Standard Ring	0.8 - 1.25	0.0 - 0.8
B	S - Standard Ring	1.25 - 1.6	0.0 - 0.7
	R - Alternative Ring	0.9 - 1.25	0.5 - 0.9

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Connectors Order Codes

Order Code Builder

Instrumex Connector

Parameter	Select Code	Description	Example Code
Material	S	Stainless Steel	N
	N	Nickel Plated Brass	
Connector Style	CP	Connector Plug	BR1
	FP	Flange Mounted Connector Plug	
	CR	Connector Receptacle	
	FR	Flange Mounted Connector Receptacle	
	BR1	Bulkhead Receptacle (Fixed Position 1 Standard)	
	BR2	Bulkhead Receptacle (Fixed Position 2)	
	BR3	Bulkhead Receptacle (Fixed Position 3)	
	BR4	Bulkhead Receptacle (Fixed Position 4)	
	BR5	Bulkhead Receptacle (Fixed Position 5)	
Bulkhead Entry Thread	M	Metric Thread (4/8 way = M20; 9 way = M32)	M
	N	NPT Thread (4/8 way = 1/2"; 9 way = 1")	
	R	NPT Alternative Thread (4/8 way= 3/4"; 9 way = N/A)	
	X	N/A (for Connector Plug or Connector Receptacle)	
Cross Sectional Area *4 & 9 way Bulkhead Receptacles will always be pre-terminated with 1.5mm² conductors irrespective of cross sectional area.*	A	4 x 0.5 - 1mm²	B
	B	4 x 1.5 - 2.5mm²	
	C	8 x 0.14 - 0.37mm²	
	D	9 x 0.5 - 1mm²	
	E	9 x 1.5 - 2.5mm²	
Insert Type *In all installations the "live" side of the connector must always contain the socket insert.*	P	Pin	S
	S	Socket	
Cable Outer Sheath Diameter	S	5.5 - 16.0mm	X
	A	12.5 - 20.5mm (9 Way Only)	
	B	16.9 - 26.0mm (9 Way Only)	
	X	N/A (Bulkhead Receptacle)	
Bulkhead Receptacle Cable Length	0	0.5m (Standard)	0
	1	1m	
	2	2m	
	C	Customer Specified	
	X	N/A (for Connector Plug and Receptacle)	
Bulkhead Receptacle Pin Quantities *Bulkheads also include an additional earth lead. All RJ selections only available with Cross Sectional Area "C"*	4	4 (pins 1-4 terminated) Standard 4-way BR	4
	3	3 (pins 1,2 & 3 terminated)	
	8	8 (pins 1-8 terminated) Standard 8-way BR	
	9	9 (pins 1-9 terminated) Standard 9-way BR	
	C	Customer Specified	
	RJA	RJ45 Jack fitted, wired to T-568A	
	RJB	RJ45 Jack fitted, wired to T-568B	
	RJC	Customer Specified	
	X	N/A (for Connector Plug and Receptacle)	
Armour Clamp Size *(See Ring Size Selection Table)*	S	Standard Clamping Ring O,A,B	X
	R	Alternative Clamping Rings B only	
	X	N/A (Bulkhead Receptacle)	
	U	Unarmoured/Copper Braid Clamp *(in addition to Clamping Rings)*	
Certification Type	A	Group II : ATEX / IECEx / UKEx / InMetro / EAC / cCSAus	A

CSA Canada (CEC) Cable Types

Cable Types Permitted for Canada (CEC) Applications

Cable Types		Cable Classification			
		Class I Div 1	Class I Div 2	Class II Div 1	Class II Div 2
Armoured*	AC90HL, ACG90HL, AC90	✓	✓	✓	✓
	TECK 90 -HL,	✓		✓	✓
	RA-90-HL, RA90	✓		✓	✓
	TECK 90		✓		✓
	RC90		✓		✓
	ACIC		✓		✓
Unarmoured	TC, TC-ER		✓		✓
	RW90		✓		✓
	CIC		✓		✓

The above table denotes suitable cable selections dependent on hazadous area classification, in line with the requirements of the CEC.
For NEC applications the cable type is not limited by the InstrumEx Connector. The end user shall specify the correct cable type and gland for their applications.
**Standard product is for unarmoured CEC cable types only. For armoured, an Adaptive InstrumEx is required. Contact Hawke for more information.*

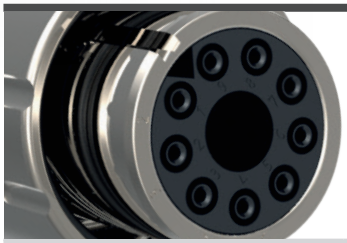
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Hawke Connectors Range

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.

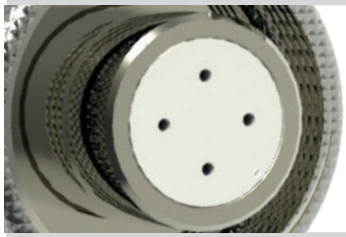
The range is ideal for use in dust and gas hazardous areas commonly found in Oil and Gas exploration and production and chemical process plants. Hawke connectors may also be used in explosive dust environments and hostile non-explosive environments.

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.



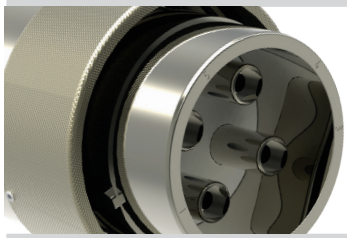
InstrumEx

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



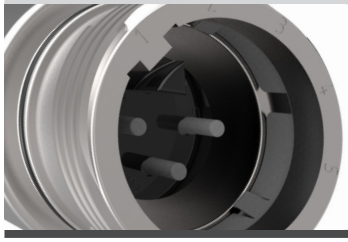
ControlEx

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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