



Panel Thermal Management

Heating Elements

- Thermostats ▪ Hydrostats
- Cooling fans ▪ Thermocoolers



PTC Panel Heating Elements

The principle of PTC Heating

ITC's line of innovative convection heaters and contact heating elements by DBK®, is based on PTC (Positive Temperature Coefficient) technology.



Unlike traditional heating elements that use a resistance wire such as Ni-Chrome to generate heat, PTC heating elements are barium-titanate based ceramic stones, with unique properties as semiconductors that are precisely determined during their design.

If a voltage is applied across a PTC, current will flow and begin to heat the element. Initially, the resistance drops, allowing more current to flow, not unlike the inrush of an electric motor, and thus begins to heat more quickly. Once the heater temperature starts to rise, the ceramic element reaches a state of equilibrium, and its resistance suddenly increased several times: the current flow diminishes to almost zero, making the heater self-limiting in many cases. If the ambient temperature starts to decrease, the heater's resistance decreases, drawing more current and countering the cooling tendency. The PTC elements can be manufactured to different temperatures at which point the resistance change takes place; this is the Curie

point of the PTC heater.

Furthermore, if the operating voltage increases, the PTC initially consumes more power, but as its temperature increases more rapidly, the current stabilizes more quickly at a lower level. For this reason, the same heater can be used at either 120vac, or 240vac, and provide essentially the same output.

A PTC heater is an effective low-cost solution, since it provides a highly efficient source of heat in a very small package and this can result in using a smaller enclosure than previously used. The heater also provides lower operating costs because the wattage constantly varies from minimum to maximum based on the temperature required. Furthermore, this feature of self-regulation will in fact offer the customer a cost savings in usage, so over time, the heaters pay for themselves. In some cases, because PTC heaters feature self-limiting temperature characteristics, they can be operated without the traditional need of thermostatic control.

There are instances where the use of a supplementary thermostat is useful, and the product line presented here includes adjustable din rail mounted units, and preset unites to control the heater near the freezing point, or limit its maximum temperature when used as an anti-condensation heater.

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PTC Convection Heating Elements: Nimbus / Nimbus NG

Nimbus PTC convection heaters are very easy to install, with a clip that snaps onto standard din rail, and terminals or leads are already attached to the heaters. The available range is very wide, from 20 to 240 watts.

Features and specifications:

- **Construction:** Anodized aluminum extrusion
- **Mounting:** DIN Rail mount with included clip
- Minimal clearance required to other panel components
- **Connection:** Nimbus: Pre-wired, with integral strain relief (lead 500mm, 2x18AWG)
Nimbus NG: Terminal block; finger guard available
- **Voltage range:** 100 - 240 AC/DC; 12/24 AC/DC upon request
- **Ingress protection:** IP20
- **Approvals:** CSA (# 215825); cURus (# E466674)

NIMBUS PTC Convection Heating Elements (Order by Part No.)

Part No.	Model	Power @ 10°C (W)	Approvals	Fuse 110V/240V (time delay)	Ext. profile temp approx. °C	WxDxH (mm)
115.331	C75-20	20		2A/4A	90	82x15x75
115.332	C75-30	30		2A/4A	120	82x15x75
115.333	C75-40	40		2A/4A	150	82x15x75
115.337	C105-100	100		6.3A	205	82x15x105
115.341	D65-30	30		2A/4A	130	71x24x65
115.342	D65-50	50		4A/6.3A	205	71x24x65
115.343	D95-40	40		2A/4A	135	71x24x95
115.344	D95-60	60		4A/6.3A	205	71x24x95
115.351	D125-50	50		4A/6.3A	160	71x24x125
115.352	D125-75	75		4A/6.3A	190	71x24x125
115.353	D175-80	80		4A/6.3A	190	71x24x175
115.354	D175-100	100		6.3A	200	71x24x175
115.371	NG100	100		4A/6.0A	139	211x70x23.4
115.372	NG125	125		4A/6.0A	150	211x70x23.4
115.373	NG150	150		4A/8.0A	171	211x70x23.4
115.374	NG175	175		6.0A/10A	200	211x70x23.4
115.375	NG240	240		6.0A/10.0A	160	211x70x47

Information subject to change without notice - External temperature is the approximate temperature measured in contact with the aluminum profile. Power requirement calculation templates, heating power graphs, temperature/power diagrams can be supplied by ITC.

NIMBUS NG Finger Guard (Order by Part No.)

Part No.	Description	Fits NG Heaters
115.379	Finger guard	115.371, 115.372, 115.373, 115.274

Information subject to change without notice



PTC Forced Air Heating Elements: Cirrus

Cirrus heaters contain a PTC ceramic stone encased in an aluminum casing, with a fan installed at one end, allowing for optimum efficiency and safety. The fan is wired separately from the heater, maintaining air circulation even when the PTC element is not powered.

There are 4 basic types, each identified by the container size:






















- Cirrus 25 (27x27mm)
- Cirrus 40 (42x42mm)
- Cirrus 60 (70x71mm)
- Cirrus 80 (82x110mm)



Features and specifications:

- DIN Rail mount
- Very small footprint and lightweight
- **Proven safety:** based on pre-set temperature limitation.
- Independent fan circuit
- High power to size ratio
- Smartcon® cable allows flexibility of power supply
- **Ingress protection:** IP20
- **Approvals:** CSA (# 215825); cURus (# E466674, E216910)

Cirrus PTC Forced Air Heating Elements (Order by Part No.)

Part No.	Model	Power @ 10°C (W)	Approvals	Operating Voltage Heater	Operating Voltage Fan	WxDxH (mm)	Fuse (time-delay)
115.411	25/1-12	10 W		12V DC	12V DC	27x27x50	4A
115.412	25/1-24	10 W		24V AC/DC	24V AC/DC	27x27x50	4A
115.413	25/2-30-24	30 W		24V AC/DC	24V AC/DC	27x27x72	4A
115.414	25/2-30-100	30 W		100-240V AC/DC	24V AC/DC	27x27x72	2A
115.415	25/2-40-24	40 W		24V AC/DC	24V AC/DC	27x27x72	6A
115.416	25/2-40-100	40 W		100-240V AC/DC	24V AC/DC	27x27x72	2A
115.421	40/1-45-100	45 W		100-240V AC/DC	24V AC/DC	42x42x72	2A
115.422	40/1-60-24	60 W		24V AC/DC	24V AC/DC	42x42x72	6A
115.423	40/1-60-100	60 W		100-240V AC/DC	24V AC/DC	42x42x72	2A
115.424	40/1-80-100	80 W		100-240V AC/DC	24V AC/DC	42x42x72	2A
115.425	40/1-100-24	100 W		24V AC/DC	24V AC/DC	42x42x72	6A
115.426	40/1-100-100	100 W		100-240V AC/DC	24V AC/DC	42x42x72	4A
115.427	40/1-125-100	125 W		100-240V AC/DC	24V AC/DC	42x42x72	4A
115.428	40/2-150-100	150 W		100-240V AC/DC	24V AC/DC	42x42x107	4A
115.429	40/2-200-100	200 W		100-240V AC/DC	24V AC/DC	42x42x107	4A
115.431	60-200-120	200/300/400W		120V AC	120V AC	71x70x97	6A
115.432	60-200-240	200/300/400W		240V AC	240V AC	71x70x97	6A
115.441	80-300-120	300/600 W		120V AC	120V AC	82x110x150	6A
115.442	80-450-120	450/800 W		120V AC	120V AC	82x110x150	6A
115.443	80-300-240	300/600 W		240V AC	240V AC	82x110x150	6A
115.444	80-450-240	450/800 W		240V AC	240V AC	82x110x150	6A
115.591	Finger guard for Cirrus 25 heating element						
115.592	Finger guard for Cirrus 40 heating element						
115.593	Finger guard for Cirrus 80 heating element						
115.595	Filter assembly for Cirrus 40 heating element						
115.596	Filter assembly for Cirrus 80 heating element						

Information subject to change without notice. NOTE: Compact DIN-rail mounted transformers available to power fan circuit if required. Power requirement calculation can be supplied by ITC upon request.

TRANSFORMERS - for transformers for models 25... and 40... see page 11

PTC Conduction Heating Elements: HP





















HP PTC convection heaters by DBK are designed to be mounted in confined spaces, small enclosures, and applied directly on the surface of a metal plate (such as the panel backplate) which acts as a supplementary heat sink for the heater.

Typical applications include telecommunication panels, CCTV housings, laboratory equipment, outdoor panels, vending machines. As with the other types of DBK heaters, because of the auto-regulating features of PTC heaters, in some cases thermostats may not be needed for control.

Features and specifications:

- **Connection:** standard 100mm leads; HP13: 500mm leads
- **Operating voltage:** 12-24V (AC/DC), and 100-240V (AC/DC).
- **Approvals:** CSA (# 091615); cURus (# E120970, E216910)

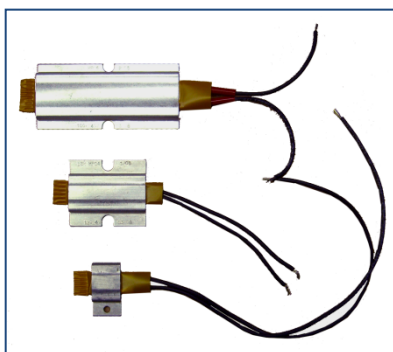
HP PTC Conduction Heating Elements (Order by Part No.)

Part No.	Model	DBK Code	Power @ 10°C (W)	Approvals	Operating Voltage	LxW (mm)
115.222	HP04-1/04-24	FG800086	10 W		12-24V AC/DC	40x35
115.220	HP04-1/05-240	FG14746.2	10 W		100-240V AC/DC	40x35
115.239	HP05-1/04-24	FG14756.1	20 W		12-24V AC/DC	40x35
115.240	HP05-1/10-24	FG800015	50 W		12-24V AC/DC	40x35
115.241	HP05-1/14-24	FG800071	60 W		12-24V AC/DC	40x35
115.275	HP05-1/09-240	FG14754.6	30 W		100-240V AC/DC	40x35
115.273	HP05-1/15-240	FG15113.5	58 W		100-240V AC/DC	40x35
115.274	HP05-1/20-240	FG14397.4	70 W		100-240V AC/DC	40x35
115.244	HP06-2/04-24	FG14762.9	18 W		12-24V AC/DC	75x35
115.245	HP06-2/10-24	FG800014	80 W		12-24V AC/DC	75x35
115.246	HP06-2/14-24	FG800055	150 W		12-24V AC/DC	75x35
115.249	HP06-2/05-240	FG13550.0	20 W		100-240V AC/DC	75x35
115.250	HP06-2/07-240	FG13560.0	50 W		100-240V AC/DC	75x35
115.255	HP06-2/09-240	FG14760.3	70 W		100-240V AC/DC	75x35
115.260	HP06-2/11-240	FG800016	110 W		100-240V AC/DC	75x35
115.265	HP06-2/15-240	FG14973.2	165 W		100-240V AC/DC	75x35
115.266	HP06-2/20-240	FG800006	200 W		100-240V AC/DC	75x35
115.280	HP13-4/22-250-100-240V		250 W		100-240V AC/DC	250x70
115.281	HP13-4/22-340-100-240V		280 W		100-240V AC/DC	340x70
115.282	HP13-4/22-400-100-240V		300 W		100-240V AC/DC	400x70

Information subject to change without notice

* Rated Temperature is the Curie point (CP) of PTC, actual surface temperature may vary, typically approx. 20°C (36°F) above CP

Other models available upon request.



Thermostats and Hydrostats: FG

Being self-regulating, the operation of a PTC heater can sometimes dispense with the use of a thermostat, however to benefit maximum economy of operation, ITC offers several models of thermostats for various of applications.

Features and specifications:

- Adjustable DIN-rail mounted models with screw terminals connection 22-14awg
- Preset point in-line models (tubular) models with lead wires
- High switching capacities:
 - Contact rating for in-line models: 3A, 250V, 6A, 120V (AC); 8A, 12V or 4A, 24V (DC)
 - Contact rating for adjustable models: 16A, 250V, 15A, 120V (AC); 5A, 12V or 2.5A, 24V (DC)
- **IP rating:** IP20 or IP30 depending on the model
- **Approvals:** CSA (# 215825); cURus (# E120970, E232412)

Thermostats (Order by Part No.)

Part No.	Model	Type of operation	Contact	Temperature Range	Approvals			Mounting
					UL	CSA	SAF	
115.510	FGT100	Adjustable - Heating	1 NC	-10°C / +50°C	•	•	•	DIN Rail
115.511	FGT101	Adjustable - Heating	1 NC	14°F / 122°F	•	•	•	DIN Rail
115.512	FGT200	Adjustable - Cooling	1 NO	0°C / +60°C	•	•	•	DIN Rail
115.513	FGCH-101	Changeover Heat/Cool	1 NO + 1 NC	0°C / +60°C	•	•	•	DIN Rail
115.514	FGT201	Adjustable - Cooling	1 NO	32°F/140°F	•	•	•	DIN Rail
115.528	FGT328	Preset/Heating	1NC (AC)	40°C	•	•	•	In-line
115.515	FGDT2100	Dual - Heat/Cool	1 NO + 1 NC	-10°C / +60°C	•	•	•	DIN Rail
115.516	FGDT2200	Dual - Heat/Heat	2 NC	-10°C / +50°C	•	•	•	DIN Rail
115.517	FGDT2300	Dual - Cool/Cool	2 NO	-10°C / +60°C	•	•	•	DIN Rail
115.527	FGT307	Preset - Heating 100/250V	1NC (AC) snap	32°C	•	•	•	In-line
115.523	FGT303	Preset - Heating 12/24V	1NC (DC) slow	20°C	•	•	•	In-line
115.521	FGT321	Preset - Heating	1NC (AC)	10°C	•	•	•	In-line
115.525	FGT305	Preset - Heating 100/250V	1NC (AC) slow	5°C	•	•	•	In-line
115.526	FGT306	Preset - Heating 100/250V	1NC (AC) snap	20°C	•	•	•	In-line
115.522	FGT302	Preset - Heating 12/24V	1NC (DC) slow	5°C	•	•	•	In-line

Information subject to change without notice



DBK®'s DIN-Rail mounted Hygrostat is used for humidity control in electrical and control panels, outdoor equipment, vending machines, etc. It features one changeover contact (NC contact generally used for humidifying, NO contact for de-humidifying) rated 5A/0.2A, minimum 100mA at 24VAC, voltage 24/250VAC.

- **Humidity range:** 40% to 90% rH, adjustable in steps of 5%; **Temperature range:** 0 to +60°C
- **Ingress protection:** IP20; **Approvals:** VDE, cURus

Hygrostat (Order by Part No.)

Part No.	Description	Voltage	Weight	Dimensions (mm)
115.530	DIN-rail mounted hygrostat 40-90% rH - type FGHS100	2-250VAC	50g.	64 (H) x37 (W)x 46 (L)

Information subject to change without notice

Cooling Fans for Panels and Cabinets: GHV

Designed for use in cabinets, panels and enclosures where heat dissipation is necessary using a highly efficient, low noise ventilation package.



Features and specifications:

- MTBF of 40,000 hours; Shielded and self-lubricating ball bearing fans
- Snap in place mounting, no hardware required
- Permanent sealing gasket in polyurethane foam
- **Filter media:** Filter class G3 according to EN 779, G4 on request, UL900 Class 2 approved and self-extinguishing in F1 Class according to DIN 53438
- Hinged cover for easy filter replacement
- **Ingress Protection:** IP54; Nema Type 12
 - IP55 or Nema Type 12 on request;
- Special Voltages (48 VDC, 400V) on request for some versions
- **Standard colour:** Light Gray (RAL 7035)
- **Operating temperature:** -10 to 60° C (GHV30A... -25 to 50° C)
- **Approvals:** cCSAus and cURus

Cooling fans - complete Fan/Filter/Grill Assembly (Order by Part No.)

Part No	Model	Current	Cert.	CFM [^]	Dimensions (inches)	Dimensions (mm) HxWxD
115.181115	GHV1000211	24 VDC		59	4.7x4.7x4	119x119x101
115.181113	GHV1000203	115 VAC		21	4.7x4.7x4	119x119x101
115.181112	GHV1000220	230 VAC		21	4.7x4.7x4	119x119x101
115.181120	GHV1500211	24 VDC		40	6x6x3.5	152x152x89
115.181118	GHV1500203	115 VAC		40	6x6x3.5	152x152x89
115.181117	GHV1500220	230 VAC		40	6x6x3.5	152x152x89
115.181125	GHV2000211	24 VDC		64	8x8x4.8	204x204x121.5
115.181123	GHV2000203	115 VAC		64	8x8x4.8	204x204x121.5
115.181122	GHV2000220	230 VAC		64	8x8x4.8	204x204x121.5
115.181130	GHV2500211	24 VDC		112	10x10x5.3	250x250x134.4
115.181128	GHV2500203	115 VAC		112	10x10x5.3	250x250x134.4
115.181127	GHV2500220	230 VAC		112	10x10x5.3	250x250x134.4
115.181135	GHV3000203	115 VAC		295	12.5x12.5x6	318x318x153.5
115.181134	GHV3000220	230 VAC		295	12.5x12.5x6	318x318x153.5

[^] Max air flow values when used with standard return filters.
Information subject to change without notice

Replacement Grills and Filters (Order by Part No.)

Part No.	Model	Description	Qty
115.181146	GHF10	Grill and filter for GHV10 models	1
115.181147	GHF15	Grill and filter for GHV15 models	1
115.181148	GHF20	Grill and filter for GHV20 models	1
115.181149	GHF25	Grill and filter for GHV25 models	1
115.181150	GHV30	Grill and filter for GHV30 models	1

Information subject to change without notice



Replacement Filters (Order by Part No.)

Part No.	Model	Description	Qty
115.186010	AVAFAGS10	Filters for GHV10 models	10
115.186015	AVAFAGS15	Filters for GHV15 models	10
115.186020	AVAFAGS20	Filters for GHV20 models	10
115.186025	AVAFAGS25	Filters for GHV25 models	10
115.186030	AVAFAGS30	Filters for GHV30 models	10

Information subject to change without notice



NEMA 12 Rainhoods (Order by Part No.)

Part No.	Fits Model	Description	Qty
115.185347	GHV10/15	ANSI61	1
115.185348	GHV10/15	RAL7035	1
115.185349	GHV10/15	304 stainless steel	1
115.185350	GHV20/25	ANSI61	1
115.185351	GHV20/25	RAL7035	1
115.185352	GHV20/25	304 stainless steel	1
115.185353	GHV30	ANSI61	1
115.185354	GHV30	RAL7035	1
115.185355	GHV30	304 stainless steel	1

Information subject to change without notice



Cooling Fans for generic applications

ITC also offers different types of fans (without filter) for multiple applications in electrical panels, machinery, etc....

DC Fans (Order by Part No.)

Brushless DC motor, polarity protected. Sealed sleeve bearing. Frame, impeller made of PBT plastic UL94 V0.

Part No.	Description	Voltage	Max. air flow (cfm)(*)	Dimensions (mm)
117.220	Cooling fan 40mm, 12VDC	12VDC	7.5	40x40x10
117.442	Cooling fan 80mm, 24VDC	24VDC	44	80x80x15
117.742	Cooling fan 119mm, 24VDC	24VDC	72	120x120x25
117.751	Cooling fan 119mm, 24VDC	24VDC	85	120x120x38

Information subject to change without notice - More models available upon request.

AC Fans (Order by Part No.)

Shaded pole motor. Sleeve or Dual ball bearing. Frame in diecast aluminum, impeller made of PBT plastic UL94 V0.

Part No.	Description	Voltage	Max. air flow (cfm)(*)	Dimensions (mm)
117.645	Cooling fan 92mm, 115/230VAC	115/230VAC	81	92x92x25
117.785	Cooling fan 119mm, 115VAC	115VAC	110	120x120x38
117.788	Cooling fan 119mm, 230VAC	230VAC	110	120x120x38
117.751	Cooling fan 172mm, 115VAC	115VAC	180	172x150x51

Information subject to change without notice - More models available upon request.

Accessories (Order by Part No.)

Part No.	Description	Dimensions Outside ring (mm)
118.201	Wire Guard for rotor, 40x40mm cooling fans	41
118.210	Wire Guard for rotor, 60x60mm cooling fans	53
118.410	Wire Guard for rotor, 80x80mm cooling fans	77
118.411	Wire Guard for rotor, 92x92mm cooling fans	89.8
118.701	Wire Guard for rotor, 119x119mm cooling fans	115.6
118.701XF	Wire Guard w/extra-fine filter, 119x119mm cooling fans	115.6

Information subject to change without notice - More models available upon request.



Thermoelectric-effect Cooling Elements

Cooling elements based on the Peltier effect

The **Peltier effect** is the presence of heating or cooling at an electrified junction of two different conductors. When a current is made to flow through a junction between two conductors A and B, heat may be removed (or generated) at the junction. A thermo-electric cooler is thus obtained. The Thermoelectric Coolers include forced air convection by means of IP54 axial fans.

Typical applications include: Control panels and enclosures; medical instrumentation; telecom cabinets; industrial instrumentation; food and beverage cooling.

Features and specifications:

- No moving parts: less maintenance
- No chlorofluorocarbons
- Small size, flexible shape
- Temperature control is simple and precise via regulation of the input voltage
- Long life (Mean Time before Failure > 100,000 hrs.)
- Same unit can be used as cooler or heater
- Typical max. temperature differential between electrodes: 70 °C
- **Rated cooling power: 60 - 200W**
- **Ingress Protection (fans): IP54**

Thermo-Electric Coolers (Order by Part No.)

Part No.	Model	Rated cooling Power (W)	Rated current, A (*)	Nominal Voltage	Operating Temperature	Cold side Airflow (cfm)	Hot side Airflow (cfm)	Dimensions (HxWxL) (mm) (◇)	Weight (kg) (●)
115.606	A60	60	3.3	24V DC	-10 / +50 °C	53.5	53.5	150x122x230	3
115.610	A100	100	5.8	24V DC	-10 / +50 °C	58	115	165x153x300	4.5
115.615	A150	150	8.5	24V DC	-10 / +50 °C	73	135	165x153x300	5.5
115.620	A200	200	12	24V DC	-10 / +50 °C	107	135	186x153x400	7.5

(*) Measured after 5 min operation @ 20 °C

(◇) Max. dimensions (height is total hot side + cool side)

(●) Approximate values

Information subject to change without notice

All products above are available upon special request only



Transformers for Cirrus

DIN-rail mounted 2VA transformers are available, for supplying low voltage AC to Cirrus heating elements (see page 4) which are powered at a lower voltage than the PTC heater itself.



Transformers (Order by Part No.)

Part No.	Description	Input Voltage	Output Voltage	Dimensions (mm)
115.599	Auxiliary transformer for PTC Heaters' fan, 230/115V to 18-24VAC, 2VA, DIN mount [FGT314]	115/230V AC	24VAC	53x56x31mm
115.599-12	Auxiliary transformer for PTC Heaters' fan, 230/115V to 8-12VAC, 2VA, DIN mount (*)	115/230V AC	12VAC	53x56x31mm

Information subject to change without notice - (*) Special order only

Typical applications of heaters and fans:

- Outdoor cabinets: telecommunication, traffic control, instrumentation, transformers
- Condensation control for transformer enclosures
- Outdoor display panels/signs
- Gas or liquid control valve housings (valve boxes)
- Meter boxes
- Sewage pump stations
- Trash compactors
- Railway switchgear enclosures
- Outdoor controls
- Transmission tower control cabinets
 - Parking gates, public access gates
- Ticket dispensing machines
- ATM machines
- Pump-house control stations
- Outdoor fire extinguisher cabinets
- Outdoor surveillance camera housings
- Clothing lockers (example: mines)
- Outdoor vending machines
- Nema 3R, 4, 4X, and 7 (hazardous locations) enclosures
- Marine lifts
- 3D printing machines
- Outdoor breathalyzer machines
- Outdoor water refilling stations
- Electric and hybrid vehicles, recharging stations



Since 1994, ITC is a trusted resource for industrial electrical and automation components. With over 10000 different parts available from its Toronto area warehouse, ITC provides the perfect blend of dependable stock, quality products, fair pricing, and friendly, knowledgeable service.

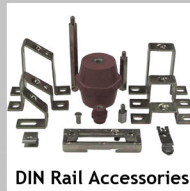
Here are some of our manufacturing partners:



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DIN Rail



DIN Rail Accessories



Non-Metallic Enclosures



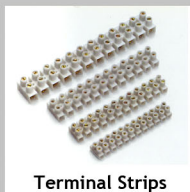
Hinged Enclosures



Thermal Management



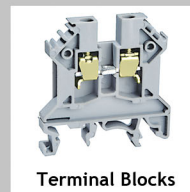
Multipole Connectors



Terminal Strips



Compact IP68 Connectors



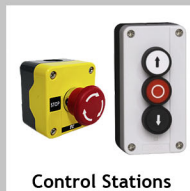
Terminal Blocks



22.5mm Pushbuttons



LED Indicators



Control Stations



Limit Switches



Micro Limit Switches



Safety Switches



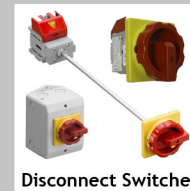
Foot Switches



Circuit Breakers



IEC Contactors



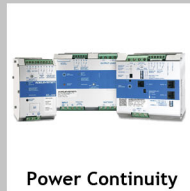
Disconnect Switches



Midget and CC Fuse Holders



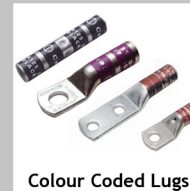
Tower Lights



Power Continuity



Ferrules



Colour Coded Lugs



Crimp Terminals



Termination Kits



Cable Glands



Thread Adapters



Cable Entry Systems



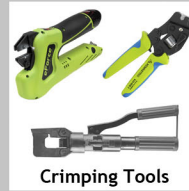
Wire Management



Assembly Tables



DIN Rail Cutters



Crimping Tools



Hole Cutting & Punching Tools



Cutting & Stripping Tools - Wire & Cable