

## Split tube furnace up to 1300 °C - FST/FZS

### General Information

The FST, single zone, and FZS, 3-zone, split tube furnaces can be used either vertically or horizontally and have a maximum operating temperature of 1300 °C.

The split heating module allows either easy positioning of the work tube or positioning around reactors which have fixed end flanges. The split design may also allow faster cooling of the sample. Cooling channels are engineered into the housing to aid with convection cooling of the outer case. A handle is attached to the upper half of the split tube furnace with two quick-release clamps to safely unlock and lock the furnace.

The two furnace halves are ceramic fibre modules with high quality APM wire heating elements mounted in the insulation, held in position by a ceramic holding ridge. A safety switch protects the operator by switching off the heating elements once the furnace is opened.

Customized versions and a comprehensive range of tube furnace accessories complete the available options.



### Standard features

- 1300 °C maximum operating temperature
- Carbolite Gero 3216CC controller, with single ramp to setpoint & process timer
- 3-zone models fitted with 1 x 3216CC and 2 x 3216CC end zone controllers, with retransmission of setpoint
- Accepts work tubes with outer diameter up to 150 mm
- Single-zone heated lengths of 200, 500 or 1000 mm
- 3-zone heated lengths of 500 or 1000 mm
- Split design allows work tubes or reactors with fixed flanges to be accommodate
- For horizontal or vertical use
- Exceptionally long life time and temperature stability
- High grade type S thermocouple
- Low thermal mass ceramic fibre insulation
- High quality 5 mm APM wire heating elements
- Supplied 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
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)
- Wide choice of tube diameters and materials is available
- For split tube furnaces, robustly shaped ceramic half tubes are available to protect the heating elements and for sample holding
- 'L' stand for vertical and/or horizontal use

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- Insulation plugs & radiation shields to prevent heat loss & improve uniformity
- Modified atmosphere and vacuum packages are available
- Vacuum packages with a choice of rotary vane pump or turbomolecular pump are available
- Larger tube diameters
- Longer heated lengths
- Automated opening mechanism
- Flanges for inert gas counter flow
- Oxygen sensor for inert gas packages

## Technical Specifications

### FST 13/40/200

Dimensions: Max outer diameter accessory tube (mm)	40
Heated length (mm)	200
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	530 x 460 x 560
Furnace weight (kg)	35
Tube length for use in air (mm)	450
Tube length for use with modified atmosphere (mm)	985
Control module dimensions H x W x D (mm)	480 x 560 x 500
Control module weight (kg)	50
Uniform length ±5 °C (mm)	100
Power (kW)	1.5
Power supply	a

### FST 13/70/500

Dimensions: Max outer diameter accessory tube (mm)	70
Heated length (mm)	500
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	530 x 680 x 560
Furnace weight (kg)	50
Tube length for use in air (mm)	670
Tube length for use with modified atmosphere (mm)	1205
Control module dimensions H x W x D (mm)	480 x 560 x 500
Control module weight (kg)	50
Uniform length ±5 °C (mm)	250

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Power (kW)	3.0
Power supply	a

### FST 13/100/500

Dimensions: Max outer diameter accessory tube (mm)	100
Heated length (mm)	500
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	530 x 680 x 560
Furnace weight (kg)	75
Tube length for use in air (mm)	670
Tube length for use with modified atmosphere (mm)	1205
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
Power (kW)	4.0
Power supply	b

### FST 13/100/1000

Dimensions: Max outer diameter accessory tube (mm)	100
Heated length (mm)	1000
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	420 x 1200 x 350
Furnace weight (kg)	80
Tube length for use in air (mm)	1190
Tube length for use with modified atmosphere (mm)	1725
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5 °C (mm)	500
Power (kW)	10.4
Power supply	c

## Split tube furnace up to 1300°C - FST/FZS

### FST 13/150/1000

Dimensions: Max outer diameter accessory tube (mm)	150
Heated length (mm)	1000
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	590 x 1200 x 520
Furnace weight (kg)	100
Tube length for use in air (mm)	1190
Tube length for use with modified atmosphere (mm)	
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	500
Power (kW)	12.0
Power supply	d

### FZS 13/50/500

Dimensions: Max outer diameter accessory tube (mm)	50
Heated length (mm)	500
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	530 x 680 x 560
Furnace weight (kg)	50
Tube length for use in air (mm)	670
Tube length for use with modified atmosphere (mm)	1205
Control module dimensions H x W x D (mm)	480 x 560 x 500
Control module weight (kg)	50
Uniform length ±5°C (mm)	350
Power (kW)	3.0
Power supply	a

## Split tube furnace up to 1300°C - FST/FZS

### FZS 13/100/500

Dimensions: Max outer diameter accessory tube (mm)	100
Heated length (mm)	500
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	530 x 680 x 560
Furnace weight (kg)	75
Tube length for use in air (mm)	670
Tube length for use with modified atmosphere (mm)	1205
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	60
Uniform length ±5°C (mm)	300
Power (kW)	4.0
Power supply	b

### FZS 13/100/1000

Dimensions: Max outer diameter accessory tube (mm)	100
Heated length (mm)	1000
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	420 x 1200 x 350
Furnace weight (kg)	80
Tube length for use in air (mm)	1190
Tube length for use with modified atmosphere (mm)	1725
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	800
Power (kW)	10.4
Power supply	c

## Split tube furnace up to 1300 °C - FST/FZS

### FZS 13/150/1000

Dimensions: Max outer diameter accessory tube (mm)	150
Heated length (mm)	1000
Max temp (°C)	1300
Furnace dimensions H x W x D (mm)	590 x 1200 x 520
Furnace weight (kg)	100
Tube length for use in air (mm)	1190
Tube length for use with modified atmosphere (mm)	--
Control module dimensions H x W x D (mm)	850 x 560 x 500
Control module weight (kg)	90
Uniform length ±5°C (mm)	600
Power (kW)	12.0
Power supply	d

#### Please note:

- Heat up rate when using an optional 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 fitted at 100 °C below max. temperature
- Power supply: a = 1 phase (16A)+N / b = 3 phase (16A)+N / c = 3 phase (32A)+N / d = 3 phase (63A)+N