Hot Plate / Stirrer
Heating Element

WIGGENS
THE MAGIC MOTION

Laboratory Hotplate Stirrer

Attractive design for demanding heating & mixing application

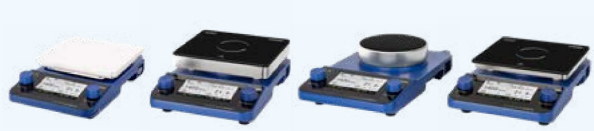
Our new complete range laboratory hotplate stirrers will meet your high demands every day!

More Powerful Units

WH380 / WH385 WH390/ WH395-NH/ WH395

Intelligent heating technology
for your very demanding applications
UP to 1800W heating power

IR Heating



WH280-AH WH280-H WH280-R WH280-NH

Elite series
High bright TFT touch screen
Intelligent Cascade Control
Two external sensors can be connected
RS485

IR Heating

WH260-AH WH260-NH WH260-R WH420R-L

Pro series
large and clear LCD display
Intelligent PID
USB interface

IR Heating

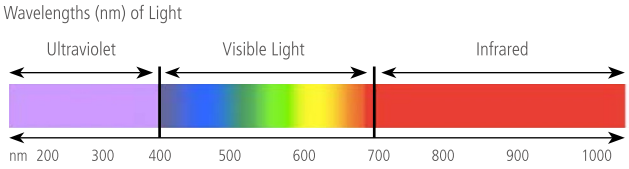
WH200 WH210 WH420 WH620

New entry level for
lab heating & mixing

Multi-position heating & mixing

Why Infrared Radiation Heating?

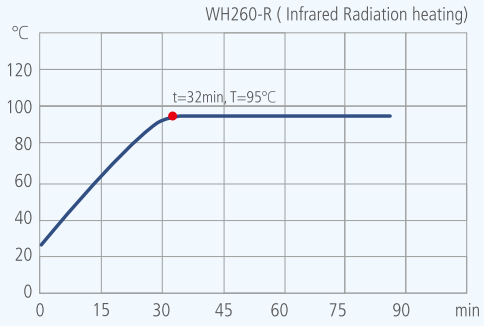
Infrared radiation heating refers to the emission and transmission of light waves in the spectrum between 0.7um and 100um, accompanied by noticeable and directional energy transfer. This energy transfer does not require any medium, even in a vacuum. Infrared heating utilizes electromagnetic waves with a wavelength of 2.5 to 15 um, which propagate at a much faster speed than conduction and convection.



IR Heating

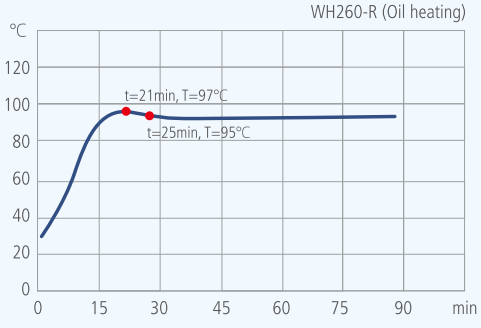
The magnetic heating stirrer incorporates advanced infrared radiation (IR) technology, providing direct, clean, and safe heating. This innovative heating method allows the WIGGENS hotplate-stirrer to quickly heat various shaped vessels, including round-bottom flasks, with the solution inside reaching a maximum temperature of 450℃ in a short time. Unlike oil heating, infrared radiation heating eliminates the need for bath oil, ensuring a direct and clean heating process without oil splashing.

The high infrared permeability facilitates fast and efficient transfer of heating energy with minimal loss, resulting in faster heating of liquids and significant time and energy savings. With PID control or advanced ICC technology, excellent temperature stability can be achieved. By connecting a Pt-100 sensor, temperature-controlled operations with a stability of ± 2℃ can be achieved in most applications.



Glass bath :
Used for sample splashing or other accidents occurring protection

Wiggens IR Heating



Oil bath

Wiggens IR Heating (Oil Bath)

Disadvantages of conventional heating method

WIGGENS
THE MAGIC MOTION

Digital Hot Plate / Stirrer New entry level for lab heating & mixing

WH200 / WH210

> Our laboratory hotplates / stirrers are developed and produced according to high international quality standards.
> Advanced microprocessor controlling system guarantees the reliability and temperature stability.
> Bright and clear LED digital display and setting for the working temperature and stirring speed.
> Memory function for stirring speed and temperature setting, convenient for experiments with fixed conditions.
> Liquid drainage above the control board to prevent liquids from accessing the system.
> Direct connection for thermocouple sensor for convenient solution temperature control.
> WH200 and WH210 are suitable for general laboratory application.
> When the temperature of the top plate is above 60℃ , hot-top indicator will light up for the user's safety protection.

Standard thermocouple sensor
Accurate solution temperature within ±1℃ in general range.

Safety protection
Flashing high temperature indicator, warning for hurt by touch

Temperature and Speed display
WH200 and WH210 display temperature and speed at the same time, and remember the last working parameters

Liquid drainage
Above the control board
Avoid the solution splashing on the touch board.

Top plate material
WH200 with aluminum plate, WH210 with SS304 plate. WH210 SS304 coated with ceramic

Specifications

Model	WH200	WH210	WH220
Order No.	400302	400402	400400
Maximum temperature setting [℃]	250	350	380
Maximum temperature setting with E-sensor [℃]	250	350	380
Safety temperature [℃]	280	380	50~430 adjustable
Temperature stability with E-sensor [℃]	±2	±2	±2
Heat output [W]	300	500	500
External temperature sensor	Thermocouple	Thermocouple	Pt100
PID parameter	1 set	1 set	2 sets
Speed setting range [rpm]	100~1500	100~1500	100~1500
Temperature and Speed display	LED display	LED display	LCD display
Temperature and Speed setting	Turning knob	Turning knob	Turning knob
Top plate material	Aluminium alloy	Stainless steel coated with ceramic	Stainless steel coated with ceramic
Top plate dimensions [mm]	165 x150	180 x145	180 x145
Dimensions W x D x H [mm]	230X200X100	270X230X100	230X200X100
Weight [kg]	1.5	3.0	3.1
Power supply	220V/50Hz	220V/50Hz	220V/50Hz

* Measured with 500ml water at 80 ℃

Standard package includes: hot plate / stirrer, thermocouple sensor (Order No. 600.170.1) with holder and clamp, stirrer bar (Order No. 1.230.8)

Digital Hot Plate / Stirrer Multi-position heating & mixing

WH420 / WH620

> Advanced microprocessor controlling system guarantees the reliability and temperature stability
> Bright and clear LED digital display and setting for the working temperature, stirring speed, working time, and safety temperature
> Memory function for stirring speed and temperature setting, convenient for experiments with fixed conditions
> Liquid drainage above the control board to prevent liquids from accessing the system
> Direct connection for Pt100 temperature sensor for convenient solution temperature control
> Sealed outer shell and isolated critical parts design for enhanced longevity even in a harsh laboratory environment
> When the temperature of the top plate is above 60℃ , hot-top indicator will light up for the user's safety protection

Standard PT100 temperature sensor
Accurate solution temperature within ±1℃ in general range.

Safety protection
Flashing high temperature indicator, warning for hurt by touch.

LED selectable
Display temperature and speed at the same time, and remember the last working parameters

Liquid drainage
Above the control board
Avoid the solution splashing on the touch board.

Ceramic top plate
Great anti-corrosive ability to acid, base, or organic solvents.

Specifications

Model	WH420	WH620
Order No.	400315	400316
Number of stirring positions	4	6
Maximum temperature setting [℃]	300	300
Maximum temperature setting with E-sensor [℃]	300	300
Safety temperature [℃]	370	370
Temperature stability with E-sensor [℃]*	±1	±1
Total heating output [W]	1000	1500
External temperature sensor	Pt100	Pt100
PID parameter	1 set	1 set
Speed setting range [rpm]	150~1500	150~1500
Stirring quantity max [L / H_2O]	2	2
Temperature and Speed display	LED display	LED display
Temperature and Speed setting	Turning knob	Turning knob
Time setting	1~9959min / continuous	1~9959min / continuous
Top plate material	Aluminium coated with ceramic	Aluminium coated with ceramic
Top plate dimensions [mm]	(160×155) x4	(150×133) x6
RS 232 interface	Yes	Yes
Dimensions W x D x H [mm]	405x320x80	525x320x87
Weight [kg]	8.5	9.0
Power supply	220V/50Hz	220V/50Hz

*Measured with 500ml water at 80 ℃

Standard package includes: Hot plate / stirrer, thermocouple sensor PT100-01 with holder and clamp , stirrer bar 4pcs or 6pcs (Order No. 1.230.8)

WIGGENS
THE MAGIC MOTION

Multi-position hot plate/stirrer

WH420R-L / 620R-L / WH420R-D / 620R-D

> WIGGENS multi-position heat magnetic stirrer, each position can work independently, ceramic glass plate has excellent chemical corrosion resistance, easy to clean. Efficient infrared heating technology ensures high efficiency and accuracy of temperature control. Ceramic glass plate are resistant to heat impact over 700℃ .
> The control panel is made of waterproof and anti-corrosion material, which protects the panel from damage caused by splashing or spilling of liquid.
> The WH420R /WH620R series is configured with three sets of PID parameters, which are optional from the menu. PID1 is suitable for small sample heating (small volume or small specific heat capacity), PID 3 is suitable for a large vol of samples for rapid heating.
> Each position is independent display, control system; Each of them is equipped with separate safety temperature control and monitoring.

WH420R-L

WH620R-D

Standard package includes: Main unit/sensor and holder (match the number of working position)

Specifications

Model	WH420R-L	WH620R-L	WH420R-D	WH620R-D
Order no.	W3010415	W3010416	W3010425	W3010426
Maximum temperature setting [℃]	450	450	450	450
Maximum temperature setting with E-sensor [℃]	300	300	300	300
Safety temperature [℃]	50-500 adjustable	50-500 adjustable	50-500 adjustable	50-500 adjustable
High temperature protection [℃]	10-50 adjustable	10-50 adjustable	10-50 adjustable	10-50 adjustable
Temperature stability with E-sensor [℃]*	±1	±1	±1	±1
Heat output，each position/set [W]	500W/2000W	500W/3000W	500W/2000W	500W/3000W
External temperature sensor	Pt100	Pt100	Pt100	Pt100
Temperature control	3	3	3	3
Speed setting range [rpm]	100-1500	100-1500	100-1500	100-1500
Stirring quantity max [L / H_2O]	20L	20L	20L	20L
Display/Control	Independent control LCD digital display/knob operation			
Time setting	1~999min/continuous	1~999min/continuous	1~999min/continuous	1~999min/continuous
Top plate material	Ceramic glass	Ceramic glass	Ceramic glass	Ceramic glass
Top plate dimension [mm]	Ø135	Ø135	Ø135	Ø135
Communicate interface.	USB-A	USB-A	USB-A	USB-A
Dimensions W*D*H（Sensor set's not included）	786*309*113mm	1180*309*113mm	388*473*138mm	582*473*138mm
Weight（Kg）	15.5	23.5	15.8	23.8
Power supply	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ

*Measured with 500ml water at 80 ℃

Infrared Hot Plate / Stirrer

Attractive design for demanding heating & mixing

WH260-NH / WH260-H / WH260-R / WH260-RL

The WIGGENS new hotplate stirrer offers several advantages due to its Schott glass ceramic surface. It provides chemical resistance, high surface quality, and can withstand temperature shocks of over 700℃ , making it a superior choice compared to conventional heating surface materials. The high infrared permeability ensures efficient transfer of heating energy with minimal loss, resulting in fast heating of liquids and significant time and energy savings. PID control ensures good temperature stability, and when a Pt-100 sensor is connected, temperature-controlled work with a stability of ± 2℃ can be achieved in most applications.

The device features a large and clear LCD display that allows users to view and monitor essential parameters such as working temperature, stirring speed, working time, and safety temperature. It also includes a memory function for stirring speed and temperature settings, making it convenient for experiments with fixed conditions. To prevent liquids from reaching the touching board and electronics, there is liquid drainage above the control board. Additionally, a direct connection for a Pt100 temperature sensor enables easy solution temperature control.

The hotplate stirrer is designed with a sealed outer shell and isolated critical parts to enhance its longevity, even in harsh laboratory environments. It offers high safety protection, automatically shutting off the heating when exceeding the safety range of the hotplate (adjustable between 10-50℃) to ensure user safety. With three sets of PID parameters, it is suitable for accurate control of smallvolume samples, rapid heating, and stable temperature control of large-volume

Standard PT100 temperature sensor

Accurate solution temperature within ±1℃ in general range.

LCD display

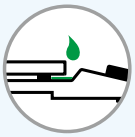
Simultaneously displaying various parameters, memory of the last working parameters.

Ceramic glass top plate

Great anti-corrosive ability to acid, base, or organic solvents.

Safety protection

Flashing high temperature indicator, warning for hurt by touch.



Liquid drainage

Above the control board

Avoid the solution splashing on the touch board.

Intelligent PID

Suitable for different application, for accurately controlling the quick heating of small sample and the stable temprature control of large sample.

Overheating protection

If the internal temperature exceeds the permissible temperature that may damage the internal electronic components, the heating power will be reduced automatically.

USB-A interface

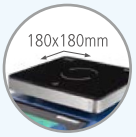
Enable the unit to be connected to a PC for operating

Safety temperature

is an adjustable temperature safety circuit that prevents from exceeding a specified set temperature. The safety temperature can be adjusted by using a special tool included in the product delivery

Ceramic glass top plate

Ceramic Glass by Schott combines chemical resistance, top quality surfaces and resistance to temperature shocks of greater than 700℃ .



WH260-H / NH / AH

Plate dimension: 180x180mm

WH260-R / AR

Plate dimension: Ø135cm

Suitable for parallel application

Compact

Height: Only 85mm

Easy to operate

Rotating knobs control panel

WIGGENS
THE MAGIC MOTION

Strong & Robust

WH260-R

WH260-NH

In addition to speedy heating up and good temperature control, WH260-NH also offers well controlled liquids mixing from gentle to intense, being suitable for big volume viscous media as well.

WH260-AH WH260-NH WH260-H WH260-R

Specifications

Model	WH260-AH	WH260-NH (NEW!)	WH260-H	WH260-R	WH260-RL
Order No.	W3012601	W3012602	W3012603	W3012605	W3012606
Maximum temperature setting [℃]	380	450	450	450	450
Maximum temperature setting with E-sensor [℃]	200	300	300	300	300
Safety temperature [℃]	50~430 adjustable	50~500 adjustable	50~500 adjustable	50~500 adjustable	50~500 adjustable
High temperature protection [℃]	10~50 adjustable	10~50 adjustable	10~50 adjustable	10~50 adjustable	10~50 adjustable
Temperature stability with E-sensor [℃]*	±1	±1	±1	±1	±1
Heat output [W]	800	1000	800	800	800
External temperature sensor	Pt100	Pt100	Pt100	Pt100	Pt100
PID parameter	3 sets	3 sets	3 sets	3 sets	3 sets
Speed setting range [rpm]	100~1500	100~1500	100~1500	100~1500	100~1500
Stirring quantity max [L / H_2O]	20	20	20	20	20
Temperature and Speed display	LCD display	LCD display	LCD display	LCD display	LCD display
Temperature and Speed setting	Turning knob	Turning knob	Turning knob	Turning knob	Turning knob
Time setting	1~1999min / continuous	1~1999min / continuous	1~1999min / continuous	1~1999min / continuous	1~1999min / continuous
Top plate material	Ceramic glass	Ceramic glass	Ceramic glass	Ceramic glass	Ceramic glass
Top plate dimensions [mm]	180×180	180×180	180×180	Ø135	Ø145
USB-A interface	Yes	Yes	Yes	Yes	Yes
Dimensions W x D x H [mm]	190x320x70	190x320x70	190x320x85	190x320x90	190x320x90
Weight [kg]	2.8	2.8	3.1	3.0	3.0
Power supply	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz

*Measured with 500ml water at 80 ℃

Standard package includes: Hot plate / stirrer, thermocouple sensor PT100-01 with holder and clamp, stirrer bar (Order No. 1.230.8)

Infrared Hot Plate / Stirrer

Attractive design for demanding heating & mixing

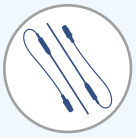
WH280-AH / WH280-NH / WH280-H / WH280-R / WH280-RL

The WIGGENS new hotplate stirrer enjoys the benefits of Schott glass ceramic surface such as chemical resistance, a high surface quality, and a resistance to temperature shocks of more than700℃ , providing the users with optimal solution compared to conventional heating surface materials. The high infrared permeability ensures that the heating energy is transferred quickly and
with very limited loss. i.e. it heats liquids fast and thus saves time and energy. PID control enables good temperature stability. If the Pt-100 sensor is connected, temperature-controlled work with stability of ± 1℃ can be reached in most applications.
All functions can be viewed and monitored on a large and clear LCD display, including most frequently used parameters like working temperature, stirring speed, working time, and safety temperature etc.

> Memory function for stirring speed and temperature setting, convenient for experiments with fixed conditions.
> Liquid drainage above the control board to prevent liquids from accessing the touching board and the electronics.
> Direct connection for Pt100 temperature sensor for convenient solution temperature control.
> Sealed outer shell and isolated critical parts design for enhanced longevity even in a harsh laboratory environment.
> High safety protection: When exceeding the safety range of the hotplate (10-50 ℃ adjustable) , the heating can be shut off immediately and automatically for the safety protection.
> ICC technology to self-optimize for optimal heating results.

TFT high-definition color touch screen

Synchronous display of set temperature, actual temperature, and rotational speed. Automatic memory of the last set working parameters.



Two external sensors can be connected

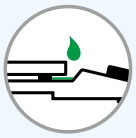
The first PT100 is used to test and control the sample temperature, and the second thermocouple is only for reference temperature value

Ceramic glass top plate

Great anti-corrosive ability to acid, base, or organic solvents.

Safety protection

Flashing high temperature indicator, warning for hurt by touch.



Liquid drainage

Above the control board
Avoid the solution splashing on the touch board.

Intelligent Cascade Control

self-optimizing, for optimal results.
Excellent temperature stability

Overheating protection

If the internal temperature exceeds the permissible temperature that may damage the internal electronic components, the heating power will be reduced automatically.

RS232 interface

Enable the unit to be connected to a PC for operating

Safety Temperature

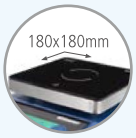
is an adjustable temperature safety circuit that prevents from exceeding a specified set temperature. The safety temperature can be adjusted by using a special tool included in the product delivery

Sensor in medium detection

If the sensor falls during the heating process, it will automatically trigger the device alarm

Direction of rotation

Clockwise or counterclockwise



WH280-H / NH / AH

Plate dimension: 180x180mm

WH280-R / AR

Plate dimension: Ø135cm
Suitable for parallel application

Compact

Height: Only 85mm

WIGGENS
THE MAGIC MOTION

Strong & Robust

WH280-R

WH280-NH

In addition to speedy heating up and good temperature control, WH280-NH also offers well controlled liquids mixing from gentle to intense, being suitable for big volume viscous media as well.

WH280-AH

WH280-NH

WH280-H

WH280-R

Specifications

Model	WH280-AH	WH280-NH (NEW!)	WH280-H	WH280-R	WH280-RL
Order no.	W3012801	W3012802	W3012803	W3012805	W3012806
Maximum temperature setting [℃]	380	450	450	450	450
Maximum temperature setting with E-sensor [℃]	200	300	300	300	300
Safety temperature [℃]	50~430 adjustable	50~500 adjustable	50~500 adjustable	50~500 adjustable	50~500 adjustable
High temperature protection [℃]	10~50 adjustable	10~50 adjustable	10~50 adjustable	10~50 adjustable	10~50 adjustable
Temperature stability with E-sensor [℃]*	±1	±1	±1	±1	±1
Heat output [W]	800	1000	800	800	800
External temperature sensor	Pt100	Pt100	Pt100	Pt100	Pt100
Temperature control	ICC	ICC	ICC	ICC	ICC
Speed setting range [rpm	100~1500	100~1500	100~1500	100~1500	100~1500
Stirring quantity max [L / H2O]	20	20	20	20	20
Display	TFT	TFT	TFT	TFT	TFT
Mixing direction	Clockwise or counterclockwise				
Time setting	1~1999min / continuous				
Top plate material	Metal coated with ceramic	Ceramic glass	Ceramic glass	Ceramic glass	Ceramic glass
Top plate dimensions [mm]	180×180	180×180	180×180	Ø135	Ø145
Communicate interface.	RS232/485	RS232/485	RS232/485	RS232/485	RS232/485
Dimensions W x D x H [mm]	190x320x90	190x320x85	190x320x85	190x320x90	190x320x90
Weight (Kg)	2.8	2.8	3.1	3.0	3.0
Power supply	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ

*Measured with 500ml water at 80 ℃

Standard package includes: Hot plate / stirrer, thermocouple sensor PT100-01 with holder and clamp , stirrer bar (Order No. 1.230.8)

Infrared Hot Plate / Stirrer

Intelligent heating technology for your very demanding applications

WH380 / WH385 UP to 1200W heating power

1.2kW

Standard PT100 temperature sensor
Accurate solution temperature within ±1℃ in general range.

Ceramic glass top plate
Great anti-corrosive ability to acid, base, or organic solvents.

Rapid heating up speed.
Temperature can reach up to 550℃ , and one liter of water can be boiled in approx. 9 minutes
(Measured in 2L glass flask at 25℃ ambient temperature and 1bar air pressure)

Touch controller （WH385）
with comfortable and easy operation

Heating power
With 1200W heating power, rapid heating speed.

Extra large heating plate
Top plate dimensions: 280×280mm
Heating zone: Ø190mm

WH380 WH385

Attractive designs for heating, stirring and controlling

WH380 presets 3 sets of PID for different volume heating application. WH385 uses advanced ICC technology to self-optimize for optimal results. WH380 has LCD display and WH385 has TFT

Specifications

Model	WH380	WH385
Order no.	W3013803	W3013853
Maximum temperature setting [℃]	550	550
Maximum temperature setting with E-sensor [℃]	300	300
Safety temperature [℃]	50~600 adjustable	50~600 adjustable
High temperature protection [℃]	10~50 adjustable	10~50 adjustable
Temperature stability with E-sensor [℃]*	±1	±1
Heat output [W]	1200	1200
External temperature sensor	Pt100	Pt100
Temperature control	PID	ICC
Speed setting range [rpm	100~1500	100~1500
Stirring quantity max [L / H2O]	30	30
Display	PID	TFT
Mixing direction	Clockwise	Clockwise or counterclockwise
Time setting	1~1999min / continuous	1~1999min / continuous
Top plate material	Ceramic glass	Ceramic glass
Top plate dimensions [mm]	280×280	280×280
Communicate interface.	RS232/485	RS232/485
Dimensions W x D x H [mm]	282x450x115	282x450x115
Weight（Kg）	4.0	4.0
Power supply	220V/50Hz	220V/50Hz

*Measured with 500ml water at 80 ℃

Standard package includes: Hot plate / stirrer, thermocouple sensor PT100-01 with holder and clamp， stirrer bar (Order No. 1.230.8)

WIGGENS
THE MAGIC MOTION

Infrared Hot Plate / Stirrer

Intelligent heating technology for powerful heating

WH390 / WH395-NH / WH395 UP to 1800W heating power

Standard PT100 temperature sensor
Accurate solution temperature within ±1℃ in general range.

Ceramic glass top plate
Great anti-corrosive ability to acid, base, or organic solvents.

Rapid heating up speed.
Temperature can reach up to 550℃ , and one liter of water can be boiled in approx. 9 minutes
(Measured in 2L glass flask at 25℃ ambient temperature and 1bar air pressure)

Intelligent PID (WH390)
Suitable for different application, for accurately controlling the quick heating of small samples and the temperature stability of large samples..

Intelligent Cascade Control (WH395)
self-optimizing, for optimal results.
Good temperature stability

Heating power
With 1800W heating power, rapid heating up speed.
2000W (WH390-NH)

WH390 presets 3 sets of PID for different volume heating application. WH395 uses advanced ICC technolgy to self-optimize for optimal results. WH390 has LCD display and WH395 has TFT

Specifications

Model	WH390	WH390-NH NEW!	WH395
Order no.	W3013902	W3013903	W3013953
Maximum temperature setting [℃]	550	450	450
Maximum temperature setting with E-sensor [℃]	300	300	300
Safety temperature [℃]	50~600 adjustable	50~500 adjustable	50~500 adjustable
High temperature protection [℃]	10~50 adjustable	10~50 adjustable	10~50 adjustable
Temperature stability with E-sensor [℃]*	±1	±1	±1
Heat output [W]	1800	2000	1800
External temperature sensor	Pt100	Pt100	Pt100
Temperature control	PID	PID	ICC
Speed setting range [rpm	100~1500	100~1500	100~1500
Stirring quantity max [L / H2O]	30	30	30
Display	PID	PID	TFT
Mixing direction	Clockwise	Clockwise	Clockwise or counterclockwise
Time setting	1~1999min / continuous	1~1999min / continuous	1~1999min / continuous
Top plate material	Ceramic glass	Ceramic glass	Ceramic glass
Top plate dimensions [mm]	280×280	280×280	280×280
Communicate interface.	RS232/485		
Dimensions W x D x H [mm]	290x450x120	290x450x80	290x450x120
Weight (Kg)	4.1	4.1	4.1
Power supply	220V/50HZ	220V/50HZ	220V/50HZ

*Measured with 500ml water at 80 ℃

Standard package includes: Hot plate / stirrer, thermocouple sensor PT100-01 with holder and clamp , stirrer bar (Order No. 1.230.8)

Soft Dry Bath -one for all shapes of vessels

Heating in reflux, distillation and rectification, Oil free heating, completely new experience

The Soft Dry Bath launched by Wiggens like a versatile heating solution for various vessel shapes in the laboratory. Its uniform heat transfer and fast heat conduction make it a suitable alternative to small oil baths, electric heating sleeves, and other heating methods commonly used in labs. The aluminum bottom aids in quick heat transfer to alloy particles, while the PTFE material provides insulation and anticorrosion properties. With infrared heating (IR) technology and ICC self-tuning temperature control, the Soft Dry Bath offers faster heating and improved temperature stability. It seems like a reliable and efficient tool for laboratory heating applications

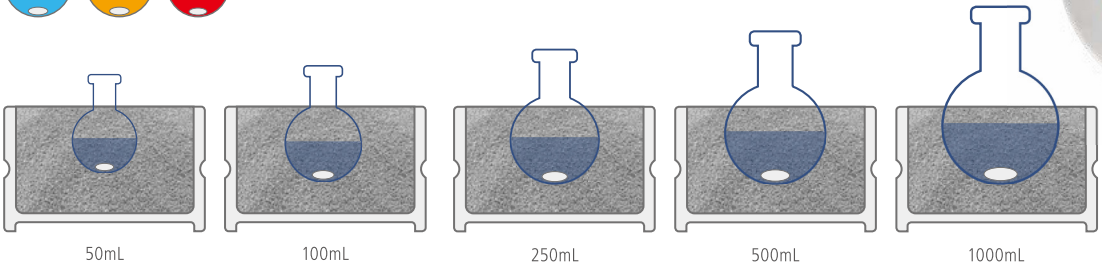
The high-quality soft dry bath developed by Wiggens offers uniform heat transfer and fast heat conduction. This makes it a great replacement for small oil baths, dry bath modules, electric heating sleeves, and other heating methods commonly used in laboratories. The aluminum bottom of the bath facilitates rapid heat transfer to alloy particles, while the PTFE material surrounding it provides insulation and protects against corrosion.

Additionally, Wiggens has incorporated infrared heating (IR) technology and ICC self-tuning temperature control into their soft dry bath. This combination allows for faster heating and improved temperature stability, making it a reliable and efficient heating solution for laboratory applications.

- Suitable for containers of any shape
- Replacement of Silicon oil
- Replacement of thermostat module
- High temperature
- Safety
- New experience
- No cleaning required
- Energy conservation and environmental protection
- The exclusive technology

One For All

Suitable for containers of any shape



50mL 100mL 250mL 500mL 1000mL

Suitable for containers of different volumes

Order information

Order No.	Model	Description
SDB-1	Dry bath tank and jacket	The dry bath tank and PTFE insulation jacket internal diameter: 140mm
SDB-2	Alloy seeds	The alloy seeds, 2kg

* For digital hot plate / stirrers (WH260-R or WH280-R), you need to order separately.

For stirrer bars, please reference Page 89

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THE MAGIC MOTION

Accessories for Hot Plate / Stirrer

Thermometer

Order No.	Description
PR5500	Temperature resolution: 1℃ or 0.1℃ Standard package with two sensors: Pt100 (250×Ø4mm), temperature range: -50.0~ 400.0℃ ; Type K thermocouple (170×Ø4mm, temperature range: -50.0~ 500.0℃
PR5600	Temperature resolution: 0.01℃ or 0.001℃ Standard with two sensors: Pt100 (250×Ø4mm), temperature range: -50.0~ 400.0℃ ; Type K thermocouple (170×Ø4mm, temperature range: -50.0~ 500.0℃

Order No.	Description
PR5000-1	Pt100 (250×Ø4mm), temperature range: -50.0~ 400.0℃ ; Suitable for PR5500 or PR5600
PR5000-2	Type K thermocouple (170×Ø4mm, temperature range: -50.0~ 500.0℃ ; Suitable for PR5500 or PR5600

Protective Cover

Order No.	Description
400-0011	Silicone, suitable for WH260-NH and WH260-H
400-0012	Silicone, suitable for WH260-R and WH260-RL
400-0013	Silicone, suitable for WH280-NH and WH280-H
400-0014	Silicone, suitable for WH280-R and WH280-RL

Temperature sensor Suitable for all Hot Plate / Stirrer

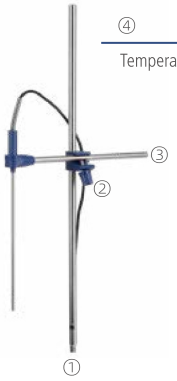
Order No.	Description
PT100-01	PT100, Type I; -30~300℃ ;Length: 170 mm; Diameter: 4 mm; Material: Stainless steel;
PT100-02	PT100, Type II; -30~300℃ ; Length: 300 mm; Material: Stainless steel, Fig. ④
PT100-03	PT100, Type III; -30~250℃ ; Length: 170 mm; Material: Stainless steel, PTFE coated, Fig. ⑤
PT100-04	PT100, Type IV; -30~250℃ ;Length: 300 mm; Material: Stainless steel, PTFE coated
PT100-06	PT100, Type VI; -30~300℃ ; Length: 250 mm; Diameter: 4 mm; Material: Glass; Fig. ③
600.170.1	K type thermocouple 0-500℃ ; Length: 170 mm; Diameter: 4 mm; Material: Stainless steel;

④ ⑤ ⑥

Temperature sensor

Holder for temperature sensor Suitable for all Hot Plate / Stirrer

Order No.	Description
PT100-05	Holder and clamp for PT100 temperature sensor, Fixed temperature sensor
	PT100-05: ①②③
WH220017	① installation stand
WH220026	② Boss head clamp
WH220027	③ Sensor holde



Holder and clamp

Clamps for oil bath

Order No.	Description
WA00-56	Suitable for oil bath with the diameter up to 160mm
WA00-56A	Suitable for oil bath with the diameter up to 280mm

Glass oil bath with spout

Order No.	Model	Description
213115407	G1000	Oil bath, Glass, 900mL, inner Ø 140 mm,75 mm height
213115904	G2000	Oil bath, Glass, 2L, inner Ø 190 mm,90 mm height
213116309	G3500	Oil bath, Glass, 3.5L, inner Ø 230 mm,100 mm height

Stainless steel oil bath

for WH260-R, WH280-R, Ø 135mm

Order No.	Model	Description
H220000	H1000	Beaker, stainless steel, 1.9 l, inner Ø 177 mm, 83 mm height

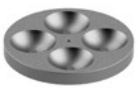
Cylindrical heating block

Order No.	Description	For
13696-01W	Stainless T-shape handle, length: 20cm	All types of heating block
13696-02W	Stainless T-shape handle, length: 30cm	All types of heating block
13697-01W	28×30 (ID x H in mm) 11 Holes	WH260-R
13697-02W	28×50 (ID x H in mm)11 Holes	WH260-R
13697-03W	26×30 (ID x H in mm)11 Holes	WH260-R
13697-04W	28×30 (ID x H in mm)11 Holes	WH260-R
13697-11W	28×30 (ID x H in mm)15 Holes	WH260-R
13697-12W	28×50 (ID x H in mm)15 Holes	WH260-R
13697-13W	26×30 (ID x H in mm)15 Holes	WH260-R
13697-14W	26×50 (ID x H in mm)15 Holes	WH260-R
13699-04W	60.3mm Diameter, 4 holes	WH260-R
13699-03F	69 mm Diameter,3 Holes	WH260-R
13699-05W	48.5 mm Diameter,5 Holes	WH260-R
13699-150	62.2mm Diameter,4 Holes	WH260-R
13699-01W	100mL Beakers,3 Holes	WH260-R
13699-02W	62.2 mm Diameter,3 Holes	WH260-R
13707-250	250mL Beakers Form	WH260-R
13707-500	500mL Beakers Form	WH260-R
13707-1000	1000mL Beakers Form	WH260-R
13707-2000	2000mL Beakers Form	WH260-R

13696-01W / 02W

13697-01W 13697-02W 13697-03W 13697-04W

13697-11W 13697-12W 13697-13W 13697-14W



13699-04W

13699-03F 13699-05W 13699-150 13699-01W 13699-02W

13707-250 13707-500 13707-1000 13707-2000

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Magnetic Stirrer

> LED display for convenient control and monitoring of the stirring speed
> Leading microprocessor control technology ensures accuracy and stability of the stirring speed
> Stirring plate surface made of powder coated stainless steel
> Wide speed range between 150 and 1500 rpm
> Individual control for each plate

Best-seller!

Specifications

Model	WH-210D	WH-410D	WH-610D
Order No.	400214	400215	400216
Number of stirring positions	1	4	6
Stirring quantity max. per stirring position (H2O) [L]	3	2	2
Speed setting range [rpm]	150~1500	150~1500	150~1500
Speed display	LED display	LED display	LCD display
Speed setting	Turning knob	Turning knob	Turning knob
Top plate material	Powder coated stainless steel	Powder coated stainless steel	Powder coated stainless steel
Top plate dimensions [mm]	158 x143	(151 x156) x4	(151 x156) x6
Dimensions W x D x H [mm]	189 x215 x48	344 x377 x48	504 x377 x48
Weight [kg]	1.8	2.5	4.0
Power supply	220V/50Hz	220V/50Hz	220V/50Hz

Standard package includes: Stirrer, stirrer bar 4/6 (Corresponding to the mixing position Order No. 1.230.8)

Corrosion resistant mat for Magnetic Stirrer

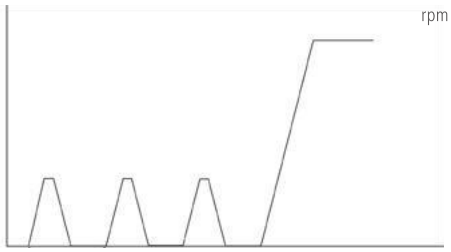
> Corrosion sistant and protect the surface of magnetic stirrer
> The surface is non-slippery, with adhesive layer on the back, which is easy to fix.
> Repeatedly for use and can be replaced

Order No.	400214-PTFE	400215-PTFE	400216-PTFE
Suitable for	WH-210D	WH-410D	WH-610D
Material	PTFE	PTFE	PTFE
Thickness	0.18mm	0.18mm	0.18mm
Attachment strength	25N/100mm	25N/100mm	25N/100mm
Tensile strength	400/100mm	400/100mm	400/100mm
Temperature range	70~260℃	70~260℃	70~260℃
Size	158mmx170mm	317mmx325mm	317mmx485mm

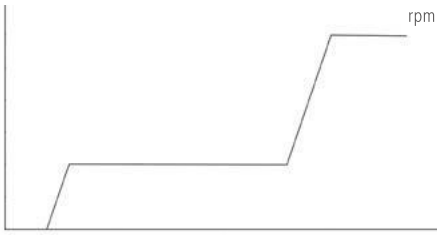
Micro-Stir Magnetic Stirrer

> Ideal for low speed shear sensitive mixing
> 5-200 RPM, single and four place units
> Programmable, remote control

The Micro-Stir can be set to run in cycle stirring mode, where the unit will run a set number of alternating and idle times.
This type of stirring may be especially helpful in cellculture applications during initial where cells need a set idle time during the stirrer / growth cycle. Both running times and idle times can be independently adjusted.



A stirring cycle consists of one running period and one idle period as shown above.



The Micro-Stir can be set to run in two speed stirring mode, as shown above.

BioStir Magnetic Stirrer

> Ideal for general mixing and difficult to dissolve solutes
> 150-1200 RPM, single and four place units
> Programmable, remote control

Single Place Micro-Stir

Four Place Micro-Stir

Specifications

Model	Micro-Stir		Bio-Stir	
Order No.	W3032100	W3032101	W3032102	W3032103
Number of stirring positions	1	4	1	4
Speed setting range [rpm]	5-200	5-200	150-1200	150-1200
Stirring quantity max [L]	3	3	3	3
Power	15W	15W	15W	15W
Operating Temperature:	15 to 40°C	15 to 40°C	15 to 40°C	15 to 40°C
Humidity:	95% up to 37°C	95% up to 37°C	95% up to 37°C	95% up to 37°C
Dimensions W x D x H [mm] (Without controller)	20.3x24.9x9.2 cm	20.3x24.9x9.2 cm	20.3x24.9x9.2 cm	20.3x24.9x9.2 cm
Weight [kg]	1.9	4.5	1.9	4.5
Operating Voltage	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz

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Submersible Magnetic Stirrer

Fully encapsulated and hermetically sealed PP housing, and suitable for the use in incubators and ovens. water-,dust-, and germ proof, submersible in water.

Stirrer Model	S-1	B-1
Number of stirring positions	1	1
Stirring quantity max. per stirring position (H2O) [L]	1	3
Top plate material	PP housing	PP housing
Dimensions W x D x H [mm]	70 x70 x28	155 x155 x45
Power supply	The power supplied by remote controller	

Order No.	Description
S-1-01	Connection adapter to fix several stirrers together as one multi-position stirrer, Suitable for S-1
B-1-01	Connection adapter to fix stirrers together as one multi-position stirrer, Suitable for B-1

Working inside with the thermostatic bath

Same speed for all connected stirrers
CS-1 and CB-1 controller

Different speed for connected stirrers
CS-4 and CB-4 controller

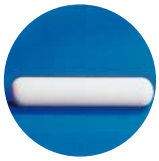
Controller for submersible magnetic stirrers

Controller Model	CS-1	CS-4	CB-1	CB-4
Suitable for	S-1	S-1	B-1	B-1
Working mode	Same speed for all connected stirrers	Different speed for connected stirrers	Same speed for all connected stirrers	Different speed for connected stirrers
Maximum number of stirrer to connect	4	4	4	4
Speed setting range [rpm]	100~1500	100~1500	100~1500	100~1500
Speed setting	Turning knob	Turning knob	Turning knob	Turning knob
Power supply	220V/50Hz	220V/50Hz	220V/50Hz	220V/50Hz

Stirrer Bar

Cylindrical Stirrer Bar

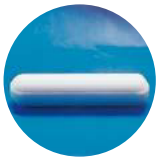
Cylindrical Stirrer Bars have a smooth round profile.
A popular general purpose stirrer for a wide varity of applications.



Order No.	Name	Description
1.110.6	Cylindrical Stir Bar	Length:10mm,Diameter:6mm
1.115.6	Cylindrical Stir Bar	Length:15mm,Diameter:6mm
1.120.7	Cylindrical Stir Bar	Length: 20mm, Diameter: 7mm
1.120.8	Cylindrical Stir Bar	Length:20mm,Diameter:8mm
1.125.8	Cylindrical Stir Bar	Length: 25mm, Diameter: 8mm
1.130.8	Cylindrical Stir Bar	Length:30mm,Diameter:8mm
1.140	Cylindrical Stir Bar	Length:40mm,Diameter:8mm
1.145	Cylindrical Stir Bar	Length:45mm,Diameter:8mm
1.150	Cylindrical Stir Bar	Length:50mm,Diameter:8mm
1.180	Cylindrical Stir Bar	Length:80mm,Diameter:10mm

Plain Stirrer Bar

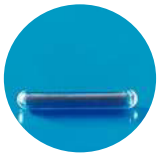
Plain Stirrer Bars have similar functions as the cylindrical but give more turbulence at low speed.



Order No.	Name	Description
1.215.6	Plain Stir Bar	Length: 15mm, Diameter: 6mm
1.220.7	Plain Stir Bar	Length: 20mm, Diameter: 7mm
1.230.7	Plain Stir Bar	Length: 30mm, Diameter: 7mm
1.240	Plain Stir Bar	Length: 40mm, Diameter: 8mm
1.250	Plain Stir Bar	Length: 50mm, Diameter: 8mm
1.260	Plain Stir Bar	Length: 60mm, Diameter: 10mm
1.270	Plain Stir Bar	Length: 70mm, Diameter: 10mm
1.280	Plain Stir Bar	Length: 80mm, Diameter: 10mm

Glass Covered Stirrer Bar

For use with very abrasive media which may erode PTFE



Order No.	Name	Description
1.1212	Glass Covered Stir Bar	Length: 12mm, Diameter: 5mm
1.1225	Glass Covered Stir Bar	Length: 25mm, Diameter: 6mm
1.1245	Glass Covered Stir Bar	Length: 45mm, Diameter: 8mm
1.1260	Glass Covered Stir Bar	Length: 60mm, Diameter: 8mm

Cross Stirrer Bar

Cross Stirrer Bars are very stable general purpose stirrers.

Order No.	Name	Description
1.2402	Cross-Shaped Stir Bar	Length: 20mm, Diameter: 8mm
1.2405	Cross-Shaped Stir Bar	Length: 38mm, Diameter: 11mm
1.2407	Cross-Shaped Stir Bar	Length: 60mm, Diameter: 20mm

Oval Stirrer Bar

Oval Stirrer Bars are for round bottom flasks.

Order No.	Name	Description
1.620	Oval Stir Bar	Length: 20mm, Diameter: 10mm
1.625.10	Oval Stir Bar	Length: 25mm, Diameter: 10mm
1.630	Oval Stir Bar	Length: 30mm, Diameter: 16mm
1.635	Oval Stir Bar	Length: 35mm, Diameter: 16mm
1.640	Oval Stir Bar	Length: 40mm, Diameter: 20mm
1.650.17	Oval Stir Bar	Length: 50mm, Diameter: 17mm
1.650	Oval Stir Bar	Length: 50mm, Diameter: 20mm

Octahedral Stirrer Bar

Octahedral Stirrer Bars use have similar functions as Pivot Ring type but withincreased turbulence at low speeds.

Order No.	Name	Description
1.515	Octahedral Stir Bar	Length: 15mm, Diameter: 8mm
1.525	Octahedral Stir Bar	Length: 25mm, Diameter: 8mm
1.538.10	Octahedral Stir Bar	Length: 38mm, Diameter: 10mm
1.551.10	Octahedral Stir Bar	Length: 51mm, Diameter: 10mm
1.575.10	Octahedral Stir Bar	Length: 75mm, Diameter: 13mm

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Double Ended Stirrer Bar

Double Ended Stirrer Bars have a double paddle action for efficient stirring plus high stability.

Order No.	Name	Description
1.1335	Double Ended Stir Bar	Length: 35mm, Diameter: 8mm
1.1355	Double Ended Stir Bar	Length: 55mm, Diameter: 8mm
1.1335-R/B/Y	Double Ended Stir Bar	Length: 35mm, Diameter: 8mm
1.1355-R/B/Y	Double Ended Stir Bar	Length: 55mm, Diameter: 8mm

Micro Stirrer Bar

Micro Stirrer Bars are for the smallest containers.
Note: Always use the largest stirrer bar possible.

Order No.	Name	Description
1.515-R,B/Y	Colored Octahedral Stir Bar	Length: 15mm, Diameter: 8mm
1.525-R,B/Y	Colored Octahedral Stir Bar	Length: 25mm, Diameter: 8mm
1.538-R,B/Y	Colored Octahedral Stir Bar	Length: 38mm, Diameter: 8mm
1.551.-R,B/Y	Colored Octahedral Stir Bar	Length: 51mm, Diameter: 8mm
1.575-R,B/Y	Colored Octahedral Stir Bar	Length: 75mm, Diameter: 13mm

Tube Stirrer Bar

Tube Stirrer Bars are designed for use with 10mm standard cuvettes.

Order No.	Name	Description
1.420	Triangular Stir Bar	Length: 20mm, Diameter: 8mm
1.440	Triangular Stir Bar	Length: 40mm, Diameter: 14mm
1.450	Triangular Stir Bar	Length: 50mm, Diameter: 12mm
1.480	Triangular Stir Bar	Length: 80mm, Diameter: 14mm
1.4136	Triangular Stir Bar	Length: 136mm, Diameter: 36mm

Turbo Cylindrical Bar

Exceptional strength coupled with almost total resistance to demagnetisation. Identified by an inert carbon black spot.

Order No.	Name	Description
1.802	Micro Stir Bar	Length: 2mm, Diameter: 2mm
1.806	Micro Stir Bar	Length: 6mm, Diameter: 3mm
1.808	Micro Stir Bar	Length: 8mm, Diameter: 1.5mm
1.813	Micro Stir Bar	Length: 13mm, Diameter: 3mm
001-350-8	Turbo Stir Bar	Length 35mm, Diameter: 8mm
1.160.RE	Turbo cylindrical	Length: 60mm, Diameter: 10mm

Colored Octahedral Stirrer Bar

Colored Octahedral Stirrer Bars are for use where identification is of prime importance.

Order No.	Name	Description
1.1609	Tube Stir Bar	Length: 6mm, Diameter: 9mm

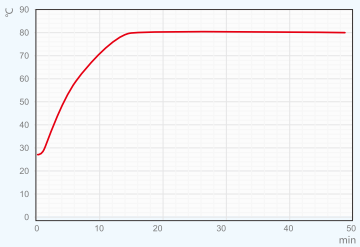
The first address for laboratory hotplates

Infrared Hot Plate

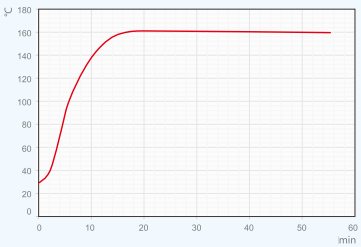
- Smooth and corrosion resistant ceramic glass top plate
- Excellent transmittance of the infrared light
- Material can resist a thermal shock of up to 700°C
- Corrosion-resistant, solid casing which is hermetically sealed
- Fast heating and excellent temperature stability
- Temperature can be externally controlled by the connection of a Pt100 temperature sensor
- Large LCD screen displays the set and actual temperature
- A high-temperature indicator warns the user and prevents burning injuries
- Compressed air connector optionally available for the use of the hotplate in an aggressive environment
- Rod holder can be conveniently used to connect diverse accessories such as a temperature sensor
- Can be connected to an external temperature sensor for direct and precise temperature control

SLK1-T / SLK2-T

SLK2-T heating up 1L water up to 80°C with external control mode in 15min



SLK2-T heating up 1L oil up to 160°C with external control mode in 18min



Note: Above data is based on the 220V/50Hz instrument with pure water (H_2O) and simethicone (Silicon Oil).

Pt-100 sensor is not included in the standard delivery
For external temperature sensor Please refer to Page 84

Specifications

Model	SLK1-T	SLK2-T
Order No.	W3032391	W3032392
Maximum temperature setting	550 [°C] / 24 steps	550 [°C] / 24 steps
Maximum temperature setting with E-sensor [°C]	300	300
Safety temperature [°C]	50~600 adjustable	50~600 adjustable
High temperature protection [°C]	10~50 adjustable	10~50 adjustable
Temperature stability with E-sensor [°C]*	±1	±1
Heat output [W]	1200	1800
External temperature sensor	Pt100	Pt100
PID parameter	3 sets	3 sets
Temperature and Speed display	LCD display	LCD display
Temperature and Speed setting	Turning knob	Turning knob
Time setting	1~1999min / continuous	1~1999min / continuous
Top plate material	Ceramic glass	Ceramic glass
Top plate dimensions [mm]	280×280	280×280
Heating zone [mm]	Ø190	Ø190
USB interface	Yes	Yes
Dimensions W x D x H [mm]	290x450x120	290x450x120
Weight [kg]	4.1	4.1
Power supply	220V/50Hz	220V/50Hz

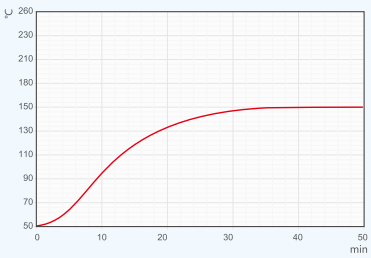
*Measured with 500ml water at 80 °C

Standard package includes: hot plate, thermocouple sensor PT100-01 with holder and clamp

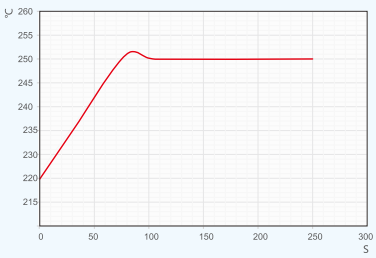
Digital Hot Plate

> PID temperature control technology for accurate and reliable results
> Suitable for complicated temperature control requirements
> Bright LED screen can display both set value and actual temperature
> Convenient temperature setting via on-touch control
> Timer function for automatic heating up to 100 hours
> Alarm signal output which can be applied to stop the operation of the hot plate and other connected devices
> External Pt100 temperature sensor connection for direct and precise control of the actual sample temperature

The data for H200D-2K heating up the high-temperature oil from 50 to 150℃ (with external temperature sensor)



The surface temperature stability data for WH200D-2K (250℃)

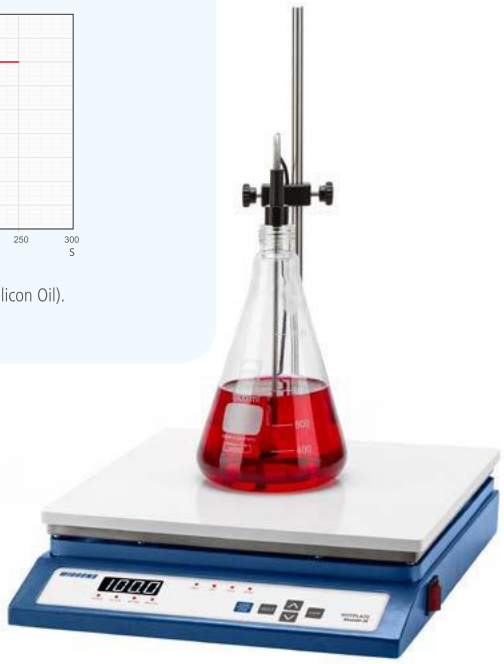


Note: Above data is based on the 220V/50Hz instrument with pure water (H_2O) and simethicone (Silicon Oil).

For external temperature sensor
Please refer to Page 84

WH200D-1K

WH200D-2K



WH200D-3K

Specifications

Model	WH200D-1K	WH200D-2K	WH200D-3K
Order No.	400110	400111	400112
Maximum temperature setting	300	300	300
Maximum temperature setting with E-sensor [℃]	300	300	300
Temperature stability [℃]*	±1	±1	±1
Heat output [W]	680	1000	1500
External temperature sensor	Pt100	Pt100	Pt100
Temperature display	LED display	LED display	LED display
Temperature setting	Turning knob	Turning knob	Turning knob
Top plate material	Aluminum coated with ceramic	Aluminum coated with ceramic	Aluminum coated with ceramic
Top plate dimensions [mm]	170×170	320×320	400×300
Dimensions W x D x H [mm]	240 x280 x70	320 x360 x70	470 x410 x70
Weight [kg]	2.5	7.5	9.0
Power supply	220V/50Hz	220V/50Hz	220V/50Hz

*Measured with 500ml water at 80 ℃
Standard package includes: hot plate, thermocouple sensor PT100-01 with holder and clamp

Multi-Purpose Heater / Dry Bath

Microprocessor control
The built-in unique microprocessor can provide precise temperature control for a variety of biochemical experiments.

Heating chamber in one piece
The heating tank is made of molded aluminum bath coated with PTFE

Various optional heating blocks
Various types of heating block are available for option, and customized block is optional.

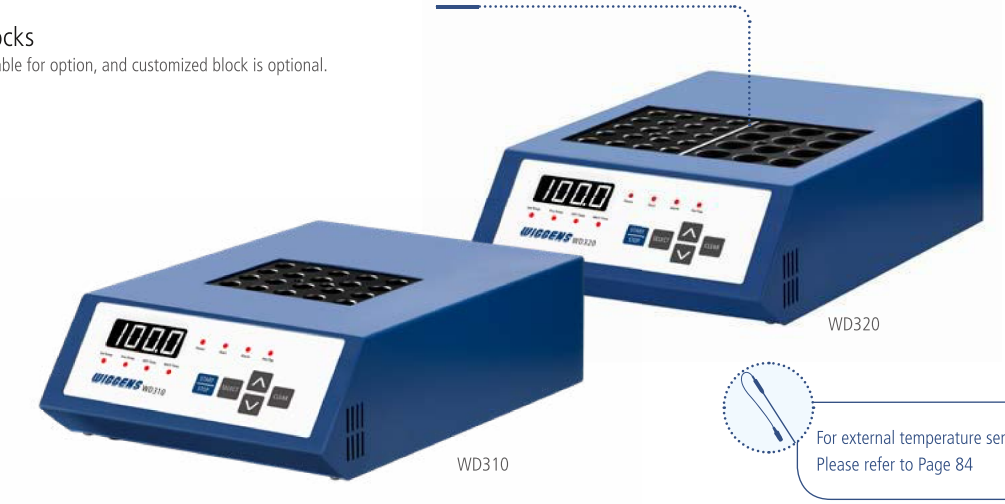
Three types of timer modes
OFF, OFF-TIME, and WAIT-TIME

Certification
CE certification

Application
> Molecular biology
> Biochemistry

Precise temperature control!
> Rapid heat up speed
> Exceptional temperature uniformity
> External PT 100 temperature sensor included

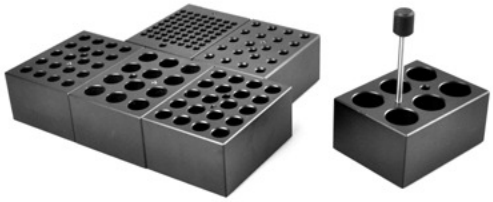
Best-seller!



For external temperature sensor
Please refer to Page 84

WIGGENS® dry block heaters are highly versatile suitable for broad range of applications.

> DNA extractions
> DNA analysis
> Melting point determination
> Nucleic acid hybridization
> Coagulation studies
> Biochemical processes
> Incubation and activation of cultures
> Blood examinations
> Fertile ground processing
> Restriction digest
> Denaturation
> Boiling point determination
> Enzymatic processes
> Enzyme activity studies
> Blood-urea-nitrogen determinations
> Immunoassays
> Enzyme reactions
> In situ hybridization



Specifications

Model	WD310	WD320
Order No.	179310	179320
Temperature setting range [°C]	50.0~150.0	50.0~150.0
Temperature setting range with E-sensor [°C]	40.0~150.0	40.0~150.0
Safety temperature [°C]	Cut off at 170.0	Cut off at 170.0
Temperature stability [°C]	±0.1	±0.1
Temperature accuracy [°C]	±0.1	±0.1
Time setting [min]	1~9959 / off	1~9959 / off
External temperature sensor	Pt100	Pt100
Temperature display	LED display	LED display
Temperature setting	Touch button	Touch button
Number of heating blocks × (block size W×L×Hmm)	1×(79×104×50)	2×(79×104×50)
Dimensions W x D x H [mm]	200 x270 x80	200 x270 x80
Weight [kg]	2.6 (W/O the block)	2.8 (W/O the block)
Power supply	220V/50Hz,1A	220V/50Hz,2A

Standard package includes: hot plate, thermocouple sensor PT100-01 with holder and clamp.
Heating blocks are need to be ordered separately.

Heating Blocks for WD310 and WD320

Order No.	Size	Number of Holes	Ø x H (mm)
179300-01	0.2mL	64	6x17mm
179300-02	0.5mL	20	8x25mm
179300-03	1.5mL(or2.0)	20	11x35mm
179300-04	10mL	20	10x33mm
179300-05	13mL	20	13x36mm
179300-06	20mL	12	20x48mm
179300-07	25mL	6	25x45mm
179300-10	17mL	12	17x44mm

COD Reactor

Features

Compliance with regulations
WD325 COD reactor is used to digest closed micro reflux COD vial and can meet USEPA 410. 4. It is easier and safer than traditional open macro reflux method.

Special COD program
Just press start/stop button, and the reactor will start to heat up to 150℃ and keep for 2-hour countdown then shut down automatically with 10-sec audio alarm.

3 additional program settings
Temperature range setting 60℃ - 200℃ and timer from 1 - 999. 3 Built-in additional heating program settings available for users to store and execute as needed.

Auto shut off and audio alarm
WD325 can stop heating, and then shut off automatically with audio alarm when every program is completed.

Application

- Waste water from factories
- Water quality in lake, pond and river

For external temperature sensor
Please refer to Page 84

Specifications

Model	WD325
Order No.	179200
Temperature setting range [℃]	Fixed 150.0℃ for COD, 60.0~200.0 adjustable
Temperature accuracy [℃]	±2 (at 150.0℃)
Hot top indicator	Flashing when block temperature is over 70.0℃
Automatic shutoff	The temperature of block is over 240.0℃
Time setting [min]	1~1999 with audible alarm and automatic shutoff or continuous operation
Heat output [W]	220
Temperature display	LED display
Temperature setting	Touch button
Number of heating blocks × (block size W×L×Hmm)	25×(Ø16.5*55mm sample vials)
Optional block is available	
Housing material	Stainless steel with powder paint coating
Heating block material	Aluminium alloy
Dimensions W x D x H [mm]	189 x315x116
Weight [kg]	4.5
Power supply	110V/60Hz or 220V/50Hz

Heating & Cooling Block

Rapid cooling and heating in centrifuge tubes, sample vials, micro tubes within the broad temperature range of 4 to 95℃ .
Outstanding temperature compensation function guarantees precise temperature control.

Features

> Precision accuracy of ±0.1℃ is ensured by its PID controller.
> Wide temperature control range from 4 to 95℃ with rapid cool down and heat-up times.
> Maximum 9 temperature range-specific calibration.
> Memory function of programmed protocols allowing relevant parameters of each protocol step to be stored.
  - Up to 10 protocols allowed for memory storage.
  - Up to 10 steps allowed for each protocol.
> Two types of timer modes:
  - Timer 1 starts only after reaching the set temp.
  - Timer 2 starts right after the timer setting.

Convenience

> Cooling is controlled by Peltier elements for an energy efficient compact design.
> Bright VFD display with responsive touch buttons.
> Its polypropylene main body is highly chemical-resistant and easy-to-clean.
> Optimal heat transfer is achieved by the tight coupling design of the main body and the corrosion-resistant anodized aluminum blocks.
> Transparent lid allows easy sample monitoring and even temperature distribution.
> Blocks can be easily interchanged by the included block lifter.

Specifications

Model		WB-350
Order No.		W3033350
Control system		Feedback control PID
Display		VFD(0.1℃ resolution)
Temperature	Range (℃)	4 to 95
	Stability at 37℃ (±℃)	0.1
	Variation at 37℃ (±℃)	0.5
Safety	Over temp.	Heating plate
		PCB
	Over current	Current limit protection
Dimension (W×D×H)	Interior (mm)	99 x 77.5 x 36
	Exterior (mm)	249×330×168
	Net weight (kg)	5.0
Electrical requirements		230V, 50 / 60Hz/2A

Permissible environmental conditions: temperature (2-60℃) and relative humidity (up to 80%)
Standard package includes: hot plate, thermocouple sensor PT100-01 with holder and clamp (heating blocks are optional accessories)

WIGGENS
THE MAGIC MOTION

Multi-Purpose Heater / Dry Bath

Ideal for simultaneous sample heating of multiple vials or test tubes with uniform and precise temperature control.

Features

> Precision accuracy of ±0.1°C is ensured by its PID controller from ambient + 5°C to 130°C .
> Its built-in temperature limit setting feature (with max. 0.2°C overshooting) allows you to perform highly temp. sensitive reactions such as isothermal amplifications.
> Automatic power cut off.
- If the temperature of the main body exceeds 150°C .
- If the internal circuit is overheated.
> Two types of timer modes:
- Timer 1 starts only after reaching the set temp.
- Timer 2 starts right after the timer setting.

Convenience

> Its polypropylene main body is highly chemical-resistant and easy-to-clean.
> Optimal heat transfer is achieved by the tight coupling design of the main body and the corrosion-resistant anodized aluminum blocks.
> Bright VFD display with responsive touch buttons.
> Transparent lid allows easy sample monitoring and even temperature distribution.
> Blocks can be easily interchanged by the included block lifter.

Specifications

Model		WB-350T	WB-350S
Order No.		W3033351	W3033352
Control system		Feedback control PID	Feedback control PID
Display		VFD (0.1°C resolution)	VFD (0.1°C resolution)
Temperature	Range (°C)	Amb. +5 to 130	Amb. +5 to 130
	Stability at 37°C (±°C)	0.1	0.1
	Variation at 37°C (±°C)	0.5	0.5
Safety	Over temp.	Heating plate	Heating plate
		PCB	PCB
	Over current	Current limit protection	Current limit protection
Dimension (W×D×H)	Interior (mm)	154×99×37	154×99×37
	Exterior (mm)	249×330×250	249×330×125
	Net weight (kg)	4.3	3.9
Electrical requirements		230V, 50 / 60Hz/2.8A	230V, 50 / 60Hz/2.8A

Standard package includes: hot plate, thermocouple sensor PT100-01 with holder and clamp (heating blocks are optional accessories)

Tube Block

Block	Order No.	Description	WxDxH (mm)	Mountable Capacity of Blocks		
				WB-350S	WB-350T	WB-350
	W3033001	0.2mL x 96 holes（microtube）	153×98×41	1	1	-
	W3033002	0.5mL x 48 holes（microtube）	98×76.5×41	2	2	1
	W3033003	1.5mL x 48 holes（microtube）	153×98×41	1	1	-
	W3033004	15mL x 15 holes（centrifuge tube）	98×76.5×51	2*	2	1*
	W3033005	50mL x 6 holes（centrifuge tube）	98×76.5×51	2*	2	1*
	W3033006	50mL x 6 holes（centrifuge tube）	98×76.5×87	2	2	1*
	W3033007	Ø10 x 35 holes	98×76.5×51	2*	2	1*
	W3033008	Ø12 x 24 holes	98×76.5×51	2*	2	1*
	W3033009	Ø13 x 24 holes	98×76.5×51	2*	2	1*
	W3033010	Ø15 x 20 holes	98×76.5×51	2*	2	1*
	W3033011	Ø16 x 16 holes	98×76.5×51	2*	2	1*
	W3033012	Ø18 x 12 holes	98×76.5×51	2*	2	1*
	W3033013	Ø20 x 12 holes	98×76.5×51	2*	2	1*

* Available to use only when the lid is opened.

WIGGENS
THE MAGIC MOTION

Soxhlet Extraction System (SES)

Wiggens Soxhlet Extraction System is based on the Soxhlet extraction principle and integrates such functions as soaking, extraction, leaching, heating, condensation and solvent recovery. It features sealed metal bath heating with automatic temperature control, ensuring uniform heating and safe operation; six samples can be tested at the same time, and optimal temperature can be selected according to the difference between reagent boiling point and RT. so as to achieve quick analysis; reagents can also be recycled to reduce test cost; and soaking,extraction and solvent recovery can be done in one step. Therefore, this device is characterized by reasonable design, stable performance, good reproducibility, high accuracy, easy operation, saving time and effort, and so on.

SES can quickly separate one substance from solid or semi-solid mixtures, can determine the soluble organic compounds contained in foods, feeds,medicines, soil, sludge, polymers, fiber products, petrochemical products, detergent, rubbers, plastics and other materials.

LED display

The set temperature and actual temperature can be displayed simultaneously

Extremely high temperature

Temperature can reach up to 450°C
Display resolution is 0.1

Independent temperature control

According to the experimental requirements, different position can be run at the same or different temperature

Glassware

Both round and flat bottom flasks can be ordered with 300ml and 500ml volume

Cellulose fiber extraction thimbles

Optional, good retention. seamless, high quality extraction thimbles, single thickness.
Readily permeable to the flow of ether and other organic solvents.

Specifications

Order No.	Model	Temperature range	Heat output	Flask volume		Glass extraction thimbles	
		℃	Each position [W]	volume [ml]	Bottom	ID x H [mm]	Sintered glass
3-place Soxhlet Extraction System (Multi-position heating mantle with stand)							
W3030350	SES350	Rt. +5~450	180W	500	Flat	45 x 130	20-35um / 100-200 um
W3030355	SES355	Rt. +5~450	180W	500	Round	45 x 130	20-35um / 100-200 um
W3030395	SES395	Rt. +5~450	290W	1000	Round	45 x 130	20-35um / 100-200 um
6-place Soxhlet Extraction System (Multi-position heating mantle with stand)							
W3030630	SES630	Rt. +5~450	125W	300	Flat	45 x 130	20-35um / 100-200 um
W3030635	SES635	Rt. +5~450	125W	300	Round	45 x 130	20-35um / 100-200 um

Glassware need to be ordered seperately
Standard package includes: Multi-position heating mantle with stand

Multi-Position Heating Mantle

WIGGENS Multi-position heating mantle has always been the mantle of choice for repetitive extracting, refluxing, and distilling procedures in labs of the food, textile fiber, water and waste-water, petroleum, and many other industries. WIGGENS latest version offers safety and convenience never before available in a multi-place heating mantle.

> Lower profile for space-saving convenience
> Revolutionary heating element container system makes replacing burned-out elements a simple task
> Clear anodized aluminum cabinet with blue PTFE resin coated top for chemical resistance.
> Offered in two space-saving configurations; six-place for 100 - 300 mL flasks and three-place for 500 - 1,000 mL flasks
> Available in low-temperature (450°C RX version) and high-temperature (650°C RJ version) for greater versatility
> The ideal mantle for Kjeldahl, Soxhlet, and other extraction procedures.

LED display

The set temperature and actual temperature can be displayed at the same time

450℃

Extremely high temperature

Temperature can reach up to 450°C
Display resolution is 0.1

Independent temperature control

According to the experimental requirements, each position can be set at the same or different temperature

650℃

Extremely high temperature

Temperature can reach up to 650°C
Display resolution is 0.1

Replaceable element containers

The replaceable element containers provide spill containment and can be replaced in a matter of a few minutes.

Order No.	Model	Flask Size ml	Maximum Diameter mm	Bottom	Rating Per Position	Replacement Element Order No.
450℃	Three-Place - medium temperature					
W3031350	RX350	500	103	Flat	180W	RX50024E
W3031354	RX354	500	101	Round	180W	RX50224E
W3031394	RX394	1000	130	Round	290W	RX100024E
650℃	Three-Place - high temperature					
W3031356	RJ356	500	103	Flat	300W	RJ50024E
W3031358	RJ358	500	101	Round	300W	RJ50224E
450℃	Six-Place - medium temperature					
W3031630	RX630	250/300	87	Flat	125W	RX30024E
W3031634	RX634	250/300	87	Round	125W	RX30424E
650℃	Six-Place - high temperature					
W3031636	RJ636	250/300	87	Flat	210W	RJ30024E
W3031638	RJ638	250/300	87	Round	210W	RJ30424E

Standard package includes: Multi-position heating mantle

Table C - Soxhlet Lipid Extraction Apparatus (for Combo Mantles)

Size	Flask volume (mL)	Extractor Top Joint	Extractor Bottom Joint	Package Order No.	Condenser Order No.	Extractor Order No.	Extraction Thimbles Order No.	Flask volume Order No.
Suitable for Wiggens Combo Mantles (Six positions Flat Bottom)								
A	100	34 / 45	24 / 40	189100-11	189102-01	189101-01	189103-01	189105-01
A	100	34 / 45	24 / 40	189100-12	189102-01	189101-01	189103-02	189105-01
A	125	34 / 45	24 / 40	189100-01	189102-01	189101-01	189103-01	189105-02
A	125	34 / 45	24 / 40	189100-02	189102-01	189101-01	189103-02	189105-02
B	250	45 / 50	24 / 40	189100-03	189102-02	189101-02	189103-03	189105-03
B	250	45 / 50	24 / 40	189100-04	189102-02	189101-02	189103-04	189105-03
D	300	55 / 50	24 / 40	189100-05	189102-03	189101-04	189103-05	189105-04
D	300	55 / 50	24 / 40	189100-06	189102-03	189101-04	189103-06	189105-04
Suitable for Wiggens Combo Mantles (Six positions Round Bottom)								
A	100	34 / 45	24 / 40	189100-21	189102-01	189101-01	189103-01	189104-01
A	100	34 / 45	24 / 40	189100-22	189102-01	189101-01	189103-02	189104-01
A	125	34 / 45	24 / 40	189100-23	189102-01	189101-01	189103-01	189104-02
A	125	34 / 45	24 / 40	189100-24	189102-01	189101-01	189103-02	189104-02
B	250	45 / 50	24 / 40	189100-25	189102-02	189101-02	189103-03	189104-03
B	250	45 / 50	24 / 40	189100-26	189102-02	189101-02	189103-04	189104-03
D	300	55 / 50	24 / 40	189100-27	189102-03	189101-04	189103-05	189104-04
D	300	55 / 50	24 / 40	189100-28	189102-03	189101-04	189103-06	189104-04
Suitable for Wiggens Combo Mantles (Three positions Flat Bottom)								
D	500	55 / 50	24 / 40	189100-07	189102-03	189101-04	189103-05	189105-05
D	500	55 / 50	24 / 40	189100-08	189102-03	189101-04	189103-06	189105-05
Suitable for Wiggens Combo Mantles (Three positions Round Bottom)								
D	500	55 / 50	24 / 40	189100-41	189102-03	189101-04	189103-05	189104-05
D	500	55 / 50	24 / 40	189100-42	189102-03	189101-04	189103-06	189104-05
D	1000	55 / 50	24 / 40	189100-43	189102-03	189101-04	189103-05	189104-06
D	1000	55 / 50	24 / 40	189100-44	189102-03	189101-04	189103-06	189104-06

Soxhlet Extraction 6-position Heating Plate

The design concept of WH-106 is compactness, safety and efficiency. For compactness, the layout of hotplates has been changed from traditional 6 holes in one row to 3 each in 2 rows, so that we can save 50% operating space.
The distance between each hole is 55mm which is in accord with DIN 44548 and wide enough for users to handle the samples in back row conveniently. WH-106 contains six embedded heating plates with 85mm diameter, and its heating components are made in Germany, rugged and easy to maintain. Each plate with a heating indicator is controlled independently, and the temperature can reach 425℃ . For safety reason, each plate is surrounded by a rim for keeping electronics from spilling. The whole housing is made of stainless steel with paint coating.

Application

> COD digestion
> Lipid extraction
> Kinds of heating

Specification

Modle	WH-106
Heating plate	6×Ø85mm diameter cast-iron with embedded heating resistor
Safety	Each top plate is surrounded by a rim that protect electronics from spills. Spacing of 55mm between the heating plate is in accord with DIN 44548.
Max. Temperature	425℃
Control	Each heating plate is controlled independently
Power supply	6×450W
Order No.	178106

Parallel reaction for Soxhlet extraction

Soxhlet Lipid Extraction Apparatus (Suitable for WH-106)

Size	Flask volume (mL)	Extractor Top Joint	Extractor Bottom Joint	Package Order No.	Condenser Order No.	Extractor Order No.	Extraction Thimbles Order No.	Flask volume Order No.
A	125	34 / 45	24 / 40	189100-01	189102-01	189101-01	189103-01	189105-02
A	125	34 / 45	24 / 40	189100-02	189102-01	189101-01	189103-02	189105-02
B	250	45 / 50	24 / 40	189100-03	189102-02	189101-02	189103-03	189105-03
B	250	45 / 50	24 / 40	189100-04	189102-02	189101-02	189103-04	189105-03
B	300	45 / 50	24 / 40	189100-05	189102-02	189101-02	189103-03	189105-04
B	300	45 / 50	24 / 40	189100-06	189102-02	189101-02	189103-04	189105-04
D	500	55 / 50	24 / 40	189100-07	189102-03	189101-04	189103-05	189105-05
D	500	55 / 50	24 / 40	189100-08	189102-03	189101-04	189103-06	189105-05

Extraction Thimbles - Glass

With a Wiggens fritted disc sealed in, it can be used in any standard Soxhlet extraction apparatus. The sizes below correspond to the size specifications of extraction bodies and will fit those units.

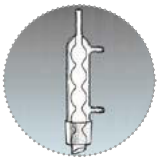
Size	A	A	B/C	B/C	D	D
ID x H (mm)	25 x 85	25 x 85	35 x 90	35 x 90	45 x 130	45 x 130
Sintered glass	20-35um	100-200 um	20-35um	100-200 um	20-35um	100-200 um
Order No.	189103-01	189103-02	189103-03	189103-04	189103-05	189103-06

Specifications for Wiggens Extractor Bodies

Specification				
Size	A	B	C	D
Use Thimble Size (mm)	25 x 85	35 x 90	35 x 90	45 x 130
Extractor Top Joint	34 / 45	45 / 50	45 / 50	55 / 50
Extractor Bottom Joint	24 / 40	24 / 40	29 / 42	24 / 40
Condenser Bottom Joint	34 / 45	45 / 50	45 / 50	55 / 50
Length of Siphon (mm)	190	260	260	300

Extractor Body

Size	A	B	C	D
Extractor Top Joint	34 / 45	45 / 50	45 / 50	55 / 50
Extractor Bottom Joint	24 / 40	24 / 40	29 / 42	24 / 40
Order No.	189101-01	189101-02	189101-03	189101-04



Extraction Apparatus

Bulb type for use with regular extraction apparatus. Improved design permits greater condensing capacity.

Size	A	B/C	D
Extractor Top Joint	34/45	45/50	55/50
Tubing Size （mm）	190	260	300
Height （mm）	275	365	405
Order No.	189102-01	189102-02	189102-03

Extraction Thimbles

CELLULOSE FIBER. Good retention. Seamless, high quality extraction thimbles, single thickness.
Readily permeable to the flow of ether and other organic solvents. Packed 25 per box.

Size (Ø x H)	27 x 80	27 x 60	30 x 80	33 x 94	40 x 123
Order No.	6811-08	6811-14	6811-20	6811-22	6811-24

Flask

Round bottom with short neck and outer joint.

24/40 Joint

Capacity (mL)	100	125	250	300	500	1000
Order No.	189104-01	189104-02	189104-03	189104-04	189104-05	189104-06

29/42 Joint

Capacity (mL)	100	250	500	1000
Order No.	189104-11	189104-13	189104-15	189104-16

Flask

Single Neck, Flat Bottom

24/40 Joint

Capacity (mL)	100	125	250	300	500	1000
Order No.	189105-01	189105-02	189105-03	189105-04	189105-05	189105-06

29/42 Joint

Capacity (mL)	250	300	500	1000
Order No.	189105-13	189105-14	189105-15	189105-16

WIGGENS
THE MAGIC MOTION

Temperature and stirring controller

for measuring, control and monitoring

WIGGENS temperature controllers measure, control and monitor applications in laboratories such as heating mantle and chemical reactors.

T Temp. C Control S Safety S Stirring





Ordering Information

Models / Specifications		TCSS	PL524 Pre	PL524 Pro-Stir	PL524 Pro	PC524
Name		Programmable controller for temperature and stirring	Programmable controller for temperature	Temperature and stirring controller	Temperature controller	Safety temperature protector
Screen	5″ TFT touch screen	●	●			
	LED			●	●	●
Function	Heating	●	●	●	●	
	Cooling	●	●			
	Programming	●	●			
	Stirring	●		●		
	Safety temperature	●	●	●	●	●
Interface	RS485	●	●			
	RS232	●	●	●	●	
	Ethernet	●	●	●		
	USB-A	●	●			
	Alarm	●	●	●	●	
Options	Pt100	○	○	○	○	○
	Thermocouple	○	○	○	○	○
	heating mantle	○	○	○	○	
	matching unit	○ please reference Note 3		○ please reference Note 3		
	Solenoid valve for cooling	○				
	WH260 series					

Temperature,Stirring Speed,Cooling Valve Controller

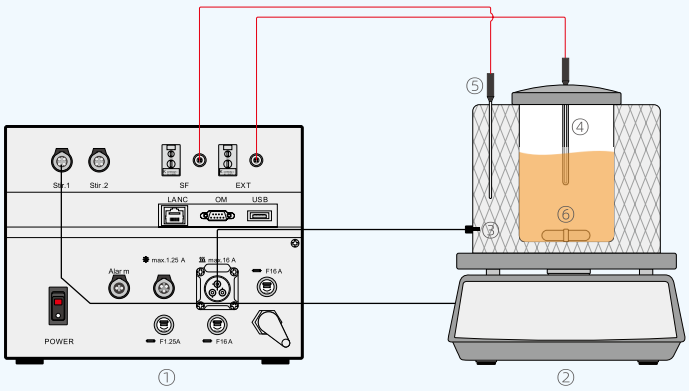
Programmable temp. Control and security protection

Temp. and Stir. Controller

Temp. Control and safety protection

Overheated safety protection

Note 1 : ● Standard configuration ○ Options
Note 2 : TCSS, PL524 Pre, PL524 Pro-Stir, PL524 Pro working with two temperature sensors ; PC524 just need one temperature sensor
Note 3 : TCSS-1 matching with heating-stirring mantle, PL524pro-Stir matching with heating-stirring mantle



Application

The external system (e.g. heating mantle and magnetic stirrer) is connected via the socket at the back. Different sensors for working and safety temperatures control the application.

① TCSS-1
② Magnetic stirrer
③ Heating mantle
④ Working sensor
⑤ Safety sensor
⑥ stirring bar

Heating Mantle

Aluminum Housed Mantle

> Rigid housing provides strength and durability while supporting the weight of the vessel
> Fabric interior to softly nest glass vessels and reduce the chance of thermal shock
> Adaptable to most vessels including larger sizes
> Withstands 450°C internal operating temperature (650°C for Series STM), enough power for most applications
> Can be adapted to special applications with custom sizes, bottom holes, and special electrical devices
> Feet on smaller sizes designed to provide stability and promote cooler exterior temperatures

Spherical Flask Mantle

> The Series TM spherical flask mantle covers only the flask's bottom half, letting you see its full contents. Larger sizes have multiple circuits for ease of temperature control when a flask is less than half full. Splash Guards can be used with TM102 through TM117.
> Poncho Safety Shields can be used with sizes 500 mL (TM107) and larger.

Specifications

Complete System Order No.	Order No.	Flask Capacity mL	Max. Flask Diameter mm	Watts W	Depth mm	Outside Dia. mm	Height mm	Weight kg
WTM95	TM95	50	48	60	24	159	121	1.0
WTM97	TM97	100	60	80	30	159	121	1.0
WTM99	TM99	125	70	80	35	159	121	1.0
WTM101	TM101	200	76	100	38	159	121	1.0
WTM103	TM103	250	83	180	41	159	121	1.1
WTM105	TM105	300	86	180	43	159	121	1.1
WTM107	TM107	500	101	270	51	159	127	1.1
WTM109	TM109	1000	130	380	65	191	127	1.4
WTM111	TM111	2000	170	500	86	254	152	2.1
WTM113	TM113	3000	183	500	91	254	152	2.1
WTM115	TM115	5000	220	600	109	305	178	2.8
WTM117	TM117	12000	293	2@650	147	419	229	6.8
WTM119	TM119	22000	347	2@770	173	483	254	8.5
WTM121	TM121	50000	456	3@1000	228	610	330	18.6
WTM122	TM122	72000	522	3@2000	259	660	356	20.0

WTM seires
Spherical flask mantle with temp. control and security protection, the flask is not included

TM seires
Spherical flask mantle only, the flask is not included

WIGGENS
THE MAGIC MOTION

Stir Mantle

> The Stir Mantle adds electromagnetic stirring capability (50-750 rpm) to the Series TM heating mantle for spherical flasks. Heating and stirring are independent, choosing either or both. Speed is easily adjusted by a single dial on the PL524pro-Stir.
> The PL524pro-Stir creates and synchronizes the magnetic field. When restarting (as for removal and reinsertion of the flask), Wiggens exclusive "Synchrostart" feature maintains linkage between the field and the bar. The PL524pro-Stir connects to the StirMantle by cord, so it may be placed outside corrosive hood atmospheres and is easily accessible.
> PL524pro-Stir connecting cords, and stir bar. Completely grounded and fused.

Complete system of stir mantle (EMS1XXP)

Specifications

Complete System Order No.	Order No.	Flask Capacity mL	Depth mm	Watts W	Outside Dia. mm	Height mm	Weight kg
EMS103P	EMS103	250	42	180	159	121	2.0
EMS105P	EMS105	300	43	180	159	121	2.0
EMS107P	EMS107	500	51	270	159	133	2.0
EMS109P	EMS109	1000	65	380	191	140	2.4
EMS111P	EMS111	2000	85	500	254	165	2.5
EMS113P	EMS113	3000	91	500	254	165	2.9

Temperature sensor

Order No.	Description	
PT100-01	PT100, Type I; -30~300℃ ;Length: 170 mm; Diameter: 4 mm; Material: Stainless steel;	Suitable for WH260, WH280, WH380, WH390, PL524, TCSS series
PT100-02	PT100, Type II; -30~300℃ ; Length: 300 mm; Material: Stainless steel, Fig. ①	
PT100-03	PT100, Type III; -30~250℃ ; Length: 170 mm; Material: Stainless steel, PTFE coated, Fig. ②	
PT100-04	PT100, Type IV; -30~250℃ ;Length: 300 mm; Material: Stainless steel, PTFE coated	
PT100-06	PT100, Type VI; -30~300℃ ; Length: 250 mm; Diameter: 4 mm; Material: Glass; Fig. ③	
600.170.1	K type thermocouple, 0-500℃ ; Length: 170 mm; Diameter: 4 mm; Material: Stainless steel;	
PR5600-009	K type thermocouple, -50-1200℃; Length: 1m ④	Suitable for PL524, TCSS, PR series


① ② ③ ④