

# HSR / HSB

Top-hat rail temperature controller - limiter



## Characteristics

- Easy installation on the top-hat rail
- Easily readable display
- Parameterization easily understandable
- Analog output
- 1 x PT 100 sensor inlet
- Min monitoring
- Redundancy operation via Bus RS-485
- P- control

The type series HS.. is of modular design. You can choose between 2 different types.

These are not destined for the use in the Ex zone. Herein customer specific adaptations are possible at any time. The top-hat rail module is available as controller or limiter. For different fields of application the module is independently configurable. It offers the user maximum safety and reliability during the monitoring of thermal processes.

## Control

All control devices have a Pt-100 sensor inlet and are completely configurable on-site. The complete overview of the operating condition and all functions can directly be read from the 3-lined display.

The control device is designed as two-point controller and records the temperature via a Pt-100 sensor in 3-wire technology, which is directly connected to the module HS.. Depending on the temperature at the measuring sensor and the value set as nominal value, the relay switches at the output of the controller. We supply suitable Pt-100 measuring sensors in two basic versions.

Redundancy operation is possible with 2 controllers. This takes place via the RS-485 Bus. Here, further devices can (limiter and voltage adjuster) can be integrated respectively for the main controller or the additional controller.

Type Ex TF Pt100L as contact sensor with minimum dimensions of 7,4 cm x 2,1 cm x 2,1 cm. Fully encapsulated in aluminium cabinet with a measuring temperature of up to 200°C.

Type Ex TF Pt100KS with a measuring tip 5 mm and a length of 23 cm. Fully encapsulated in an aluminium cabinet, a stainless steel measuring sensor tip and a measuring temperature of up to 400°C.

The measuring sensors are especially safe of interference voltage. Please take further information from our product literature Ex Pt-100 K and Ex TF-Pt 100 L.

## Monitoring

- Sensor break
- Short circuit
- Power failure
- Shortfall of the minimum temperature

## Voltage adjuster HSS

The top-hat rail controller (HSR) can optionally be complemented by a voltage adjuster (HSS) for power or rather length adjustment of trace heaters. The planning, construction and subsequent extension of heating circuits is essentially simplified.

The voltage adjuster (HSS) is designed for the top-hat rail installation TS35 and can optionally operate 230V or 400V heating circuits.

It is controlled and parameterized by the HSR. Even the control in redundancy operation is possible.

Please take further information from the data sheet HSS or from the operating manual HSR/ HSB / HSS at [www.erich-ott.de](http://www.erich-ott.de)

## P-control

It is possible to predicate the output power of the voltage regulator on the prevailing temperature of the controller. (P-control)

The parameterization by indicating the minimum and maximum power as well as start and outlet temperature facilitates the setting of this function very much. Due to the executed set-up in such a way, significant energy conservations are possible. The operation can be carried out by use of an external sensor as controller or with a sensor attached to the medium to be heated. (control loop).

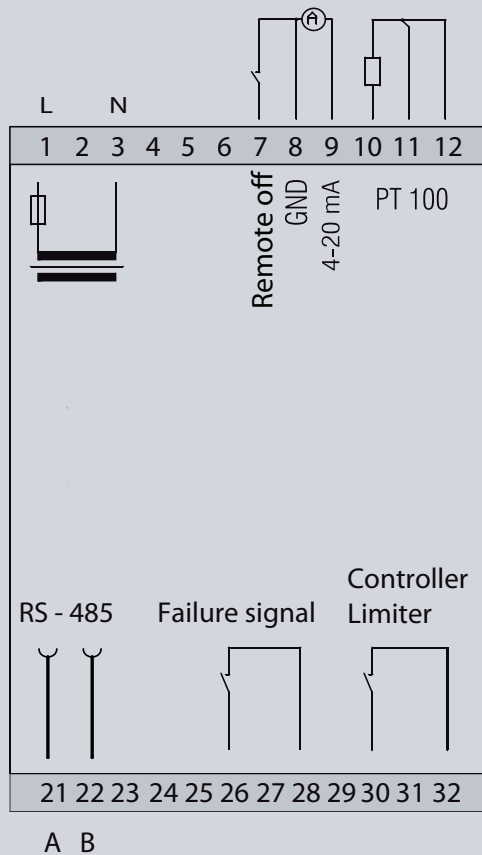
## TECHNICAL DATA

Adjustment range	0 °C to + 500 °C	
Temperature range	-30 °C to + 500 °C	
Adjustment range Min. monitoring	0 °C to + 500 °C (only controller)	
Nominal value setting	digitally	
ESD protection	according to DIN EN 61340-5-1	
Switching point accuracy	1 °C	
Switching hysteresis	adjustable	
Ambient temperature	0 °C to + 40 °C	
Ambient temperature influence	≤ 0,02 % per K	
Measuring accuracy	0,2°C or rather 1 Digit	
Nominal voltage	230 V / alternatively 24V /48V	
Supply line measuring error	1 K for cable 3 x 1,5 mm², length 1,0 km	
Degree of protection	IP 20	
Measuring circuit monitoring		
Line breakage	≥ 300 Ω	
Open-circuit	= 80 Ω	
Dimensions		
Length	71 mm	
Width	90 mm	
Height	58 mm	
Design		
Plastic cabinet for top hat rail TS 35	4 TE	3 lined LCD Display
Electrical connection	Terminal block in grid 5,08	Conductor cross-section up to 2,5 mm²

## ELECTRICAL DATA 230 V MODULE

Power supply circuit	
Nominal voltage	230 V ± 15%, 48-62 Hz
Nominal current	20 mA
Fuse	80 mA
Test category	II
Analog output actual value	
Nominal current	4-20mA / burden max. 500 Ohm
max. current	22 mA
max. voltage	18 V
PT-100 input	
1 PT 100 input	Three-wire technology
Measuring current	1 mA
max. current	4,6 mA
max. voltage	5 V
max. power	5,7 mW
Relay	
1 potential free make contact	
Nominal voltage	230 V
max. current	3 A
Fault signal relay	
1 potential free make contact	
Nominal voltage	230 V
max. current	3 A

## CONNECTION PLAN CONTROLLER + LIMITER



## TYPE CODE

HS 1 2 3 4 5 6

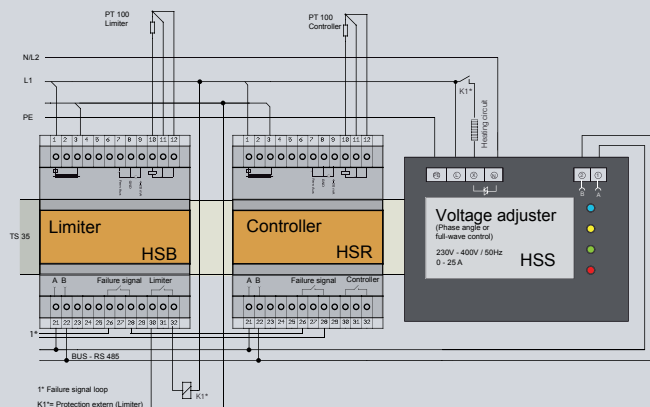
<b>1</b>	R	Controller
	B	Limiter
	S	Voltage adjuster (See separate data sheet HSS)
<b>2</b>	Current output (Controller + Limiter)	
	-	Standard (without current output)
	i	4 - 20 mA
	FA	Remote off (remote switch)
	iFA	4-20mA and remote off
<b>3</b>	HB	Heat conductor break control (Function excludes RS-485 Pos. 4)
<b>4</b>	RS- 485 port (Controller + Limiter)	
	-	Devoid of (standard)
	485	RS-485 (port with voltage adjuster possible)
	P	Interface for HSS incl. PID control
	R	Redundancy operation
<b>5</b>	Voltage	
	-	230 V AC (standard version with trafo)
	S 230V	230 V Version switching power supply (low level of self-heating)
	S 24V	24 V DC Version switching power supply (low level of self-heating)
	S 48V	48 V DC Version switching power supply (low level of self-heating)
<b>6</b>	Display	
	-	Backlit Display Colour: Amber (standard)
	D	No display illumination - high reflecting display - (Minimum intrinsic heating in combination with switching power supply.)

Example: HSR i

Digital controller with 4-20mA current output and 230V AC operating voltage and backlit display.

HS R i - - - 6

## APPLICATION EXAMPLE



Please take further information from our operating manual.  
Download on [www.erich-ott.de](http://www.erich-ott.de)