

TS1, TS3 Split Tube Furnaces

With a maximum temperature of 1200 °C, the TS tube furnace range incorporates high-quality heating elements and innovative thermal insulation design to achieve first class performance delivering both reduced case temperatures and power consumption.

The extensive range features three main case sizes, small, medium and large, with multiple heated lengths available. Standard models can be configured to function with a single heated zone (TS1) or three heated zones (TS3) to extend the uniform heated length. Each heated zone of the TS3 benefits from its own dedicated controller and thermocouple.

The TS furnace body is split into two halves and hinged at the rear; pneumatic dampening struts at either end provide a smooth opening action. The ability to open the furnace makes it easier for operators to exchange work tubes, or insert vessels, such as reactors, with end flanges that would make them difficult to insert into a non-split furnace.

An accessory work tube is required to protect the heating elements and support the work piece. The TS range can accommodate work tubes with outside diameters ranging from 60 mm to 200 mm.



TS1 12/125/600 with CC-T1 temperature programmer

Slide-in accessory work tubes and the use of tube adapters allow a single furnace to accommodate a variety of tube diameters. The work tubes themselves can easily be exchanged to meet the different physical or chemical requirements of a process.

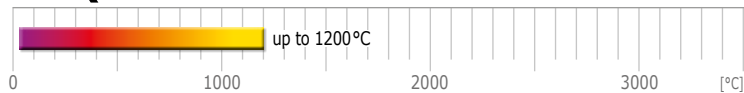
Optional work tube packages enable users to equip the TS for operation under vacuum or modified atmosphere; for such applications, an extended work tube is required. Information can be found on pages 42–43.

Standard features

- 1200 °C maximum operating temperature
- Programmable temperature controller with 24 segments.
 - TS1 fitted with Carbolite Gero EPC3016P1
 - TS3 fitted with Carbolite Gero CC-T1
- TS1 (1-zone) Heated length range from 150 to 1200 mm
- TS3 (3-zone) Heated length range from 450 to 1200 mm
- Accepts work tubes with outer diameters from 60 mm up to 200 mm
- Wire elements in high quality vacuum formed insulation ensure fast heat up, excellent temperature uniformity and short cool down times
- Furnace splits into two halves and accommodates tubes or samples fixed into a test rig
- Horizontal configuration mounted on control module for heated lengths up to 600 mm
- Furnace body detachable from the control box to allow use of optional mounting arrangements (see page 6–7)
- Horizontal configuration have a separate control module for heated lengths of 800 mm and above
- Control module with 2 metre cable to furnace with plug and socket



TS1 12/125/600 with CC-T1 temperature programmer



TS1 12/60/150 with CC-T1 and optional vertical package



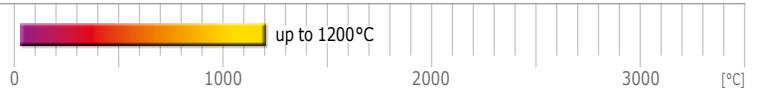
TS1 12/200/600 with CC-T1 temperature programmer

Options (specify these at time of order)

- A range of sophisticated digital controllers, multi-segment programmers and data loggers with digital communication options is available (see pages 36–40)
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)
- A range of additional work tubes (page 41), end seals (page 44) and work tube packages (pages 42–43) is available for use with modified atmosphere and/or vacuum
- Vacuum packages with a choice of rotary vane pump or turbomolecular pump are available (page 46)
- Wide choice of tube diameters and materials is available. See page 41 for tube materials
- Insulation plugs and radiation shields to prevent heat loss and improve uniformity
- Vertical mounting stand for the furnace body including bracket for mounting the furnace body to customer's equipment
- 4 m long extension cable to give a total 6 m length of cable between furnace body and control box
- Gas packages with manual valve (page 47)
- Gas packages with electrically operated valve for up to 3 gases (page 47)



TS1 12/60/150 with CC-T1 temperature programmer



Work tube package for air + vertical stand and vertical tube support package shown with a TS1 12/60/600



Detail showing work tube guiding bracket. This is supplied with the vertical tube support package.

Detail showing the lower work tube support clamp. This is supplied with the vertical tube support package.



Work tube package for gas atmosphere + vertical stand and vertical tube support package shown with a TS1 12/125/400



Detail showing work tube guiding bracket. This is supplied with the vertical tube support package.

Detail showing the lower work tube support clamp. This is supplied with the vertical tube support package.

Technical data – TS1, TS3 Small

Model	Max. temp. [°C]	Heat-up time [mins]	Dimensions: Max. outer ϕ accessory tube [mm]	Dimensions: Heated length [mm]	Recommended tube length		Dimensions: Horizontal External H x W x D [mm]	Dimensions: control box H x W x D [mm]	Uniform length $\pm 5^\circ\text{C}$ [mm]	Max. power [W]	Thermo-couple Type	Weight [kg]
					for use in air [mm]	for use with modified atmosphere [mm]						

Single Zone Split Tube Furnaces TS1

TS1 12/60/150	1200	99	60	150	430	600	560 x 485 x 480 (closed) 765 x 485 x 530 (open)	220 x 485 x 480	77	750	N	31
TS1 12/60/300	1200	46	60	300	580	750	560 x 495 x 480 (closed) 765 x 495 x 530 (open)	220 x 485 x 480	-	1500	N	37
TS1 12/60/450	1200	-	60	450	730	900	560 x 645 x 480 (closed) 765 x 645 x 530 (open)	220 x 635 x 480	-	2000	N	49
TS1 12/60/600	1200	-	60	600	880	1050	560 x 795 x 480 (closed) 765 x 795 x 530 (open)	220 x 785 x 480	-	2500	N	56

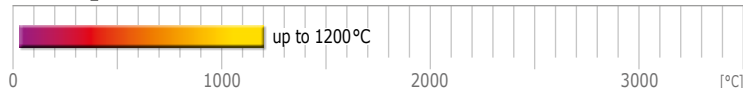
3-Zone Split Tube Furnaces TS3

TS3 12/60/450	1200	-	60	450	730	900	560 x 645 x 480 (closed) 765 x 645 x 530 (open)	220 x 635 x 480	-	2000	N	49
TS3 12/60/600	1200	63	60	600	880	1050	560 x 795 x 480 (closed) 765 x 795 x 530 (open)	220 x 785 x 480	-	2500	N	56

i Please note:

- Heat up time is measured to 100°C below max, using an empty quartz tube & insulation plugs
- Heat up rate when using an optional ceramic work tube must be limited to 5°C/min
- Holding power is measured at continuous operating temperature

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



Technical data – TS1, TS3 Medium

Model	Max. temp. [°C]	Heat-up time [mins]	Dimensions: Max. outer Ø accessory tube [mm]	Dimensions: Heated length [mm]	Recommended tube length		Dimensions: Horizontal External H x W x D [mm]	Dimensions: control box H x W x D [mm]	Max. power [W]	Holding power [W]	Thermo-couple type	Weight [kg]
					for use in air [mm]	for use with modified atmosphere [mm]						

Single Zone Split Tube Furnaces TS1

TS1 12/125/400	1200	134	125	400	750	1000	645 x 665 x 575 (closed) 905 x 665 x 655 (open)	220 x 655 x 480	1860	1100	N	71
TS1 12/125/600	1200	150	125	600	950	1200	645 x 865 x 575 (closed) 905 x 865 x 655 (open)	220 x 855 x 480	2510	1450	N	89
TS1 12/125/800	1200	147	125	800	1150	1400	430 x 1065 x 575 (closed) 690 x 1065 x 655 (open)	220 x 655 x 480*	3160	1600	N	102
TS1 12/125/1000	1200	147	125	1000	1350	1600	430 x 1265 x 575 (closed) 690 x 1265 x 655 (open)	220 x 655 x 480*	3810	1900	N	120
TS1 12/125/1200	1200	154	125	1200	1550	1800	430 x 1465 x 575 (closed) 690 x 1465 x 655 (open)	220 x 655 x 480*	4460	2350	N	134

3-Zone Split Tube Furnaces TS3

TS3 12/125/600	1200	113	125	600	950	1200	645 x 865 x 575 (closed) 905 x 865 x 655 (open)	220 x 855 x 480	2510	1450	N	89
TS3 12/125/800	1200	141	125	800	1150	1400	430 x 1065 x 575 (closed) 690 x 1065 x 655 (open)	220 x 655 x 480*	3160	1600	N	102
TS3 12/125/1000	1200	134	125	1000	1350	1600	430 x 1265 x 575 (closed) 690 x 1265 x 655 (open)	220 x 655 x 480*	3810	1900	N	120
TS3 12/125/1200	1200	138	125	1200	1550	1800	430 x 1465 x 575 (closed) 690 x 1465 x 655 (open)	220 x 655 x 480*	4460	2350	N	134

i Please note:

- Heat up time is measured to 100°C below max, using an empty quartz tube & insulation plugs
- Heat up rate when using an optional ceramic work tube must be limited to 5°C/min
- Holding power is measured at continuous operating temperature

- Uniform temperature lengths are measured with insulation plugs fitted
- Maximum continuous operating temperature is 100°C below maximum temperature
- * Furnace with separate control box

Technical data – TS1, TS3 Large

Model	Max. temp. [°C]	Heat-up time [mins]	Dimensions: Max. outer Ø accessory tube [mm]	Dimensions: Heated length [mm]	Recommended tube length		Dimensions: Horizontal External H x W x D [mm]	Dimensions: control box H x W x D [mm]	Max. power [W]	Holding power [W]	Thermo-couple type	Weight [kg]
					for use in air [mm]	for use with modified atmosphere [mm]						

Single Zone Split Tube Furnaces TS1

TS1 12/200/600	1200	62	200	600	1300	1300	530 x 1015 x 670 (closed) 845 x 1015 x 760 (open)	220 x 655 x 480*	6600	3400	N	127
TS1 12/200/1200	1200	80	200	1200	1900	1900	530 x 1615 x 670 (closed) 845 x 1615 x 760 (open)	220 x 1255 x 480*	11400	3800	N	192

3-Zone Split Tube Furnaces TS3

TS3 12/200/600	1200	62	200	600	1300	1300	530 x 1015 x 670 (closed) 845 x 1015 x 760 (open)	220 x 655 x 480*	6600	3400	N	127
TS3 12/200/1200	1200	80	200	1200	1900	1900	530 x 1615 x 670 (closed) 845 x 1615 x 760 (open)	220 x 1255 x 480*	11400	3800	N	192

i Please note:

- Heat up time is measured to 100°C below max, using an empty quartz tube & insulation plugs
- Heat up rate when using an optional ceramic work tube must be limited to 5°C/min
- Holding power is measured at continuous operating temperature

- Uniform temperature lengths are measured with insulation plugs fitted
- Maximum continuous operating temperature is 100°C below maximum temperature
- * Furnace with separate control box



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