



SMART HEATER VARITHERM HI System



1 Application

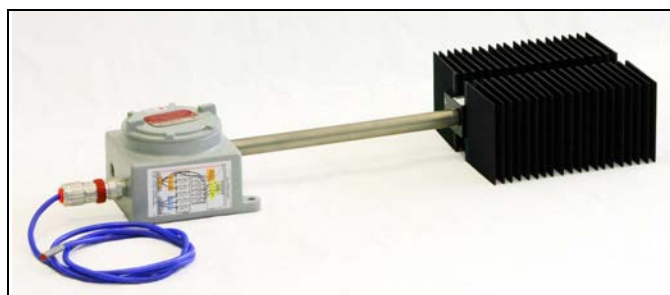
VARITHERM HI "smart heater" is a system consisting of an explosion-proof electric heater and a microprocessor, designed to control the air temperature in instrument enclosures and protective cabinets and to limit the surface temperature of the heater.

It is equipped with an intrinsically safe sensor for measurement and accurate regulation of the temperature of the instruments and equipment (e.g. of manifolds).

SMART HEATERS are designed to solve sophisticated and complex heating problems in hazardous areas, and in particular for high temperature maintenance of analyzing equipment.

2 Special Features

- The surface temperature of the heater is redundantly limited both electronically as well as by a safety fuse at the heat source. This patented concept ensures very safe operation and at the same time guarantees a high level of safety for explosion protection.
- A digital PID controller provides precise temperature control.
- The RS 485 interface allows networking in fieldbus networks and parameterizing at the PC.
- Extensive fault monitoring.
- Long 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 %.
- Storage and operating temperature ranging from -58°F to +356°F/ -50°C to +180°C (heater)
-58°F to +176°F/ -50°C to +80°C (controller) (see data sheet HD253 section 7).
- Negligible network regeneration through phase group control with no voltage triac switching
- The temperature set point can be adjusted continuously
- Industrial design inside an aluminium terminal box



3 Description

A ... THERM HI heating system basically consists of an electric heater body (heating block or finned heater) and a controller in an aluminium housing. The two parts can be separated (e.g. for installation).

The heater can be made the same form as any INTERTEC CSA heater with fixed resistance, i.e. VARITHERM, MULTITHERM, BLOCKTHERM etc.



The controller consists of an electronic section with microprocessor, completely encapsulated in silicone, and a terminal section with EEx e terminals. The controller has three analogue inputs:

- An integrated temperature sensor at the housing for the room temperature
- A temperature sensor in the heating coil of the heater serving as temperature limiter
- Optionally: an intrinsically safe external temperature sensor



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4 Function

- PID controller, with either the integrated or the external temperature sensor serving as actual value sensor.
- Electronic temperature limiter.
- Proportional actuator, consisting of an integrated zero voltage switch and a triac as switching element.

5 Technical Data

5.1 SMART Controller

CSA Certificate	1655545 (LR43674)
CSA Type of Protection	Cl. 1, Div. 1, Grp ABCD T3/ T4
Ingress Protection	IP65
Nominal voltage	120 V AC
Minimum power	30 W
Maximum power	1200 W
Maximum Temperature	max. 80°C (box) -58°F to +176°F/ -50°C to +80°C*
Conduit connection	½" NPT
Dimensions (Height x Width x Depth)	4.3" x 5.1" x 5.1" / 110 x 130 x 130mm
Material	seawater proof aluminium; coated

* see data sheet HD253

5.2 CP VARITHERM CPA ... 100 HI

Type	..500 T3..	..400 T4..	..500 T4..
Nominal power	500 W	400 W	500 W
Temperature class	T3	T4	
CSA Certificate	1655545 (LR43674)		
CSA Type of Protection	Cl. 1, Div. 1, Grp ABCD T3/T4		
Ingress Protection	IP 68		
Nominal voltage	120 V AC		
Operating temperature range	-58°F to +356°F/ -50°C to +180°C		
Connection cable	Silicone cable, notch and oil resistant, 3x1,5mm² 8,1mm Ø		
Conduit connection	½" NPT		
Dimensions(Length x Width x Height)	8.7" x 8.4" x 3.9"/ 220 x 213 x 100 mm		
Material	seawater proof aluminium; black anodized		

Ordering example: SMART HEATER with
CP VARITHERM CPA 400 T4 100 HI

6 Options

E (Standard)	Intrinsically safe external sensor
Additional conduit entry for fieldbus connection	
3M	Length of intrinsic safe sensor cable in meters (any length)

Further options upon request, e.g.

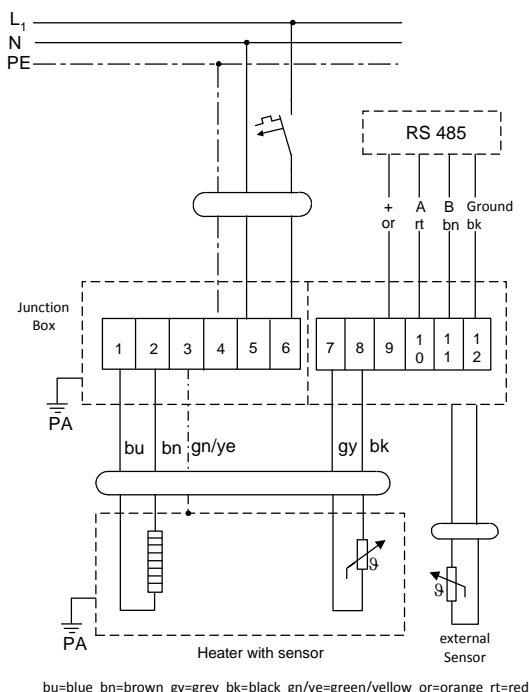
- Other operating voltages
- Other designs of sensor (2 mm diameter),
- IEC ATEX GOST Explosion protection certificate

7 Parameter

For factory programming, please specify the following parameters when placing an order:

Parameter	Default value
Setpoint	122° F/ 50° C
Temperature class of the heater	T3
Address in the RS485 network	0
Power frequency	60 Hz at 120 V

8 Electric Wiring



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