

**HAWKE**  
International

# POWEREx CONNECTORS

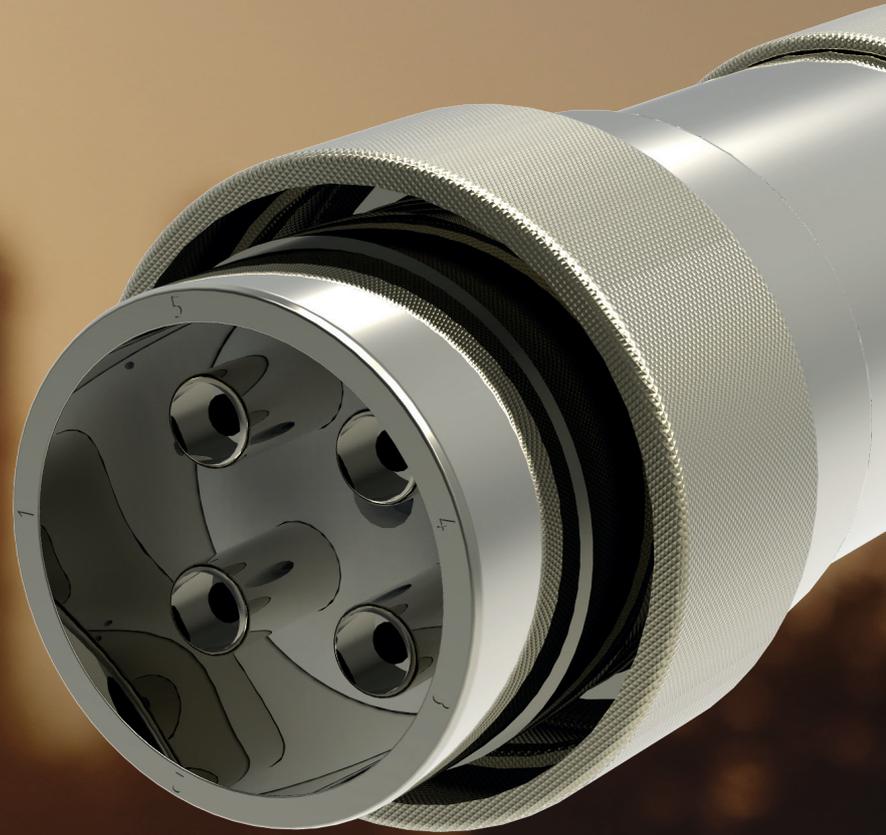
..... For Harsh & Hazardous Environments .....



[www.hubbell.com/hawke](http://www.hubbell.com/hawke)







## Introducing Hawke's **PowerEx** range of Connectors

The **PowerEx** range of connectors have been designed specifically for the extremely demanding requirements of harsh and hazardous environments.

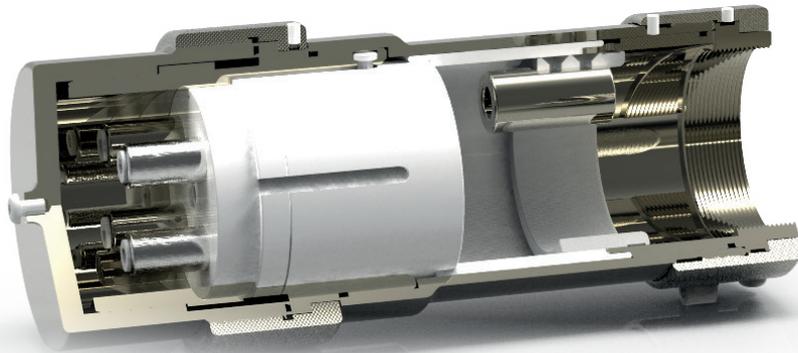
Inserts are available with 1 to 4 contacts with a conductor acceptance range of between 50mm<sup>2</sup> and 630mm<sup>2</sup> operating up to 780A and 750V as standard.

Other voltages available on special request.

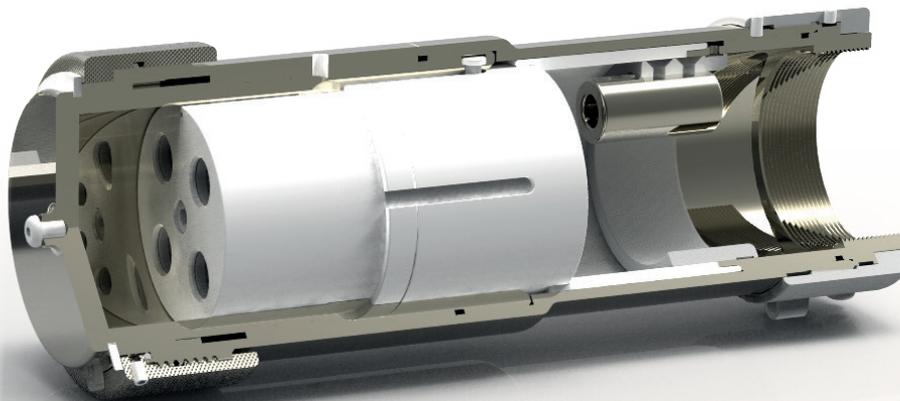


International Approvals

### Connector Plug - CP



### Connector Receptacle - CR



#### Technical Data

Material Options	Manufactured in 316L Stainless Steel
Ingress Protection	IP66 67
Deluge Protection	to DTS01
Operating Temperature	-40°C to +60°C (May be limited by T Rating)
Applications	Suitable for use in Zone 1, Zone 21, Zone 2 and Zone 22
<b>Approvals</b>	
Protection Class	Ex II 2GD Ex db IIC Gb T5/T6, Ex tb IIC Db T95/T80
ATEX Certificate No	Baseefa06ATEX0062X
IECEx Certificate No	IECEx BAS 06.0019X
UKEX Certificate No	BAS21UKEX0045X
Construction & Test Standards	IEC/EN 60079-0, 1, 31
Marine Approvals	ABS: 17-LD1653736-PDA BV: 43523/B0 DNV: TAE00003RX
Additional Certifications	EAC: No EA3C RU C-GB.HA91.B.00261/21 EQM: 20-11-27224/Q20-11-000979/NB0007 Inmetro: IEx 14.0218X PESO: P411511 SONCAP: LCOGB049552-0500
<b>NEC/CEC</b>	
NEC Protection Class	Class I, Zone I, AEx d IIC Gb T5/T6, AEx tb IIIC Db T95/T80
CEC Protection Class	Ex db IIC Gb T5/T6; Ex tb IIIC Db T95/T80
c CSA us Certificate	2633583
Construction & Test Standards	UL1977, CSA/UL 60079-0, 1, 31

# POWEREx



**1 Running Coupler -**

Allows the connector to be installed onto a pre-assembled cable gland.



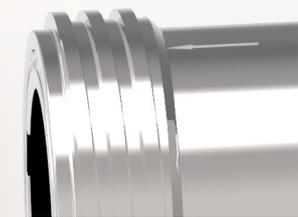
**2 Easily Fieldwireable -**

Insert assembled outside connector shell to assist wiring of large and rigid conductors.



**3 Keying Position -**

The unique visual 5 position insert keying system along with the integral machined keyway prevents contact damage and ensures safe use by eliminating the possibility of misconnection of adjacent circuits.



**4 Acme Thread at Mating Interface -**

Unique ACME thread offers a smooth and quick fully mating action.



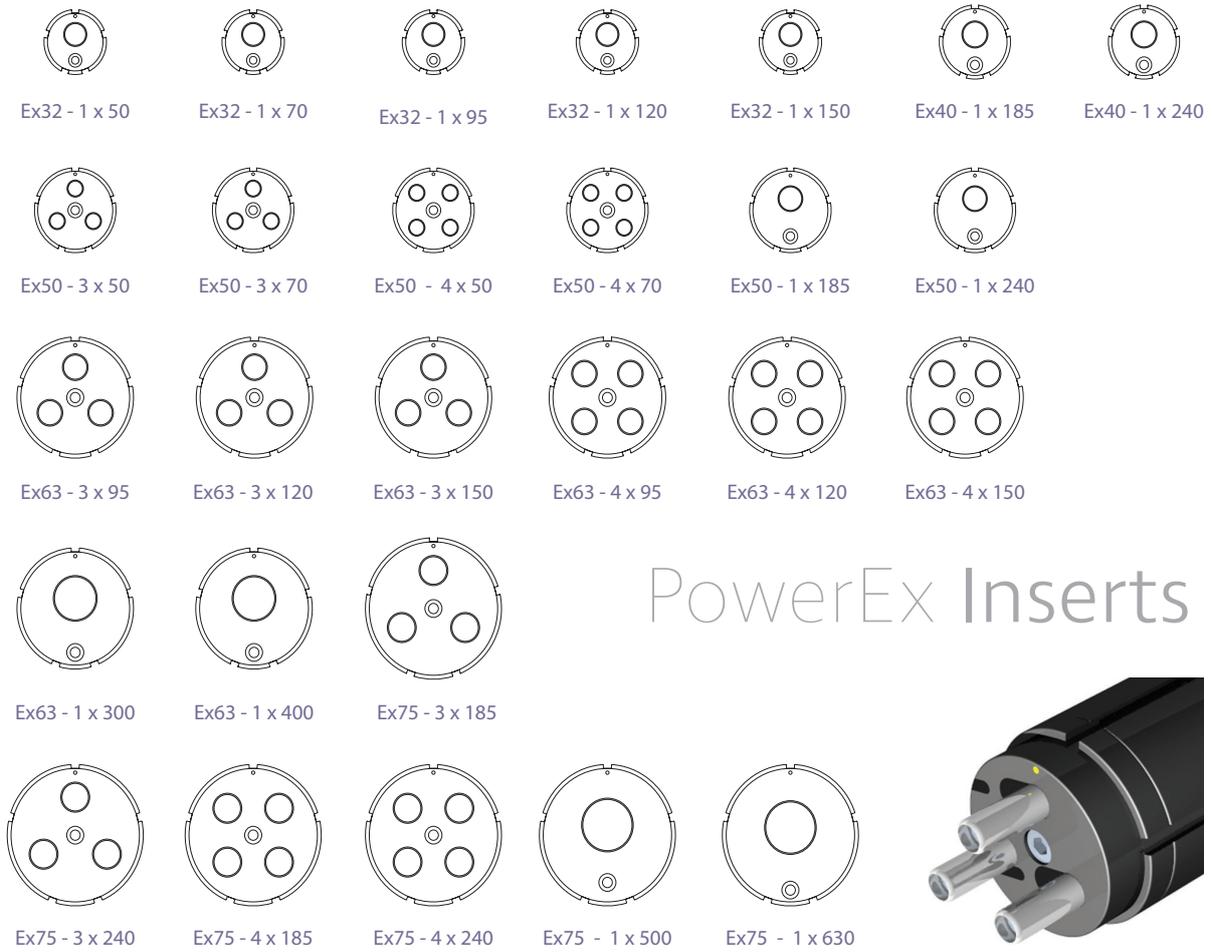
**5 Internal Earth -**

Internal earth fitted as standard. Size to suit cable earthing facility.



**6 Multilam Technology -**

Tried and tested multiple high contact force, low resistance multilams used in all contacts.



PowerEx Configurations

Shell Size 32	Shell Size 40	Shell Size 50	Shell Size 63	Shell Size 75
1 x 50mm <sup>2</sup> + Earth	1 x 185mm <sup>2</sup> + Earth	3 x 50mm <sup>2</sup> + Earth	3 x 95mm <sup>2</sup> + Earth	3 x 185mm <sup>2</sup> + Earth
1 x 70mm <sup>2</sup> + Earth	1 x 240mm <sup>2</sup> + Earth	3 x 70mm <sup>2</sup> + Earth	3 x 120mm <sup>2</sup> + Earth	3 x 240mm <sup>2</sup> + Earth
1 x 95mm <sup>2</sup> + Earth		4 x 50mm <sup>2</sup> + Earth	3 x 150mm <sup>2</sup> + Earth	4 x 185mm <sup>2</sup> + Earth
1 x 120mm <sup>2</sup> + Earth		4 x 70mm <sup>2</sup> + Earth	4 x 95mm <sup>2</sup> + Earth	4 x 240mm <sup>2</sup> + Earth
1 x 150mm <sup>2</sup> + Earth		1 x 185mm <sup>2</sup> + Earth	4 x 120mm <sup>2</sup> + Earth	1 x 500mm <sup>2</sup> + Earth
		1 x 240mm <sup>2</sup> + Earth	4 x 150mm <sup>2</sup> + Earth	1 x 630mm <sup>2</sup> + Earth
			1 x 300mm <sup>2</sup> + Earth	
			1 x 400mm <sup>2</sup> + Earth	

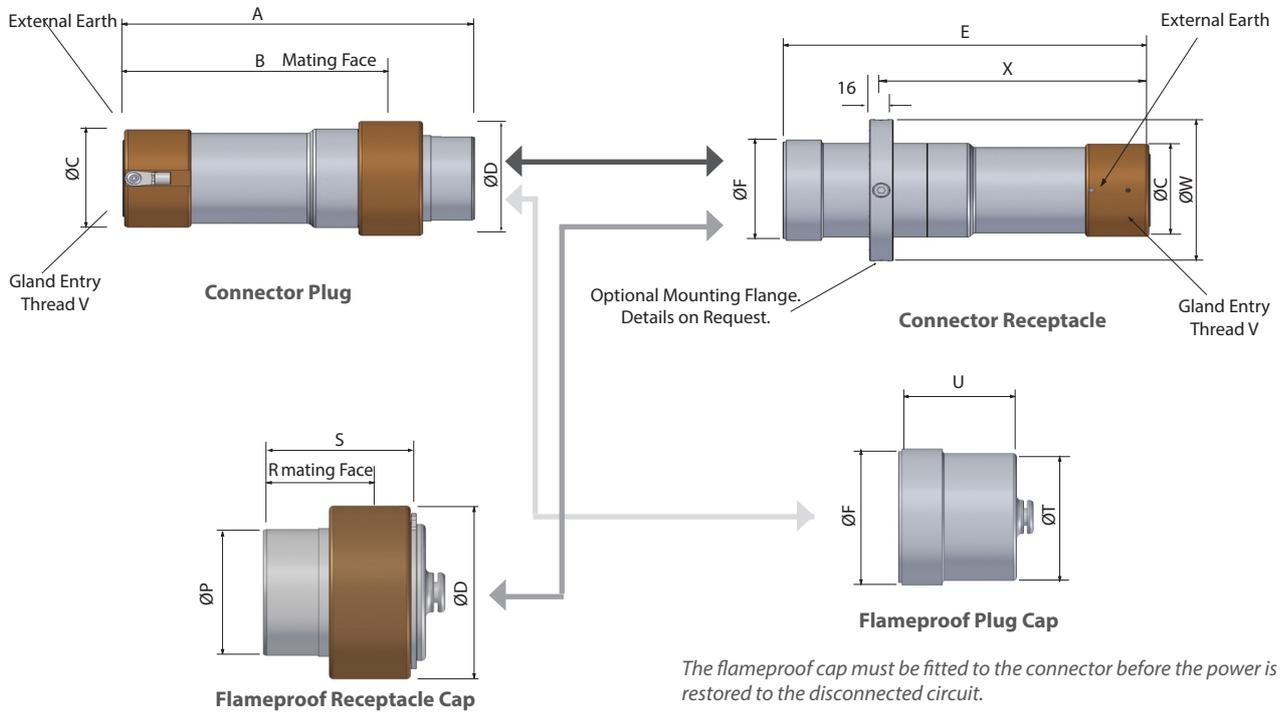
Order Codes				
PowerEx Connector				
	SELECT CODE	DESCRIPTION	Example Code	
PROTECTION	Exd	Flameproof	Exd	
SHELL SIZE	32	32	50	
	40	40		
	50	50		
	63	63		
	75	75		
MATERIAL	S	316L Stainless Steel (as standard)	S	
	N	Nickel Plated Brass (mandatory for single core configuration)		
CONNECTOR STYLE	CP	Connector Plug	CR	
	CR	Connector Receptacle		
INTERNAL EARTH SIZE Should be at least 50% of phase conductor size	A	50mm <sup>2</sup>	A	
	B	70mm <sup>2</sup>		
	C	95mm <sup>2</sup>		
	D	120mm <sup>2</sup>		
	E	150mm <sup>2</sup>		
	F	185mm <sup>2</sup>		
	G	240mm <sup>2</sup>		
	X	No internal earth - May only be selected if single core cable is used		
NUMBER OF CONTACTS	See Insert Selection Chart		4	
CONTACT TYPE		CONTACT TYPE	MAXIMUM CONDUCTOR ACCEPTANCE DIAMETER (mm)	50
	50	50mm <sup>2</sup>	9.5	
	70	70mm <sup>2</sup>	11.5	
	95	95mm <sup>2</sup>	13	
	120	120mm <sup>2</sup>	14.5	
	150	150mm <sup>2</sup>	16.5	
	185	185mm <sup>2</sup>	18.5	
	240	240mm <sup>2</sup>	20.5	
	300	300mm <sup>2</sup>	25	
	400	400mm <sup>2</sup>	29	
	500	500mm <sup>2</sup>	32	
630	630mm <sup>2</sup>	38		
INSERT TYPE	P	Pin	S	
	S	Socket		
ACCESSORIES	FL	Mounting Flange *	FL-FRC	
	FPC	Flameproof Plug Cap		
	FRC	Flameproof Receptacle Cap		
	PPC	Environmental Plug Cap		
	PRC	Environmental Receptacle Cap		
CABLE GLAND REDUCED ENTRY*	R25	M25 Reduced Entry (Ex32 and Ex40 Only)	R32	
	R32	M32 Reduced Entry (Ex40 and Ex50 Only)		
	R40	M40 Reduced Entry (Ex50 and Ex63 Only)		
	R50	M50 Reduced Entry (Ex63 and Ex75 Only)		
	R63	M63 Reduced Entry (Ex75 Only)		
CERTIFICATION	A	ATEX/IECEX/UKEX/EAC/INMETRO	A	
	N	ATEX/IECEX/UKEX/EAC/INMETRO/cCSAus Voltage rating reduced to 600V for Zn1D2		
AMBIENT RATING AND TEMPERATURE CLASS	1	T5 + 40°C Standard	1	
	2	T5 + 50°C		
	3	T5 + 60°C		
	4	T5 + 40°C		
	5	T6 50°C		
	6	T6 + 60°C		

\*Optional - May be omitted if not required



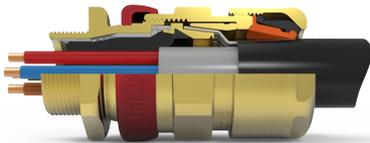
International Approvals

## Dimensions & Technical Specifications



The flameproof cap must be fitted to the connector before the power is restored to the disconnected circuit.

The receptacle cap and plug cap are available in acetal and provide an IP rating of IP66/67. They may only be used when the socket or plug is not re-energised following disconnection



### ICG 653/UNIV Cable Gland

For connector plugs and connector receptacles cable glands are required to terminate incoming cables. These can be selected from our cable gland section or our website.

For Exd application Hawke recommends the ICG 653/UNIV barrier cable gland.

### PowerEx Dimensions (mm)

Dimension	Ex32P	Ex40P	Ex50P	Ex63P	Ex75P
A	228	228	228	228	238
B	168	168	168	168	178
Ø C	60	66	76	89	101
Ø D	73	79	89	102	114
E	251	251	251	251	261
Ø F	67	73	82.5	95	108
Ø P	48	55	65	78	90
R	60	60	60	60	60
S	75.5	75.5	75.5	75.5	76
Ø T	61	68	77	90	102
U	68.5	68.5	68.5	68.5	68.5
Thread V (1.5mm Pitch)	M32*	M40*	M50*	M63*	M75*
Ø W	100	106	116	129	141
X	184	184	184	184	194

\*Reduced Entry Threads available. Refer to order code information table.

## Electrical Specifications

**Table 1: Maximum Allowable Dissipated Wattage**

Connector Size	Upper ambient Temperature of +40°		Upper ambient Temperature of +50°		Upper ambient Temperature of +60°	
	Temperature Class		Temperature Class		Temperature Class	
	T6	T5	T6	T5	T6	T5
Ex32P	20.5W	27.5W	15.75W	26W	7.5W	15.75W
Ex40P	22.5W	30.5W	17.5W	28W	8.7W	17.5W
Ex50P	25.8W	35.3W	20W	32.25W	10W	20W
Ex63P	30.2W	41.5W	23.5W	37.7W	11.7W	23.5W
Ex75P	36.3W	49.5W	28.25W	45.25	14W	28.25W

**Table 2: Combined Cable and Contact Resistance (Ohms)**

Contact Size	Combined Cable and Contact Resistance (Ohms)	Contact Current Rating
50mm <sup>2</sup>	0.000514Ω	190 amps
70mm <sup>2</sup>	0.000387Ω	240 amps
95mm <sup>2</sup>	0.000283Ω	290 amps
120mm <sup>2</sup>	0.000239Ω	340 amps
150mm <sup>2</sup>	0.000202Ω	385 amps
185mm <sup>2</sup>	0.000170Ω	440 amps
240mm <sup>2</sup>	0.000144Ω	520 amps
300mm <sup>2</sup>	0.000082Ω	590 amps
400mm <sup>2</sup>	0.000067Ω	670 amps
500mm <sup>2</sup>	0.000054Ω	720 amps
630mm <sup>2</sup>	0.000045Ω	780 amps

### Dissipated wattage calculation

#### Equation Definitions

- W = Dissipated wattage factor of the connector
- N = The number of conductors to be terminated/number of contacts required.  
(Note: A contact comprises of a pin and socket).
- I = The current requirement per contact.  
(Note: This must be equal to or less than the maximum current rating of the contact, as shown in table 2).
- R = The combined cable and contact resistance (see table 2)

Values pertinent to these definitions must then be input into the following equation to calculate the dissipated wattage (w) of your chosen arrangement:

$$W = N \times I^2 \times R$$

(Note: The results must be lower than the maximum figure shown in table 1 for the appropriate temperature class and ambient temperature).

e.g. T6 40°C ambient application with 4 x 95mm<sup>2</sup> conductors, running at 160 amps.

N = 4 contacts    I = 160 amps    R = 0.000283Ω    (95mm<sup>2</sup> soldered combined cable and contact resistance)

**Therefore W = 4 x 25600 x 0.000283Ω = 28.9 watts.**

Therefore, an Ex63P Connector should be specified for this application as the shell size can accommodate the required 4 x 95mm<sup>2</sup> pin/socket inserts (SEE PAGE 68 - Insert Selection Table) and the resultant dissipated wattage (28.9 watts) is below the maximum permitted 30.2 watts (See Table 1).

This equation can also be transposed to facilitate the calculation of the maximum number of conductors permitted in your selected connector ① and the maximum allowable current within the upper ambient temperature of our location ②.

$$\textcircled{1} \quad N = \frac{W}{R \times I^2} \qquad \textcircled{2} \quad I = \sqrt{\frac{W}{N \times R}}$$

The result of equation ② must not exceed the maximum current rating of contacts (see Table 2).

Note: Unless otherwise requested, connectors will be marked as T5 with an upper ambient temperature of +40°C.

# Hawke Connectors Range

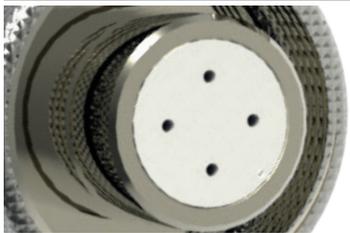
Utilising the most advanced technology, Hawke connectors are designed for quick and easy termination. Boasting market-leading features like the complete elimination of cross-mating, high reliability contacts and much more, the Hawke Connector range guarantees innovation, safety and reliability. The range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



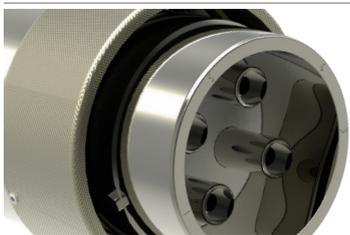
## Instrum

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



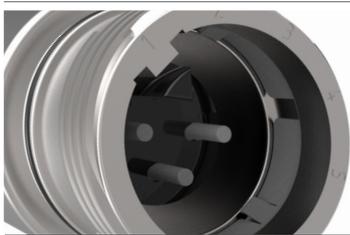
## Control

The ControlEx range 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.



## Power

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.



## Fibre

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



# Contact Details

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