



SMART BLOCKTHERM System

1 Application

SMART BLOCKTHERM is a heating system, which consists of an explosion proof electrical heater, and a microprocessor, which manages both the set point while making sure that the Blocktherm heater doesn't over heat.

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

The BLOCKTHERM heater heats through conduction and must be in firm contact with the valve block, measure instruments, controlling valve etc. The conduction heating principle is simple, reliable and economical. A conduction heater needs less energy than a finned convection heater.

Conduction of heat through metal is more efficient than heating by means of air. As the air inside the enclosure surrounds the application, it works as an additional insulation.

2 Particular advantages

- Energy saving
- Space saving
- Hole pattern according to the ISA / ANSI SP76.00.02 "open architecture" analyser standard.
- The maximum temperature of the heater 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.
- Very precise temperature set point accuracy through a digital PID controller
- A RS 485 interface enables networking and setting parameters from a PC.
- extensive error monitoring
- Long service life of the controller, as no mechanical switching elements are used (solid state). The calculated failure probability with uninterrupted operation of 10 years is less than 5 %.
- Negligible network regeneration through phase group control with no voltage triac switching
- The set point temperature can be adjusted continuously.
- Industrial design inside an aluminium box.

3 System description

A SMART BLOCKTHERM heating system consists of an electrical heater (BLOCKTHERM HI) and one digital controller (SMART).



CP BLOCKTHERM is a metall block that has an electric heating cartridge and a temperature sensor for electronic temperature limitation integrated.



The controller consists of an electronic section which is completely sealed with silicon and is accessed through a connecting terminal. The SMART controller has 3 analogue inputs:

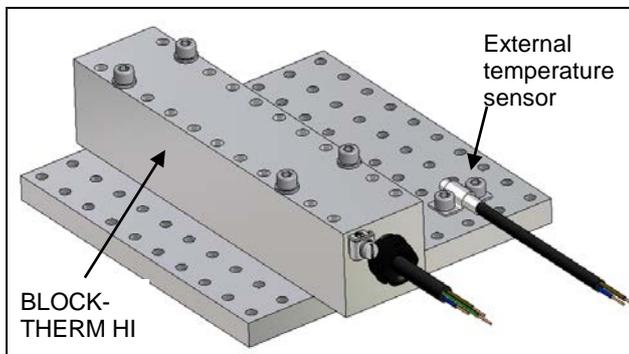
- one temperature sensor on the chip inside the box.
- one temperature sensor inside the Blocktherm heater
- an intrinsically safe external temperature sensor (Option).

For more information about the controller please refer to data sheet [HD252](#)



SMART BLOCKTHERM System

4 Installation and temperature management



The Blocktherm heater transmits its' heat through conduction. Therefore when installed, it shall be firmly attached to an even surface which conducts heat well (metal). The heater should be fastened with 4 screws.

The sensor is attached at the point where the setpoint temperature should be reached. The SMART controller has two different controlling loops. One supervises the temperature of the heater and the second the temperature set point.

5 Explosion protection

EC Examination certificate	PTB 04 ATEX 2022 X
	PTB 02 ATEX 1041 X
IEC Scheme Certificate	IECEX PTB 08.0011X
	IECEX PTB 07.0052X

6 Types and Technical data

6.1 SMART Controller

IEC Scheme Type of Protection	Ex e mb [ib] IIC T4 Ex tD A21 IP66 T130°C
Nominal voltage	230 V AC .. 250 V AC
Power minimal / maximal	60 W / 2300 W
Operating temperature range	max. 80°C (box) -50°C to +80°C *
Connection cable	2 x M20
Protection degree	IP66
Material	Seawater-proof aluminium; black anodized
Dimensions (H x W x D)	57 x 125 x 80 mm

* see data sheet [HD252](#)

6.2 CP BLOCKTHERM...

Type	DPA 200 T4 HI	DPA 500 T3 HI	DLA 100 T3 HI
Nominal power	200 W	500 W	100 W
Temperature class	T4	T3	
Operating temperature range	-60 bis +180°C		
IEC Scheme Type of Protection	II 2G Ex db IIC T6, T5, T4, T3 II 2D Ex tb IIIC T85°C, T100°C, T135°C, T200°C		
Protection degree	IP68		
Nominal voltage	230 V		
Length	225 mm	105 mm	
Width	45 mm	30 mm	
Height	50 mm	40 mm	
Material	Seawater-proof aluminium; black anodized		

7 Options

3M	Connection cable 3 m long
120 V	Nominal voltage 120V AC
240 V–250 V	Nominal voltage 240-265V AC
KLE	Additional cable entry for fieldbus connection

8 The SMART controllers' functionality

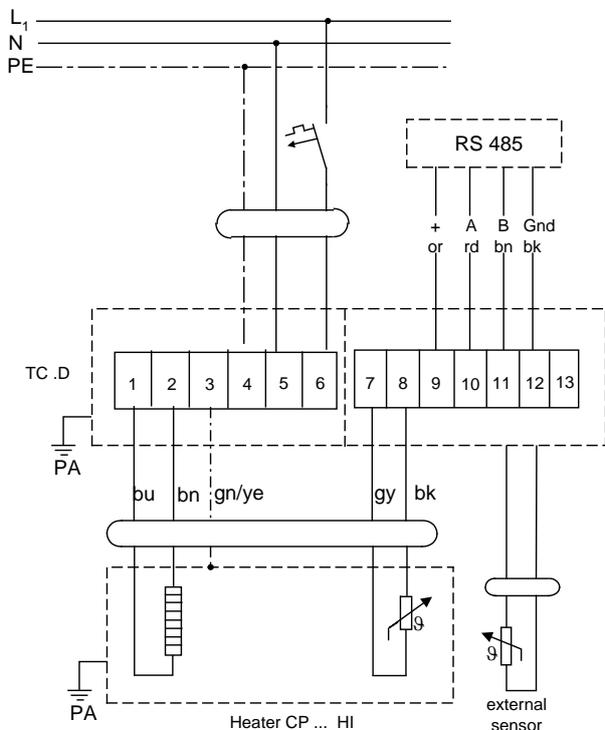
- PID-Controller
- Temperature management

The controller consists of an integrated triac which, when switching, is making use of phase group control with no voltage triac switching. A thermistor (NTC) is used as a temperature sensor. The electronics are completely sealed.



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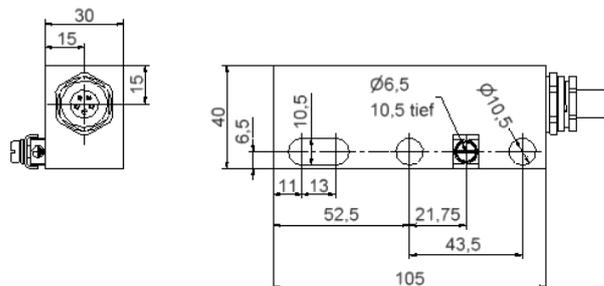
9 Electric wiring



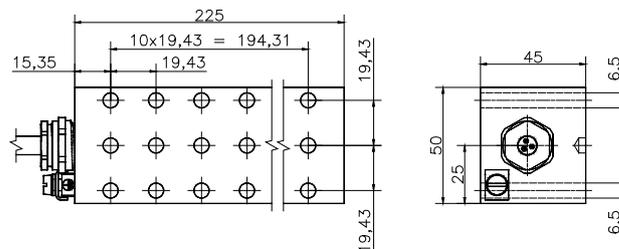
bk=black bn=brown gy=grey bu=blue gn/ye=green/yellow or=orange rd=red

10 Dimensions

10.1 BLOCKTHERM DLA...



10.2 BLOCKTHERM DPA...



11 Mounting example

