High Temperature Vertical Tube Furnace - HTRV

General Information

The HTRV high temperature tube furnaces are designed for vertical orientation and operation up to 1800 °C.

The high grade insulation material consisting of fibre plates provides low energy consumption and high heating rates due to its low thermal conductivity. The insulation and the molybdenum disilicide (MoSi2) heating elements are installed in a rectangular housing. The heating elements hang vertically and can be easily replaced. At higher temperatures and in the presence of oxygen, MoSi2 develops an oxide layer which protects the heating elements against further thermal or chemical corrosion.

With its wide range of accessories, the comprehensive HTRV tube furnace range provides complete system solutions for ambitious thermal treatment at high temperatures.

Furnaces are supplied without a stand, allowing customers to build them into their own equipment. Optional ‘L' stands are available allowing the furnaces to be self supporting.

Standard features

- 1800 °C maximum operating temperature
- Programmable 3216P1 controller
- 3-zone models fitted with 1 x programmable 3216P1 and 2 x 3216CC end zone controllers, with retransmission of setpoint
- Over-temperature protection
- Optimised for vertical usage
- Accepts work tubes with outer diameters up to 100 mm for use with modified atmosphere
- Accepts work tubes with outer diameters up to 200 mm for use in air
- Heated lengths of 100, 250 or 500 mm
- High grade type B thermocouple
- Low thermal mass ceramic fibre insulation
- Vertically hanging, high quality MoSi2 heating elements
- Rectangular housing with holes for convection cooling
- Furnace comes with separate control box with 3 m cable, plug and socket

Options (specify these at time of order)

- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications
- A range of additional work tubes is available in a variety of materials
- Insulation plugs & radiation shields are strongly recommended for high temperature vertical tube furnaces to prevent heat loss & improve uniformity
- Modified atmosphere and vacuum assemblies are available
- Vacuum packages with a choice of rotary vane pump or turbomolecular

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pump are available for furnaces with tube inner diameters of 60 mm and above
- 'L' stand for convenient usage
- Oxygen sensor for inert gas packages

Technical Specifications

HTRV __/40/100	
Max outer diameter accessory tube (mm)	40
Heated length (mm)	100
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	365 x 455 x 455
Furnace weight (kg)	30
Tube length for use in air (mm)	355
Tube length for use with modified atmosphere (mm)	890
Control module dimensions H x W x D (mm)	480 x 560 x 500
Control module weight (kg)	50
Uniform length ±5°C (mm)	50
Max power (W)	2000

HTRV __/40/250	
Max outer diameter accessory tube (mm)	40
Heated length (mm)	250
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	515 x 455 x 455
Furnace weight (kg)	40
Tube length for use in air (mm)	505
Tube length for use with modified atmosphere (mm)	1040
Control module dimensions H x W x D (mm)	480 x 560 x 500
Control module weight (kg)	50
Uniform length ±5°C (mm)	125
Max power (W)	3000

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HTRV __/40/500	
Max outer diameter accessory tube (mm)	40
Heated length (mm)	500
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	765 x 455 x 455
Furnace weight (kg)	65
Tube length for use in air (mm)	755
Tube length for use with modified atmosphere (mm)	1290
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	60
Uniform length ±5°C (mm)	250
Max power (W)	6000

HTRV __/70/100	
Max outer diameter accessory tube (mm)	70
Heated length (mm)	100
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	365 x 455 x 455
Furnace weight (kg)	30
Tube length for use in air (mm)	355
Tube length for use with modified atmosphere (mm)	890
Control module dimensions H x W x D (mm)	480 x 560 x 500
Control module weight (kg)	50
Uniform length ±5°C (mm)	50
Max power (W)	3000

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HTRV __/70/250	
Max outer diameter accessory tube (mm)	70
Heated length (mm)	250
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	515 x 455 x 455
Furnace weight (kg)	40
Tube length for use in air (mm)	505
Tube length for use with modified atmosphere (mm)	1040
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	60
Uniform length ±5°C (mm)	125
Max power (W)	4800

HTRV __/70/500	
Max outer diameter accessory tube (mm)	70
Heated length (mm)	500
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	765 x 455 x 455
Furnace weight (kg)	65
Tube length for use in air (mm)	755
Tube length for use with modified atmosphere (mm)	1290
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	250
Max power (W)	8000

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HTRV __/100/250	
Max outer diameter accessory tube (mm)	100
Heated length (mm)	250
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	515 x 455 x 455
Furnace weight (kg)	45
Tube length for use in air (mm)	505
Tube length for use with modified atmosphere (mm)	1040
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	60
Uniform length ±5°C (mm)	125
Max power (W)	6400

HTRV __/100/500	
Max outer diameter accessory tube (mm)	100
Heated length (mm)	500
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	765 x 455 x 455
Furnace weight (kg)	70
Tube length for use in air (mm)	755
Tube length for use with modified atmosphere (mm)	1290
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	250
Max power (W)	10400

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HTRV __/150/250	
Max outer diameter accessory tube (mm)	150
Heated length (mm)	250
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	515 x 580 x 580
Furnace weight (kg)	55
Tube length for use in air (mm)	505
Tube length for use with modified atmosphere (mm)	1040
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	
Max power (W)	8000

HTRV __/150/500	
Max outer diameter accessory tube (mm)	150
Heated length (mm)	500
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	765 x 580 x 580
Furnace weight (kg)	80
Tube length for use in air (mm)	755
Tube length for use with modified atmosphere (mm)	1290
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	
Max power (W)	12000

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HTRV __/200/250	
Max outer diameter accessory tube (mm)	200
Heated length (mm)	250
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	515 x 580 x 580
Furnace weight (kg)	70
Tube length for use in air (mm)	505
Tube length for use with modified atmosphere (mm)	1040
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	
Max power (W)	10000

HTRV __/200/500	
Max outer diameter accessory tube (mm)	200
Heated length (mm)	500
Max temp (°C)	1600, 1700, 1800
Dimensions: External H x W x D (mm)	765 x 580 x 580
Furnace weight (kg)	95
Tube length for use in air (mm)	355
Tube length for use with modified atmosphere (mm)	890
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	
Max power (W)	18500

Please note:

- Heat up rate when using a ceramic work tube must be limited to 5 °C/min
- Further to the depth of the control module 150 mm for the power plugs and other plugs needs to be added
- The power supply is based on 200 – 240 V for 1 phase and 380 – 415 V for 3 phase power
- Minimum uniform length in horizontal furnace with insulation plugs fi tted at 100 °C below max. temperature
- Maximum continuous operating temperature is 100 °C below maximum temperature
- Power supply: a = 1 phase (16A)+N / b = 3 phase (16A)+N / c = 3 phase (32A)+N / d = 3 phase (63A)+N