

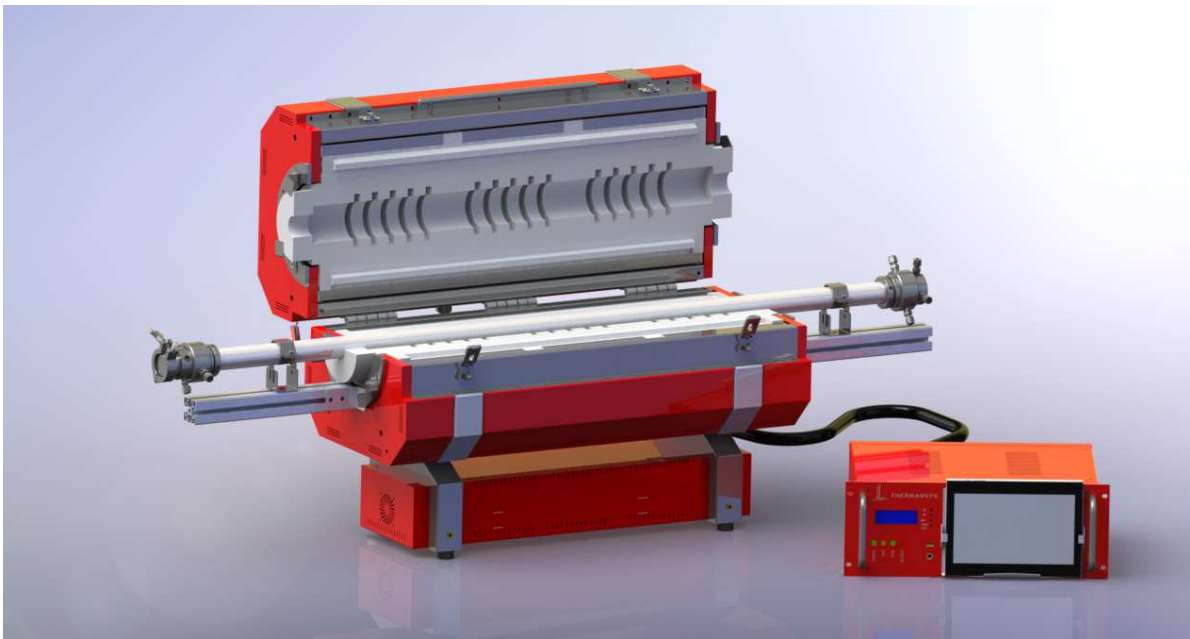
REACTOR TYPE FURNACES

Universal mounting - Split Tube - Remote Control – Single or Three Zone

Model family: **RCT-AW1-O-1150**

Description.

RCT-AW1-O-1150 models family designed to offer a **flexible solution** for the majority of applications involving controlled atmosphere tubular reactors heating, up to 1100 °C. The hinged construction offer convenience to the reactor installation and setting up access and provide a solution in situations where reactor is permanently connected to the processes manifold where furnace could literally wrapped around it. Due to the nature of the insulation material, that can tolerate ultra high temperature gradients, these models provide a reliable solution in processes require fast reactor cooling. The free option of horizontal or vertical positioning in conjunction with the remote control unit maximizes user flexibility and increase the number of the same part potential uses. Equipped with our **PYROMODULAR** controller these furnaces are easily and professionally adapted into fully instrumented scientific instruments.



Model shown RCT-AW1-O-3Z_D7L75-1150 with PYROMODULAR main controller and an optional 40mm Alumina gas sealed reactor tube. Aluminum profile reactor holding arms are standard included.

Key features.

- Best available quality KANTHAL® spiral shape FeCrAl wire resistors insure furnace long life operation up to 1100°C continuously.
- Extremely low mass vacuum formed thermal insulation enables high output available for the load and fast heat up rates while significantly contributes to energy savings under daily thermal cycling.
- Control strategy focusing in high power factor leads to energy savings and insures compliance with EMC (Electro-Magnetic Compatibility) standards.
- PID control- accurate and uniform temperature profiles.
- Modern double wall construction keeps external surfaces temperature low, emphasizing in operator safety. Internal skin is exclusively made from stainless steel to enhance durability.
- Furnace closure interlock prevents heaters powering, if furnace is opened, through mechanical conductors.
- Deterministic over-temperature limiter with manual reset, in accordance with EN 60519-2 to protect the oven and load.
- Hinged - split tube – construction, operation position horizontal or vertical.

Contact details

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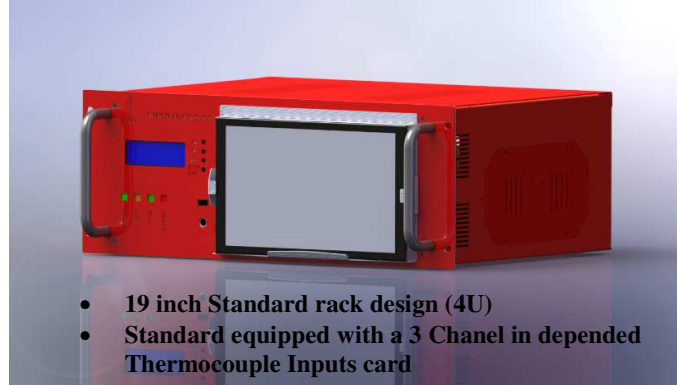
Thermansys® is reserving the right to make modifications as a result of design improvements.

PYROMODULAR System at a Glance.

Operated through the specially developed **PYROLOGISM 2.0** software and equipped with a touch screen computer **PYROMODULAR** is a state of the art control, monitoring and data acquisition system. Taking advantage of the optional expanding capabilities of this system the user can not only just control the furnace but create a fully instrumented and totally integrated high temperature reactor system.

PYROMODULAR Main Controller.

Standard equipped with a Digital LCD display temperature controller providing 15 step programming with 1 program storage.



- 19 inch Standard rack design (4U)
- Standard equipped with a 3 Channel independent Thermocouple Inputs card

Optionally equipped with a remote, Touch Screen Computer, running the specially designed **PYROLOGISM 2.0** software. Provides a really unique and friendly, windows oriented architecture interface with multiple, advanced features and peripherals.

PYROMODULAR- Modules Palette

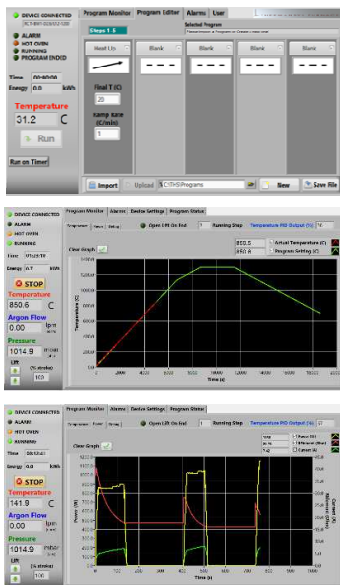
Each Pyromodular Main Controller can be connected with one or all of the following optional modules:

PM – Gas Flow and Pressure Gas flow control manifold with Mass Flow Controllers for process gas control.

PM – Gas Analyzers In line low cost embedded IR analyzers.

PM – Vacuum Rough (up to 10^{-3} torr) and High (up to 10^{-7} torr) complete vacuum systems.

“For detailed information and ordering please contact our sales team.”



PYROLOGISM 2.0 control and monitoring software.

- Programming with up to 15 Temperature programming steps. Graphical inspection.
- Storage and reload of unlimited number of distinct programs.
- Continuous monitoring of control Temperature and Independent thermocouple inputs.
- Real time graphical presentation of executed program data.
- Data file creation for all executed programs. Saves all data on local memory.
- Real time actual Power (W) and totalized Energy (kWh) chart.
- Alarm and event message tab. Overheating Alarm, open Thermocouple Alarm, Heater Alarm.
- Programmable over temperature limiter monitor/configuration.
- Remote control through network connection.
- Gas flow and pressure, gas analyzers signals, monitoring and control interface pages activated if corresponding PM modules are enabled.
- Power Safe, Uninterrupted Power Supply backup configuration. Recovers program after short term power failure.

Accessories Available.

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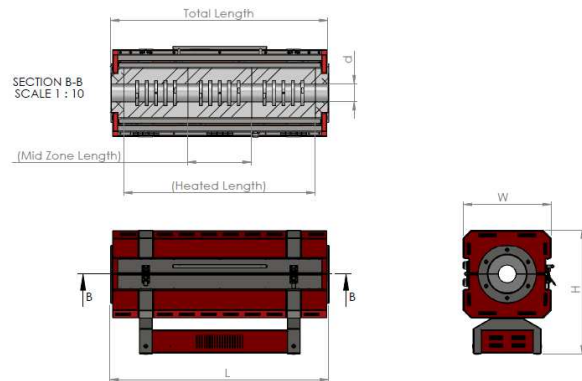
Model shown RCT-AW1-O-3Z_D7L75-1150 with optional mounting stand, Alumina work-tube and inlet/outlet end sealing gas flanges

Mounting Stands.

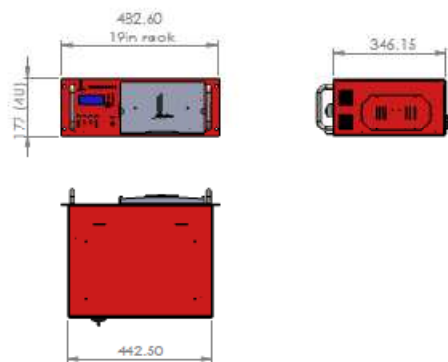
Assembled and constructed using BOSCH-REXROTH® structural profile systems these stands provide the ideal solution for vertical furnace stand alone positioning plus reactor and instrumentation mounting. Using the commercially available accessories, tubing and cable routing is easy and professionally accomplished. Stands with electronically actuated furnace move-up and down provide a solution for heating zone moving along the reactor length.

For detailed information and ordering please refer to our Technical Bulletin “**Reactor Type Furnaces–Mounting Stands**”

Technical Drawings.



Drawing 1. RCT-AW1-O-....-1150 Furnace



Drawing 2. PYRO MODYLAR Main Controller

Specifications and Ordering Information.

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- Maximum continuous temperature 1100 °C.
- Operating Power: 208 /240VAC – 50/60Hz.
- K type embedded thermocouples.
- Mounting orientation: Horizontal, and vertical.
- Temperature control accuracy ± 1 °C.
- Semi-exposed resistors type.
- Single zone or three heating zone(s) configuration models.
- Heating/cooling rate 0.1-50 °C/min, setting resolution 0.1
- Thermocouple inputs:
3 chan. - B, E, J, K, N, R, S, T type -software configurable
24 bit A/D conversion, 0-45°C cold junction compensated
Typical accuracy $\pm 0.2\%$ f.s @ 25 , resolution 0.1 °C

Optional features:

- Remote, touch screen temperature computer, running the specially designed PYROLOGISM 2.0 software on a 10.0in Tablet PC
Add suffix _TSC
- Programmable stand-alone over-temperature limiter (Watchdog) with manual reset in accordance with EN 60519-2 to protect the heater and load,
Add suffix _WD
- UPS (Uninterrupted Power Supply) that will keep system alive for short periods of power failure and restore program after power recovery
Add suffix _UPS

CE Certified. Compliant with **Low Voltage Directive 2006/95/EC** (harmonized referenced standard EN 61010-1:2001 and EN 61010-2-010:2003) and **EMC Directive 2004/108/EC** (harmonized referenced standard EN61326-1:2006).
Produced in **GREECE** following **ISO 9001:2008 quality management system** and **ISO 14001:2004 environmental management system**.

TABLE1. Single Zone Models

| Model Part Number | Max. Cont. Temp. °C x Heat up time* min | Furnace I.D. mm x Heated length mm x Total length mm | Uniform Temp. length mm ± 10 °C approx. ** | Furnace external dim. WxHxL mm see drawing 1 | Nominal Max. Power (W) |
|-------------------|---|--|---|---|------------------------------|
| RCT-AW1-O-1Z... | | | | | |
| _D7/L25-1150 | 1100 x 60 | 70x250x350 | 50 | 340x490x356 | 900 |
| _D7/L50-1150 | 1100 x 60 | 70x500x600 | 300 | 340x490x606 | 1800 |
| _D10/L30-1150 | 1100 x 60 | 100x300x400 | 100 | 370x520x406 | 1500 |
| _D10/L60-1150 | 1100 x 60 | 100x600x700 | 400 | 370x520x706 | 3000 |
| _D15/L30-1150 | 1100 x 60 | 150x300x400 | 100 | 420x570x406 | 2300 |
| _D15/L50-1150 | 1100 x 60 | 150x500x600 | 300 | 420x570x606 | 3800 |
| _D15/L60-1150 | 1100 x 60 | 150x600x700 | 400 | 420x570x706 | 4600 |
| _D20/L50-1150 | 1100 x 60 | 200x500x600 | 300 | 470x620x606 | 5000 |
| _D20/L80-1150 | 1100 x 60 | 200x800x900 | 600 | 470x620x906 | 8000 |

TABLE2. Three Zone Models

| Model Part Number | Max. Cont. Temp. °C x Heat up time* min | Furnace I.D. mmx Heated length mmx Mid.zn. length mmx Total length mm | Uniform Temp. length mm ± 10 °C approx. ** | Furnace external dim. WxHxL mm see drawing 1 | Nominal Max. Power (W) |
|-------------------|---|--|---|---|------------------------------|
| RCT_AW1_O_3Z... | | | | | |
| _D7/L75-1150 | 1100 x 60 | 70x750x250x850 | 550 | 340x490x856 | 2700 |
| _D7/L100-1150 | 1100 x 60 | 70x1000x500x1100 | 800 | 340x490x1106 | 3600 |
| _D10/L75-1150 | 1100 x 60 | 100x750x250x850 | 550 | 370x520x856 | 3900 |
| _D10/L90-1150 | 1100 x 60 | 100x900x300x1000 | 660 | 370x520x1006 | 4500 |
| _D10/L110-1150 | 1100 x 60 | 100x1100x500x1200 | 860 | 370x520x1206 | 5600 |
| _D15/L75-1150 | 1100 x 60 | 150x750x250x850 | 550 | 420x570x856 | 5400 |
| _D15/L90-1150 | 1100 x 60 | 150x900x300x1000 | 660 | 420x570x1006 | 6900 |
| _D15/L110-1150 | 1100 x 60 | 150x1100x500x1200 | 860 | 420x570x1206 | 8400 |
| _D20/L90-1150 | 1100 x 60 | 200x900x300x1000 | 660 | 470x620x1006 | 9000 |
| _D20/L110-1150 | 1100 x 60 | 200x1100x500x1200 | 860 | 470x620x1206 | 11000 |

* Furnace working with no load and both ends closed

** Simulated indicative data. Valid for common set-point for all heating zones, dense alumina process reactor fit to furnace diameter and with both ends plugged. Actual performance may vary depending on orientation, load mass and placement, reactor size and process gas flow existence.

IMPORTANT ORDERING NOTES:

- Models Part Number listed in Tables 1 and 2 concern complete turn key systems with PYROMODULAR main controller included.

Ordering Example:

RCT-AW1-O_3Z-D7/L75-1150: This Part Number includes one RCT-AW1-T-1150 family furnace having 3 heating zones, 70mm internal diameter, 250mm mid zone length and one PYROMODULAR Main Controller.

RCT-AW1-O_3Z- D7/L75-1150_TSC: This Part Number includes the system described above with Remote, touch screen temperature computer, running the specially designed PYROLOGISM 2.0 software on a 10.0in Tablet PC

- To order only the furnace add at the end of the part number the suffix "Single", e.g. RCT-AW1-O-3Z-D7/L75-1150_Single.

- Optional furnace accessories or mounding stands are ordered separately according to the respective data sheet ordering information.

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