

## Three Zone Tube Furnaces

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### HZS – Horizontal Split 3-Zone Tube Furnaces

The HZS tube furnaces use free radiating wire elements embedded within the insulation of the furnace body. The benefit of this design is its flexibility; with the use of tube adapters the same furnace can be used with a variety of tube diameters.

These furnaces comprise a furnace body which is hinged and split into two halves along its length. This makes exchange of work tubes easier and also enables the furnace to be used with reactors or work tubes where end flanges would make insertion into a non-split furnace difficult.

Excellent uniformity results from division of the heated length into 3-zones each with its own controller and thermocouple. This range of tube furnaces does not include an integral work tube and one must be selected as an additional item. The work tube length is dependent on the application eg for use with modified atmosphere or vacuum. This information can be found on pages 92-93.

The use of a separate work tube has the advantage of protecting the heating elements from damage or contamination.



HZS 12/900

#### Standard features

- 1200 °C maximum operating temperature
- Accepts work tubes with outer diameters up to 110 mm
- Heated lengths of 600 mm or 900 mm
- Horizontal furnaces with a separate control module on a 2 metre conduit
- Furnace splits into two halves to accommodate work tubes or samples fixed into a test rig
- Wire elements in high quality vacuum formed insulation ensure fast heat up, excellent temperature uniformity and short cool down times
- Carbolite 301 digital PID controller with single ramp to setpoint, digital display and process timer
- End zone control is via back to back thermocouples
- End zones of 150 mm

#### Options (specify these at time of order)

- Three equal length zones
- Insulation plugs, gas tight end seals and vacuum connections available
- Wide choice of tube diameters and materials is available: eg quartz, ceramic, metal. See pages 92-93 for tube materials and dimensions
- Over-temperature control; recommended for unattended operation and to protect a valuable load
- Available with 'L' stand for vertical and horizontal use
- Control module on longer 6 metre conduit
- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 88-91)
- If programmed cooling is required, then programmable controllers capable of retransmission of setpoint can be supplied

#### Technical data

Model	Max temp (°C)	Heat-up time (mins)	Dimensions: Max outer diameter accessory tube (mm)	Dimensions: Heated length (mm)	Dimensions: Furnace body length (mm)	Recommended tube length for use in air (mm)	Recommended tube length for use with modified atmosphere (mm)	Dimensions: External Furnace H x W x D (mm)	Dimensions: Control module H x W x D (mm)	Uniform length ±5°C (mm)	Max power (W)	Holding power (W)	Thermocouple type	Weight (kg)
HZS 12/600	1200	45	110	600	750	750	1050	350 x 750 x 410	225 x 570 x 380	500	3000	1000	N	40
HZS 12/900	1200	45	110	900	1050	1050	1350	350 x 1050 x 410	225 x 570 x 380	750	4500	1400	N	65

**i** Please note:

- Holding power is measured at continuous operating temperature
- Heat up rate is measured to 100°C below max, using an empty tube & insulation plugs

- Uniform length measured with insulation plugs fitted
- Maximum continuous operating temperature is 100°C below maximum temperature



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