Heaters

Explosion-proof heating systems

INTERTEC offers the world's largest selection of explosion-proof enclosure heaters, certified for almost all regions of the world: IECEx, ATEX (EU), CSA, UL (USA, Canada) EAC (GUS), CCC (China), KC (Korea), PESO (India), INMETRO (Brazil). The solution to a heating task is the interplay of thermal insulation, mounting position, heater type and the Controllers and Temperature Switches (pg. 51). And the heating tasks have very different requirements. Only the wide spectrum and our heaters' modular design make it possible to configure the perfect solution with optimum heat transfer, significant energy savings, the best mounting, etc.

Properties of INTERTEC heaters

- Approved for Gas-Ex and Dust-Ex zones 1, 2, 21 and 22
- Operating temperature between -60°C and 180°C
- Protection class IP66/IP68; completely waterproof encapsulated
- Made of seawater-resistant, black anodized aluminum resulting in high heat output
- All explosion-proof heating systems are also available as non explosion-proof versions

Bi-Standard for explosion proof heaters

There are two different paradigms for electrical installations in hazardous areas worldwide:

- The CEC/NEC in North America (Canada and USA) only permits the installation of electrical leads inside rigid conduits, with the exception of electrical leads inside flame-proof and CSA 4X rated enclosures
- In almost all other countries, IECEx, ATEX (EU), EAC (GUS), CCC (China) etc allows cables to be used, if they are installed mechanically protected.

INTERTEC heaters for hazardous areas are build in a modular system. Many modules of these systems are the same for heaters with IEC certificate and American certificate (CSA C/US). Therefore bi-standard heaters, that comply to both standards are possible. These heaters can be practically used world-wide.



Connection type	Ex d cable gland	Ex d cable gland and 1/2" NPT adapter	1/2" NPT thread in the heater block
IECEx/ATEX	Standard	Special	Not certified
CSA C/US	Special	Special	Standard
BI-Standard	Special	Standard	Not certified

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Conduction or Convection

Conduction

Conduction heaters are defined by their flat surface and are fixed to the instrument or device they need to heat, which in turn must also have a good flat surface for proper heat transfer. These heaters require significantly less energy than convection heaters because heat is transfered through direct contact rather than through the heating of air.

Convection

With this application the air inside the enclosure is used as a medium for transferring heat to the equipment. Convection heaters feature ribbed fins for maximum surface area.
The advantage of these heaters is that any application or design can be heated. But the enclosure must be well insulated to keep heat loss to a minimum.

Constant Power (CP) or Self-Limiting (SL)

Constant Power (or Fixed Resistance) Heaters

CP heaters are manufactured with a constant resistance heater cartridge. They need to be operated with a thermostat or controller to control their heating output.
In case of overheating, for example during an emergency, a temperature fuse within the cartridges will safely shut down the heater.
Heaters with fixed resistance are especially suitable for frost protection and Arctic conditions.

Self-Limiting Heaters

SL heaters use a PTC heater cartridge: PTC-elements (Positive Temperature Coefficient) increase their resistance when the temperature rises. The higher the resistance, the lower the output. The heat output at high temperatures becomes very little so that the limit temperature of the respective temperature class cannot be exceeded.
Self-limiting heaters in general are best suited for conduction, anti-condensation or high temperature applications.

The INTERTEC Heater Portfolio
https://www.intertec.info/en/heating

CP MICROTHERM

MICROTHERM is the right choice of heater if the available space is not sufficient to install a larger model.

Application

Heating of instrument enclosures in hazardous areas, designed for freeze and condensation protection.

Features & advantages

- very slim heater body design
- vertical design alows for optimum installation adjacent to the instruments to be heated in the enclosure

Heating method	Convection
Ingress protection	IP66/68
Nominal voltage	230 V AC (220-240 V AC)
Operating temp. range	-60°C to 180°C
Dimensions	50 x 50 x 155 mm

CP MULTITHERM

The MULTITHERM is bigger and more powerful. With enough space, this heater offers unparalleled efficiency.

Application

Heating of instrument enclosures in hazardous areas, designed for freeze and condensation protection, as well as temperature maintenance.

Features & advantages

- vertical design allows for optimum installation adjacent to the instruments to be heated in the enclosure
- freeze-protection thermostat (TAE) integrated as standard or protective thermostat (TS) for temperature maintenance

Heating method	Convection
Ingress protection	IP66/68
Nominal voltage	230 V AC (220-240 V AC)
Operating temp. range	-60°C to 180°C
Dimensions	80 x 80 x 155 or 225 mm

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CP HORIZOTHERM

HORIZOTHERM heaters heat the air in the enclosure by convection. Preferably, the heater is installed in horizontal position at the bottom of the enclosure.

Application

Heating of instrument enclosures in hazardous areas, designed for freeze and condensation protection, as well as temperature maintenance.

Features & advantages

- horizontal design allows for optimum installation underneath the instruments in the enclosure
- vertical installation also possible
- freeze-protection thermostat (TAE) as standard or optionally with protective thermostat (TS) for temperature maintenance

Heating method	Convection
Ingress protection	IP66/68
Nominal voltage	230 V AC (220-240 V AC)
Operating temp. range	-60°C to 180°C
Dimensions	152 x 155 x 40 mm

CP VARITHERM

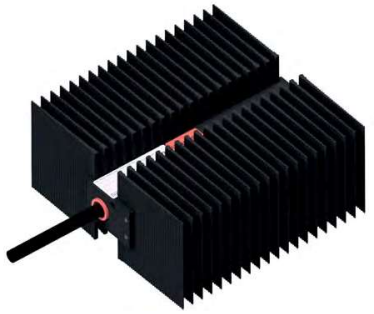
These heaters are characterized by a high heat emission due to their relative area. They are optimally installed below the devices in the housing.

Application

Heating of instrument enclosures in hazardous areas, designed for freeze and condensation protection.

Features & advantages

- horizontal design allows for optimum installation of the heater underneath the instruments in the enclosure
- vertical installation possible
- Heater fins can be removed and modified by INTERTEC, if necessary for installation purposes



Heating method	Convection
Ingress protection	IP66/68
Nominal voltage	230 V AC (220-240 V AC)
Operating temp. range	-60°C to 180°C
Dimensions	220 x 213 x 40/60/80/100/120 mm

CP/SL MEGATHERM

This electric finned heater is designed for both fixed resistance and self-limiting operation and is used in small enclosures or cabinets where measuring instruments, control valves or similar equipment in hazardous areas must be heated.

Application

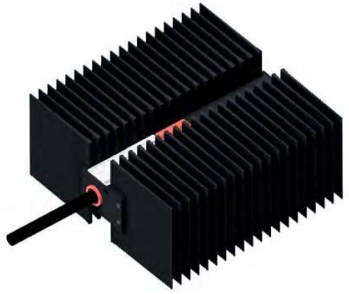
Heating of instrument enclosures in hazardous areas, designed for freeze and condensation protection, as well as temperature maintenance.

Features & advantages

- vertical design allows for optimum installation adjacent to the instruments to be heated in the enclosurec

	CP MEGATHERM	SL MEGATHERM
Heating method	Convection	
Ingress protection	IP66/68	IP66/68
Nominal voltage	230 V AC	110 V to 265 V
Operating temp. range	-60°C to 180°C	-60°C to 180°C
Dimensions	229 x 60 x 225 or 325 mm	

SL VARITHERM



The SL VARITHERM is heated by a self-limiting PTC-cartridge. It has a high heat emission due to their relative area and are optimally installed below the devices in the housing.

Application

Heating of instrument enclosures in hazardous areas, designed for high temperature maintenance.

Features & advantages

- horizontal design allows for optimum installation of the heater underneath the instruments in the enclosure
- vertical installation possible
- Heater fins can be removed and modified by INTERTEC, if necessary for installation purposes

Heating method	Convection
Ingress protection	IP66/68
Nominal voltage	110 V - 265 V
Operating temp. range	-60°C to 180°C
Dimensions	220 x 213 x 120 mm

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SL QUADRATHERM

The self-limiting electric heater is flat on one side and finned on the other. The flat side works through conduction and should be firmly attached to the manifolds, measuring instruments, control valves and similar equipment. The finned side works through convection and heats the air inside the enclosure.

Application

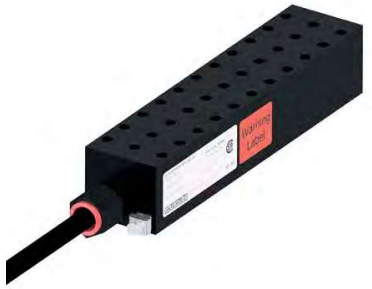
Heating of instrument enclosures in hazardous areas, designed for freeze and condensation protection, as well as temperature maintenance.

Features & advantages

- energy saving
- self limiting, no fusable link or limiter
- requires very little space
- adjusts automatically to the voltage

Heating method	Conduction
Ingress protection	IP66/68
Nominal voltage	110 V to 265 V
Operating temp. range	-60°C to 180°C
Dimensions	95 x 30 x 90-105 mm

SL BLOCKTHERM



The self-limiting electric heater is designed to be attached directly to manifolds, measuring instruments, control valves and similar equipment installed in hazardous areas. Int heats the device by direct conduction. This is the easiest, safest and most economical method of freeze protection or temperature maintenance.

Application

Heating of instruments in hazardous areas, designed for freeze and condensation protection, as well as temperature maintenance.

Features & advantages

- energy saving
- self limiting, no limiter required
- requires very little space
- adjusts automatically to the voltage
- ADA option: Adapter plates

Heating method	Conduction
Ingress protection	IP66/68
Nominal voltage	110 V to 265 V
Operating temp. range	-60°C to 180°C
Dimensions	90/105 x 50 x 45 mm 225 x 50 x 45 mm

SL FLATTHERM

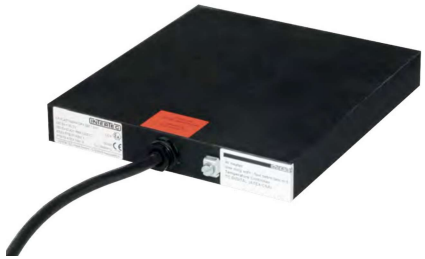
The SL FLATTHERM is a heater block that is flat on all sides. This direct heater works through conduction and should be firmly attached to the equipment at a flat metal surface.

Application

Heating of instruments in hazardous areas, designed for freeze and condensation protection, as well as temperature maintenance.

Features & advantages

- energy saving, high output
- self-limiting, no fusable link or limiter
- compact, requires very little space
- adjusts automatically to the voltage
- areas for custom drill holes to facilitate mounting



Heating method	Conduction
Ingress protection	IP66/68
Nominal voltage	110 V to 265 V
Operating temp. range	-60°C to 180°C
Dimensions	30 x 220 x 200 mm

CP SMART BLOCKTHERM

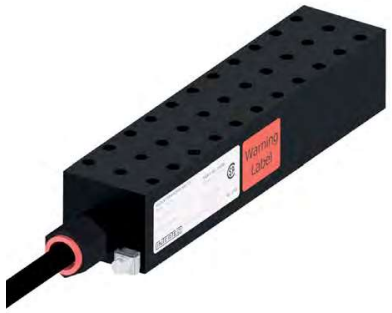
The SMART BLOCKTHERM heating system consists of the explosion-proof electrical heater BLOCKTHERM HI and the digital SMART controller. The SMART BLOCKTHERM configuration allows conduction heating at constant power.

Application

The SMART BLOCKTHERM System is especially suited for demanding heating applications in areas with explosive atmospheres. For example: to keep analyzers at high temperatures.

Features & advantages

- energy and space saving
- precise temperature control using a digital PID controller
- set point temperature can be adusted at any time
- extensive error monitoring
- The maximum temperature is managed electronically and a built in temperature sensitive fuse ensures that the maximum allowed temperature never is exceeded. This principle protected by Intertec patent is very reliable and ensures a high safety in terms of explosive protection.



Heating method	Conduction
Ingress protection	IP66/68
Nominal voltage	230 V AC (220-240 V AC)
Operating temp. range	-60°C to 180°C
Dimensions	225 x 45 x 50 mm 105 x 30 x 40 mm

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Optimal temperature control for all applications

INTERTEC offers a wide range of temperature control options - from simple thermostats to digital PID controllers that complete the range of Ex and Non-Ex heaters.

Precise temperature control can optimize application performance, effectively reducing operating and maintenance costs - whether for freeze protection solutions or when precise temperature control is required for analytical or process purposes.

For use in hazardous environments, INTERTEC offers an exceptionally wide range of explosion- and seawater-proof temperature control solutions and has numerous Zone 1 and Division 1 approvals worldwide from organizations such as IEC, ATEX, TRCU and CSA. Options include Bi-Standard (IEC/CSA) heating systems.

TS Thermostat

The TS is an explosion-proof thermostat integrated in the connection cable. When connected to an electric heater as a two-point controller, it can regulate the temperature in a small housing to the pre-set, nominal set-point.

Application

The TS is used as a temperature switch. It switches on when the temperature is below the set point and switches off above the set point.

Features & advantages

- Completely encapsulated with silicone

Ingress protection	IP66/68 1bar/30min
Nominal voltage	Max. 230 V
Rated current	Max. 10 A
Operating temp. range	-60°C to 80°C
Dimensions	22 x 30 x 22mm

Control Units and Temperature Switches
https://www.intertec.info/en/temperature-control

TAE Thermostat

The TAE is an external explosion-proof thermostat. Designed as a two-point controller, and when connected to an electric heater, it can regulate the temperature in a housing to the pre-set, nominal setpoint as a thermostat. It is used in areas where ex plosive gas/air or dust/air mixtures are to be expected on occasion.

Application

The TAE controller switches on when the temperature is below the set point and switches off above the set point. Its alternative version, the TAE AM, doubles as an alarm/fault indicator.

Features & advantages

- Very solid design with aluminium housing
- Completely encapsulated with silicone
- Relatively accurate control if the thermostat with thermal feedback is installed on the heater

Ingress protection	IP66/68 1bar/30min
Nominal voltage	Max. 275 V
Rated current	Max. 10 A
Operating temp. range	-60 °C to 180 °C
Dimensions	90 x 24 mm

	Switch on	Switch off
TAE -15	-15 °C	-5 °C
TAE -10	-10 °C	0 °C
TAE 10	10 °C	18 °C
TAE 20	20 °C	28 °C
TAE 30	30 °C	38 °C
TAE 40	40 °C	48 °C
TAE 50	50 °C	58 °C
TAE 60	60 °C	68 °C
TAE 70	65 °C	75 °C

TAEK Temperature Contact/Switch

The TAEK is an explosion-proof temperature switch for signaling only, designed for high and low temperature alarmb for PLC/control systems.

Application

The TAEK temperature contact/switch has two contacts that respond to different lower and upper temperatures.

Features & advantages

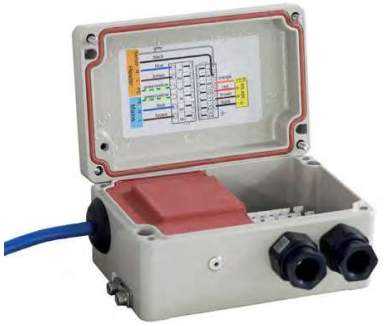
- Very solid design with aluminium housing
- Completely encapsulated with silicone
- Relatively accurate control if the contact with thermal feedback is installed on the monitoring device/equipment

Ingress protection	IP66/68 1bar/30min
Nominal voltage	Max. 250 V AC 3,3 - 48 V DC
Rated current	1 mA - 100 mA
Operating temp. range	-60 °C to 180 °C
Dimensions	115 x 24 mm

	Set point	1st contact	2nd contact
5F/30R	Open	5 °C	30 °C
	Close	8 °C	27 °C
20F/50R	Open	20 °C	50 °C
	Close	23 °C	47 °C
30F/60R	Open	30 °C	60 °C
	Close	33 °C	57 °C
50F/80R	Open	50 °C	80 °C
	Close	53 °C	77 °C

TC D Digital Temperature Controller

The digital electronic temperature controller TC D was designed to regulate the temperature of instruments or the air temperature in instrument enclosures and protective cabinets. It electronically limits the surface temperature of the heater. It can be used with all our explosion-proof electric heaters, heater cables and especially INTERTEC HI series heaters.



Application

The TC D temperature controller is particularly well suited for demanding heating applications in potentially explosive atmospheres and has been specifically designed for high temperature maintenance of analysing equipment.

Features & advantages

- Highly accurate
- Long life solid state controller with no mechanical switching elements
- RS 485 interface allows networking in fieldbus networks and setting parameters at the PC via the Modbus RTU protocol
- Extensive fault monitoring
- External status display via a green/red LED
- Integrated junction terminal with 2 M20 glands (optional 3rd gland possible)

Ingress protection	IP66
Nominal voltage	Max. 230 V
Operating temp. range	-50 °C to 80 °C
Dimensions	57 x 125 x 80 mm

Test and adjustment software

The "SMART HEATER Software Set" consists of:
- Interface converter USB to RS-485
- TC SMART ModBus Software

With your PC or laptop, the actual states and values of the TC D can be shown and some parameters can be changed: Up to 31 TC D controllers can be connected to the RS485 interface. All controllers can be operated and monitored from a PC.