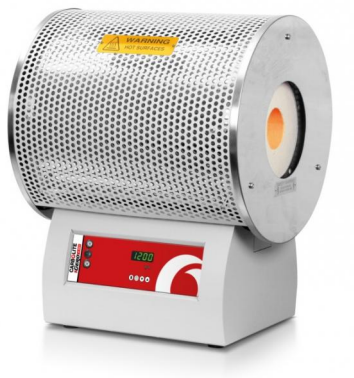
Modular Horizontal Tube Furnace GHA / GHC

General Information



The tube furnace range GHA (single zone) / GHC (three zone) uses 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.

The extended uniform zone in the mid-section of the work tube in the GHC 3-zone furnace is achieved with the use of end zone controllers which track the centre zone temperature and compensate for the loss of heat from the tube ends.

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, for example, for use with modified atmosphere or vacuum. The use of a separate work tube has the advantage of protecting the heating elements from damage or contamination.

Standard features

- 1200°C maximum operating temperature
- Carbolite Gero 301 controller, with single ramp to set-point & process timer
- Accepts work tubes with outer diameter up to 170 mm
- Heated lengths, single zone 300, 450, 600, 750, 900, 1050 or 1200 mm (GHA)
- Heated lengths, 3-zone 450, 600, 750, 900, 1050 or 1200 mm (GHC)
- End zones 150 mm long on each end (GHC)
- Long life, rapid heating, resistance wire elements mounted in rigid, vacuum formed insulation modules
- Horizontal configuration mounted on control module
- Furnace mounted directly on top of controller base unit

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)
- A range of additional work tubes, end seals and work tube packages is available for use with modified atmosphere and/or vacuum
- Vacuum packages with a choice of rotary vane pump or turbomolecular pump are available for furnaces with tube inner diameters of 60 mm and above
- Wide choice of tube diameters and materials is available: eg quartz, ceramic, metal
- Insulation plugs & radiation shields to prevent heat loss & improve uniformity
- End zones 300 mm long (GHC)
- Modified atmosphere and vacuum assemblies are available
- Over-temperature protection (recommended to protect valuable contents &

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for unattended operation)

- Retransmission of setpoint control configuration to facilitate programmed cooling
- Alternative mounting options are available

Technical Specifications

GHA 12/300	
Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	300
Heat-up time (mins)	90
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	500
Recommended tube length for use with modified atmosphere (mm)	900
Dimensions: External H x W x D (mm)	670 x 526 x 468
Dimensions: Furnace body length (mm)	480
Uniform length ±5°C (mm)	201
Max power (W)	2300
Thermocouple type	N
Weight (kg)	35

GHA 12/450	
Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	450
Heat-up time (mins)	75
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	650
Recommended tube length for use with modified atmosphere (mm)	1050
Dimensions: External H x W x D (mm)	670 x 676 x 468

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Dimensions: Furnace body length (mm)	630
Uniform length ±5°C (mm)	262
Max power (W)	3100
Thermocouple type	N
Weight (kg)	37

GHA 12/600

Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	600
Heat-up time (mins)	70
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	800
Recommended tube length for use with modified atmosphere (mm)	1200
Dimensions: External H x W x D (mm)	670 x 826 x 468
Dimensions: Furnace body length (mm)	780
Uniform length ±5°C (mm)	414
Max power (W)	3900
Thermocouple type	N
Weight (kg)	40

GHA 12/750

Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	750
Heat-up time (mins)	80
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	950
Recommended tube length for use with modified atmosphere (mm)	1350
Dimensions: External H x W x D (mm)	670 x 976 x 468

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Dimensions: Furnace body length (mm)	930
Uniform length ±5°C (mm)	448
Max power (W)	4600
Thermocouple type	N
Weight (kg)	51

GHA 12/900

Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	900
Heat-up time (mins)	--
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	1100
Recommended tube length for use with modified atmosphere (mm)	1500
Dimensions: External H x W x D (mm)	670 x 1126 x 468
Dimensions: Furnace body length (mm)	1080
Uniform length ±5°C (mm)	--
Max power (W)	5400
Thermocouple type	N
Weight (kg)	55

GHA 12/1050

Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	1050
Heat-up time (mins)	67
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	1250
Recommended tube length for use with modified atmosphere (mm)	1650
Dimensions: External H x W x D (mm)	670 x 1276 x 468

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Dimensions: Furnace body length (mm)	1230
Uniform length ±5°C (mm)	696
Max power (W)	6200
Thermocouple type	N
Weight (kg)	85

GHA 12/1200

Max temp (°C)	1200
Number of heated zones	Single zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated tube length (mm)	1200
Heat-up time (mins)	83
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	1400
Recommended tube length for use with modified atmosphere (mm)	1800
Dimensions: External H x W x D (mm)	670 x 1426 x 468
Dimensions: Furnace body length (mm)	1380
Uniform length ±5°C (mm)	--
Max power (W)	7000
Thermocouple type	N
Weight (kg)	90

GHC 12/450

Max temp (°C)	1200
Number of heated zones	Three zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated length (mm)	450
Heat-up time (mins)	75
Max continuous operating temp (°C)	1100
Tube length for use in air (mm)	650
Tube length for use with modified atmosphere (mm)	1050
Dimensions: External H x W x D (mm)	672 x 676 x 468
Dimensions: Furnace body length (mm)	630

Modular Horizontal Tube Furnace GHA / GHC

Uniform length ±5°C (mm)	300
Max power (W)	3100
Holding power (W)	1551
Thermocouple type	N
Weight (kg)	37

GHC 12/600

Max temp (°C)	1200
Number of heated zones	Three zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated length (mm)	600
Heat-up time (mins)	53
Max continuous operating temp (°C)	1100
Tube length for use in air (mm)	800
Tube length for use with modified atmosphere (mm)	1200
Dimensions: External H x W x D (mm)	672 x 827 x 468
Dimensions: Furnace body length (mm)	780
Uniform length ±5°C (mm)	440
Max power (W)	3900
Holding power (W)	1889
Thermocouple type	N
Weight (kg)	40

GHC 12/750

Max temp (°C)	1200
Number of heated zones	Three zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated length (mm)	750
Heat-up time (mins)	62
Max continuous operating temp (°C)	1100
Tube length for use in air (mm)	950
Tube length for use with modified atmosphere (mm)	1350
Dimensions: External H x W x D (mm)	672 x 976 x 468
Dimensions: Furnace body length (mm)	930
Uniform length ±5°C (mm)	500
Max power (W)	4600

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Holding power (W)	2571 @ 1200°C 1704 @ 1000°C
Thermocouple type	N
Weight (kg)	51

GHC 12/900

Max temp (°C)	1200
Number of heated zones	Three Zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated length (mm)	900
Heat-up time (mins)	90
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	1100
Recommended tube length for use with modified atmosphere (mm)	1500
Dimensions: External H x W x D (mm)	672 x 1126 x 468
Dimensions: Furnace body length (mm)	1080
Uniform length ±5°C (mm)	640
Max power (W)	5400
Holding power (W)	2800
Thermocouple type	N
Weight (kg)	55

GHC 12/1050

Max temp (°C)	1200
Number of heated zones	Three zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated length (mm)	1050
Heat-up time (mins)	67
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	1250
Recommended tube length for use with modified atmosphere (mm)	1650
Dimensions: External H x W x D (mm)	672 x 1276 x 468
Dimensions: Furnace body length (mm)	1230
Uniform length ±5°C (mm)	880
Max power (W)	6200

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Holding power (W)	2850
Thermocouple type	N
Weight (kg)	85

GHC 12/1200

Max temp (°C)	1200
Number of heated zones	Three zone
Dimensions: Max outer diameter accessory tube (mm)	170
Dimensions: Heated length (mm)	1200
Heat-up time (mins)	61
Max continuous operating temp (°C)	1100
Recommended tube length for use in air (mm)	1400
Recommended tube length for use with modified atmosphere (mm)	1800
Dimensions: External H x W x D (mm)	672 x 1426 x 468
Dimensions: Furnace body length (mm)	1380
Uniform length ±5°C (mm)	--
Max power (W)	7000
Holding power (W)	3163
Thermocouple type	N
Weight (kg)	--

Please note:

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