OPERATING INSTRUCTIONS

SLR

LABORATORY STIRRER

SI Analytics

a xylem brand

Wichtige Hinweise: Die Gebrauchsanleitung vor der ersten Inbetriebnahme des Laborrührers bitte sorgfältig lesen und beachten. Aus Sicherheitsgründen darf der Laborrührer mit Glaskeramik-Heizfläche nur für die in dieser Gebrauchsanleitung beschriebenen Zwecke eingesetzt werden.

Alle in dieser Gebrauchsanleitung enthaltenen Angaben sind zum Zeitpunkt der Drucklegung gültige Daten. Es können jedoch von SI Analytics sowohl aus technischen und kaufmännischen Gründen als auch aus der Notwendigkeit heraus, gesetzliche Bestimmungen der verschiedenen Länder zu berücksichtigen, Ergänzungen am Gerät vorgenommen werden, ohne dass die beschriebenen Eigenschaften beeinflusst werden.

Important notes: Before initial operation of the laboratory stirrer SLR with glass-ceramics heating zone please read and observe carefully the operating instructions. For safety reasons the Laboratory hot plate with glass - ceramic material may only be used for the purposes described in these present operating instructions.

All specifications in this instruction manual are guidance values which are valid at the time of printing. However, for technical or commercial reasons or in the necessity to comply with the statuary stipulations of various countries, SI Analytics may perform additions to the laboratory stirrer SLR with glass-ceramics heating zone without changing the described properties.

Remarques importantes : Prière de lire et d’observer attentivement le mode d'emploi avant la première mise en marche de l’Agitateur de laboratoire SLR à plaque chauffante en vitro céramique. Pour des raisons de sécurité, l’Agitateur de laboratoire SLR à plaque chauffante en vitro céramique pourra être utilisé exclusivement pour les usages décrits dans ce présent mode d'emploi.

Toutes les indications comprises dans ce mode d’emploi sont données à titre indicatif au moment de l'impression. Pour des raisons techniques et/ou commerciales ainsi qu'en raison des dispositions légales existantes dans les différents pays, SI Analytics se réserve le droit d'effectuer des suppléments concernant l’Agitateur de laboratoire SLR à plaque chauffante en vitro céramique qui n’influencent pas les caractéristiques dé-crits.

Nota importante: Primeramente, lean y observen atentamente el manual de instrucciones antes de la primera puesta en marcha del Agitador de laboratorio SLR con superficie de calefacción vitrocerámica. Por razones de seguridad, el Agitador de laboratorio SLR con superficie de calefacción sólo debe ser empleada para los objetivos descritos en este manual de instrucciones.

Todos los datos contenidos en este manual de instrucciones son datos orientativos que están en vigor en el momento de la impresión. Por motivos técnicos y / o comerciales, así como por la necesidad de respetar normas legales existentes en los diferentes países, SI Analytics puede efectuar modificaciones concernientes al Agitador de laboratorio SLR con superficie de calefacción sin cambiar las características descritas.

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Version 150218 US

1 Operations manual information

The present manual is designed to enable you using the laboratory stirrers safely in accordance with its designated use.

Reading aids used in this manual

Throughout this manual you will find reading aids. These reading aids have the following meaning:

- A dot is used to denote an instruction; you are required to take a certain action.

⇒ An arrow indicates what happens after you have taken this action.

Example:

- Press button.

⇒ An indicator lights up.

Safety

You should always observe all safety and warning instructions to ensure best possible safety! The pictograms used have the following meaning:

Warning referring to a common danger for people or materials.
Failure to follow these instructions may result in physical injury or material damage.

Warning referring to a special hazard.
Example: To warn operators of a hot surface.

Warning referring to a particular group of people.
Example: People with pacemakers or ICDs (Implanted Coronary Defibrillator).

Warranty

We hereby guarantee the designated piece of equipment against any manufacturing defects arising within two years from the date of purchase. The warranty covers restoration of functionality, but no further claims to compensation.
In case of improper use or unauthorised opening of the device, the warranty will be rendered invalid. Parts subject to wear, such as for example the radiant heater elements, are excluded from the warranty, as are breakage of the glass-ceramic plate and corrosion damage resulting from improper use in an aggressive atmosphere.
To establish obligations under the guarantee, we kindly request you to send the equipment to us carriage or postage-free together with the sales receipt showing the date of purchase.

2 Description

2.1 Designated use

This laboratory stirrer with glass-ceramics heating zone has been designed for the stirring of liquids in a vessel while heating them up.

Using the appliance for other purposes is considered contrary to its designated use and is inadmissible since this may result in unpredictable risks!

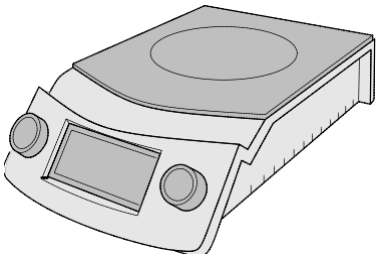
2.2 Scope of supply

For the scope of supply of your laboratory stirrer please refer to the accompanying packing list. If any parts are missing or some damage can be noticed from outside, please contact the manufacturer or the sender.

2.3 Accessories

An optional temperature sensor is available for your laboratory stirrer. In addition, your stirrer has been constructed so that it can be mounted on a tripod rod (available as accessory part incl. fastening nut, see p. 24: "Accessories".

2.4 Scope of functions



Laboratory stirrer SLR with two control knobs and display

Stirring rate and heating output of the device can be sensitively regulated by means of two control knobs and a display for control purposes.

If precise temperature control is required, we recommend to operate the stirrer with a temperature sensor (accessory). This sensor is used to control the temperature instead of the heating output. If a sensor is connected, the display alternately shows the selected command temperature and the actual temperature measured for the heated medium instead of the heating stages.

2.5 Warning and safety information

The inappropriate use of technical equipment always involves possible hazards to safety. Therefore:

The laboratory stirrer must only be operated by laboratory personnel especially trained for this purpose and familiar with all precautionary measures required for working in a laboratory!

When using this laboratory stirrer, all prescribed precautionary measures required for working in a laboratory must be observed (in particular all applicable legal regulations relevant to accident prevention)!

The heating zone can heat up to a maximum temperature of approximately 555 °C! Therefore:

CAUTION! Risk of deflagration, explosion and fire hazard when heating flammable liquids! Always heat up liquids with a flash point above 580 °C!

Be aware of increased ease of ignition of hot liquids!

Always cover vessel to prevent hot liquids from getting into contact with the heating zone (e.g. by liquid splashing or boiling over, or through escaping gases)!

The laboratory stirrer must be set up and connected in a way that ensures maximum safety for people and material handled (see p. 17: "Setting up and connecting")!

Translation of the legally binding German version

2.6 Technical Data Laboratory Stirrer SLR

(Stand: 01 April 2009)

CE sign: CE EMC compatibility according to the Council Directive: 2004/108/EG;
applied harmonized standards: EN 61326-1:2006
Low-voltage directive according to the Council Directive 2006/95/EG
Testing basis EN 61 010, Part 1

Country of origin: Made in Germany

Order no./power supply:	28 541 6373 230 V AC; 50...60 Hz
	28 541 6279 115 V AC; 50...60 Hz
Power consumption:	max. 920 W ± 10%
Speed range of stirrer:	100...1100 revolutions/minute
Stirring volume:	max. 20 liter
Heating output of heater:	900 W ± 10%
Temperature of heating zone:	max. ca. 555° C
Temperature control range:	25...200 °C ± 3 °C (temperature of heated medium)
Heating zone:	Glass-ceramics (chemically stable, corrosion-resistant and scratchproof)
Diameter of heating zone:	155 mm
Glass-ceramics floor space:	235 mm x 235 mm
Loading capacity of glass-ceramics floor space:	max. 25 kg (max. 0.1 kp/cm^2)
Safety class:	Class 1 appliance (not suitable for use in hazardous area), system of protection: IP20
Environment (storage and operation):	Ambient temperature: +10...+40° C; max. relative humidity up to +31 °C: 80 %; up to +40 °C: 50 %
Dimensions:	370 mm long x 240 mm wide x 85 mm high
Weight:	ca. 3.8 kg
Area of application:	All technical data and device functions specified are valid for use up to a height of max. 2,000 m above zero level.

Heating stages and heating zone temperatures

The table below shows the temperature of the heating zone achieved at a certain heating stage (for operation without temperature sensor). These values are, however, approximate only since:

- In practice the temperature may vary due to factors such as different atmosphere temperatures or voltage fluctuations, for example;
- Similarly, no information on the temperature of the heated medium can be obtained from the temperature of the heating zone due to the following reasons: different volumes and different heat capacities, structures, materials and surface of vessels, realization of the thermal contact between vessel and heating zone etc.

Heating stage	Temperature of heating zone [ca. °C]
1	65
2	93
3	130
4	160
5	186
6	207

Heating stage	Temperature of heating zone [ca. °C]
7	230
8	255
9	287
10	330
11	360
12	380

Heating stage	Temperature of heating zone [ca. °C]
13	400
14	415
15	430
16	444
17	456
18	473

Heating stage	Temperature of heating zone [ca. °C]
19	487
20	505
21	520
22	533
23	544
24	555

3 Initial Operation

3.1 Setting up and connecting

Setting up

Your laboratory stirrer is designed for indoor use in dry environments. When selecting a location for your stirrer, make sure to observe the following safety instructions:

Explosion hazard! Never operate your laboratory stirrer in hazardous location!

Danger of electric shock! Never operate your stirrer in wet areas!

Fire hazard due to overheating! Never install your stirrer in furniture!

Fire hazard! For safety reasons place the stirrer at least 50 cm from any inflammable material!

Risk of tripping! Never route connection cables in highly frequented areas!

Possible cable damage! Keep away connection cable from heating zone!

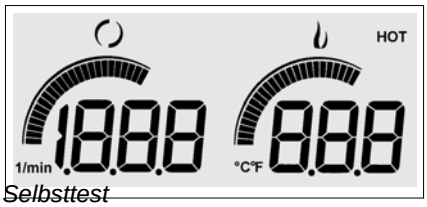
When using harmful or aggressive media:

Risk of poisoning or chemical burn! The device can be damaged when sucking in aggressive gases or vapor through the installed ventilator! laboratory stirrers must only be operated in the presence of an exhaust system!

- Install the stirrer on a flat, stable surface. The area under the stirrer must be non-combustible! Do not put any support material under the stirrer as it blocks the ventilator installed at the bottom of the device and may cause overheating!
- Install the stirrer on a flat, clean, dry and non-slippery surface.
- Avoid areas where the sun shines directly on the display (impaired readability).

Connecting

- Be sure to operate the stirrer only with the specified power supply (see p. 16: "Technical data" and details on the ratings plate).
- Make sure that the mains socket is equipped with an earthing protective wire (socket outlet with earthing)
- Insert mains plug in the socket to connect the stirrer to the mains line.
- Be sure to keep the socket clear for direct access in the case of emergency!



Selbsttest

⇒ The stirrer performs a self test which is indicated on the display followed by information on the software version (e.g. "P 1.82").

⇒ On completion of the self test, the display shows stirrer and heater symbols.

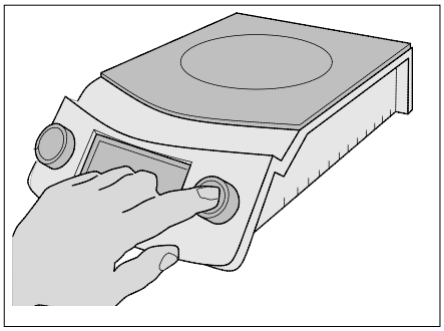
⇒ Stirrer and heater are now ready for operation.

Display symbols and their meaning:

	Stirrer symbol	Indicates that the stirrer is ready for operation.
	Heater symbol	Indicates that the stirrer is ready for operation.
HOT	Residual-heat indicator	Warning sign to inform the user that the heating zone is still hot.
	Bar graph	Indicates the control activity of stirrer or heater.

3.2 Operating heater without temperature sensor

Switching on the heater



Switching on the heater

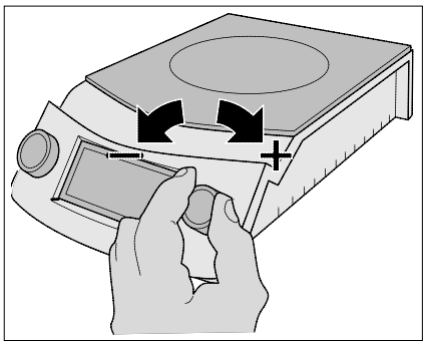
- Press and hold the right control knob for approximately 2 seconds until the heater display appears

⇒ The display shows heating stage "0" (zero).

- Select your desired heating stage within 30 seconds.

⇒ After 30 seconds the heater switches off again if you do not select a heating stage (safety function).

Selecting a heating stage



Selecting a heating stage

If the heater is operated without a temperature sensor, the heating energy will be controlled.

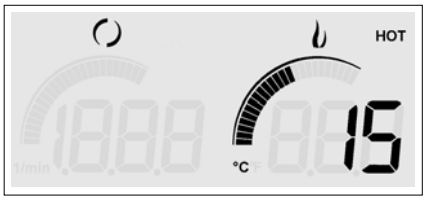
- Select the desired heating stage using the right control knob (turn clockwise to switch to a higher heating stage). The maximum heating stage is 024.

⇒ The selected heating stage is shown on the display.

⇒ The bar graph indicates the heating activity of the heater.

⇒ The heater heats up until the selected temperature level is achieved.

CAUTION! Risk of burning!
Do not touch the heating zone!



Heating stage 015

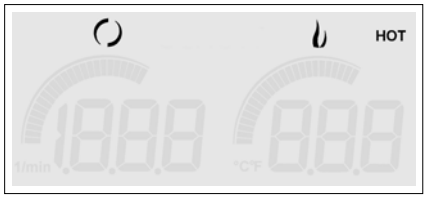
⇒ After having operated at heating stage 024 for 3 hours, the heater switches back to heating stage 018 (safety function)

Switching off the heater

- Press and hold the right control knob for approximately 2 seconds until the heating display disappears.

⇒ The heater is now switched off.

⇒ The residual-heat indicator "HOT" continues to light up as long as the glass-ceramics heating zone is still hot.



Residual-heat indicator "HOT"

CAUTION! Residual heat!
Do not touch the heating zone!

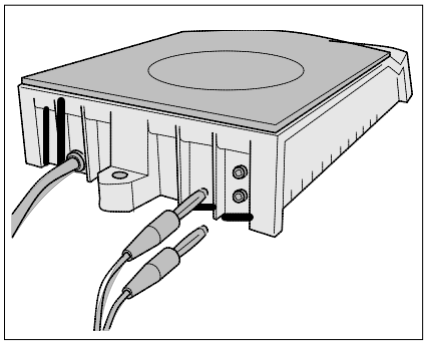
⇒ The installed ventilator continues to operate until the heating zone has cooled down completely.

CAUTION! Risk of overheating!
Do not pull out mains plug!

Disconnecting the device from mains

Do not unplug the stirrer before the heating zone has completely cooled down and the ventilator has switched off. To disconnect the device from the mains, pull out mains plug.

3.3 Operating heater with a temperature sensor



Connecting the temperature sensor

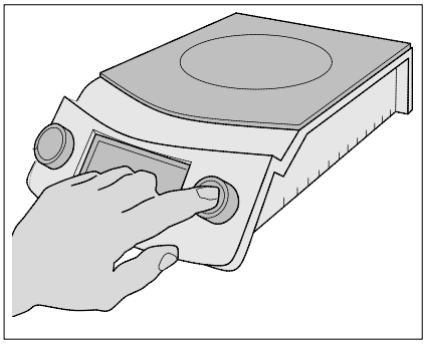
Connecting the temperature sensor

- Be sure to use the correct temperature sensor (see p. 24: "Accessories").
- Connect the temperature sensor at the rear of the laboratory stirrer.
- Make sure that the cable of the temperature sensor is routed so that it cannot touch the heating zone.
- Immerse the temperature sensor into the liquid min. 30 mm in depth.

In contrast to operation without temperature sensor, the laboratory stirrer now features:

⇒ Automatic temperature control instead of fixed heating stages with control of energy.

⇒ Temperature display alternating between command temperature and actual temperature instead of showing the heating stages.



Switching on the heater

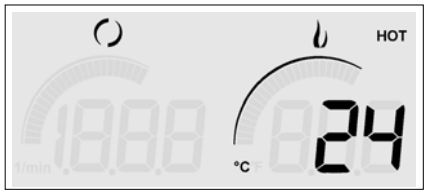
Switching on the heater

- Press and hold the right control knob for approximately 2 seconds until the heater display appears.

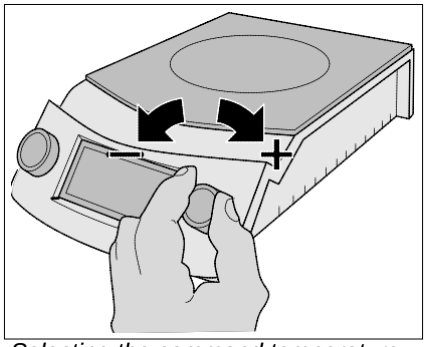
⇒ The display shows the actual temperature measured by the temperature sensor at that time.

- Select your desired command temperature within 30 seconds.

⇒ After 30 seconds the heater switches off again if you do not select a command temperature (safety function).



Actual temperature 24° C



Selecting the command temperature

Selecting the command temperature

- Select the desired command temperature using the right control knob (turn clockwise to increase temperature). The maximum command temperature is 200°C.

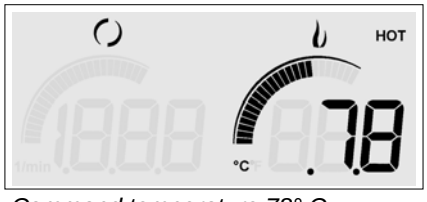
⇒ The selected command temperature is shown on the display (indicated by dots between figures).

⇒ The bar graph indicates the heating activity of the heater.

⇒ The heater heats up and maintains the selected temperature.

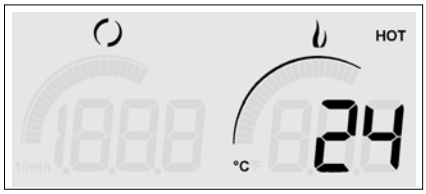
⇒ The residual-heat indicator "HOT" continues to light up as long as the glass-ceramics heating zone is still hot.

CAUTION! Risk of burning!
Do not touch the heating zone!

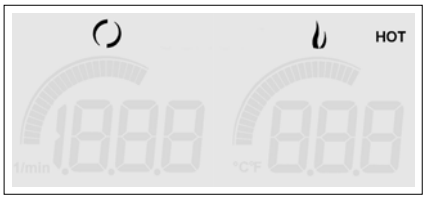


Command temperature 78° C

⇒ The display now alternates between command temperature (with dots between figures) and actual temperature (no dots between figures) every 5 seconds.



Actual temperature 24° C



Residual-heat indicator "HOT"

Switching off the heater

- Press and hold the right control knob for approximately 2 seconds until the heating display disappears.

⇒ The heater is now switched off.

⇒ The residual-heat indicator "HOT" continues to light up as long as the glass-ceramics heating zone is still hot.

CAUTION! Residual heat!
Do not touch the heating zone!

⇒ The installed ventilator continues to operate until the heating zone has cooled down completely.

CAUTION! Risk of overheating!
Do not pull out mains plug!

Disconnecting the device from mains

Do not unplug the stirrer before the heating zone has completely cooled down and the ventilator has switched off. To disconnect the device from the mains, pull out mains plug.

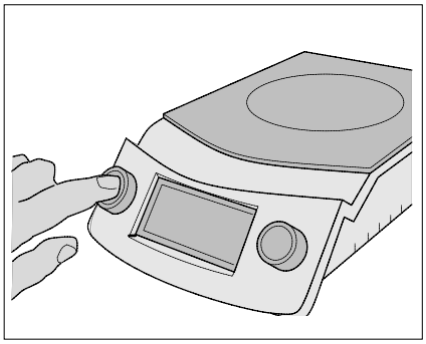
3.4 Operating stirrer

Precautionary measure

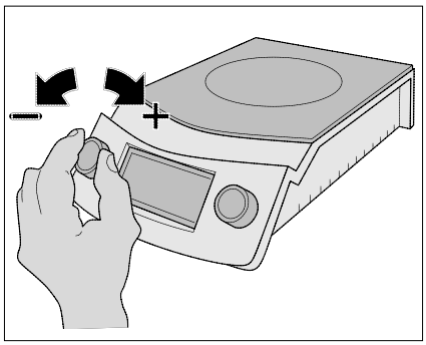
This equipment is the source for a strong magnetic field interfering with objects up to a distance of 50 cm from the laboratory stirrer. It is therefore recommended to be careful when approaching the stirrer with magneto-sensitive objects such as electronic data carriers (discs, bank cards), mechanical wristwatches or pacemakers, etc.!

People with pacemakers or implanted coronar defibrillator:
CAUTION! Risk of interference resulting from a magnetic field!

CAUTION, magnetic field!
Keep away magneto-sensitive objects!



Switching on the stirrer



Selecting the stirrer speed

Stirring speed 280 revolutions/minute

Switching on the stirrer

- Press and hold the left control knob for approximately 2 seconds until the speed display of the stirrer appears.

⇒ The display shows the desired speed which is always "0" (zero) when switching on the appliance.

Selecting the stirrer speed

The speed of the stirrer can be adjusted in increments of 10 (between 100 and 1100 revolutions per minute).

- Select the desired speed using the left control knob (turn clockwise to increase the speed). You should avoid operating the stirrer at excessive speed as this may damage the stirrer vessel!

⇒ The display shows the selected speed.

⇒ The stirrer starts running.

⇒ The bar graph shows the actual stirrer speed.

Switching off the stirrer

- Press and hold the left control knob for approximately 2 seconds until the speed display disappears.

⇒ The stirrer is now switched off.

Disconnecting the device from mains

Do not unplug the stirrer before the heating zone has completely cooled down and the ventilator has switched off. To disconnect the device from the mains, pull out mains plug.

4 Maintenance, cleaning and servicing

Maintenance

If you operate your laboratory stirrer in accordance to its designated use, no special maintenance is required. To make cleaning easier, you should observe the following instructions:

- Do not allow liquid to boil over!
- Do not allow spillage to stick to the surface of the equipment!

Cleaning

Always observe the following basic instructions:

Never immerse your laboratory stirrer in water!
Never spray wash your laboratory stirrer!

Removing normal stains

- Switch off the stirrer.
- Allow the equipment to cool down.
- Pull out mains plug.
- Clean your laboratory stirrer using a damp cloth and a commercial-grade cleaning agent for glass-ceramics cooking hobs.
- Cleansers must be wiped off completely otherwise they may damage the surface when heated.
- After cleaning, thoroughly dry the surface of your laboratory stirrer with a cloth.

Cleaning in special cases

Sugar, synthetic material or aluminum stains:

- Remove stains on hot glass-ceramics heating zone using a razor-blade scraper!

CAUTION! Residual heat!
Do not touch the heating zone!

Stains caused by highly concentrated acids or alcaline solution:

- Wipe off stains on the heating zone or the casing immediately after cooling of the equipment using a suitable cloth! Exposure to highly concentrated acids or alcaline solutions for an extended period of time may damage the glass-ceramics heating zone or the lacquered surface of the casing!

Servicing

- If you operate your laboratory stirrer in accordance with its designated use, no servicing is required.
- Before operating the equipment, always check both the mains cable and connection cable of the temperature sensor for proper operating condition. Never operate stirrer or temperature sensor with damaged cables!

CAUTION! Risk of electric shock!
Never operate the stirrer with damaged cables!

4.1 Troubleshooting

The display has disappeared (only Schott Instruments logo shown).	No connection to the mains (power cable damaged or power failure). • Check connection to the mains!
Display shows "E 1"	One or both plugs of the temperature sensor have been pulled while the stirrer was running. • Connect temperature sensor again! or: Temperature sensor or its connection cable has been damaged while the stirrer was running. • Replace temperature sensor (see p. 16: "Technical data")! • Make sure that the cause of failure cannot reoccur in future (e.g. cable touching the heating zone)!
Display shows "E 2"	Temperature sensor has caused a short-circuit. • Replace temperature sensor (see p. 16: "Technical data")!
Display shows "E 3"	Error in internal data storage unit. • Contact the manufacturer!
Display shows "E 4"	The installed ventilator does not operate. • Contact the manufacturer!
The laboratory stirrer fails to start again automatically after power failure.	The switching off after power failure is a normal safety function. • Switch on laboratory stirrer manually!
Residual-heat indicator "HOT" went out although the heating zone is still hot.	Your laboratory stirrer was or is disconnected from the mains. This caused resetting of the residual-heat indicator function (as is the case with all other functions of the device). • Switch off heater by pressing the right control knob, never by pulling the mains plug!
Device functions valid at the time are incorrectly shown on the display.	This is possibly due to a failure in the electronic system of your laboratory stirrer. • Return the stirrer to the manufacturer or your dealer to have it checked and repaired!

IMPORTANT! Do not attempt to repair the stirrer! Unauthorized changes or modifications to the laboratory stirrer can impair the safety of equipment and void the guarantee!

5 Disposal

At the end of its service life the stirrer is to be disposed of in accordance with the local regulations specified for the disposal of electronic industry waste.

6 Accessories

Temperature sensor (shaft made out of V4A stainless steel; Pt 1000 sensor; 1 m fixed cable with 2x 4 mm banana plug; 120 mm long; Ø 4 mm; -30...+ 200 °C):	W 5791 NN HT	Order no. 28 510 5308
Temperature sensor (glass shaft, Pt 1000 sensor, 2 x 4 mm banana plugs, length 250 mm, 6 mm Ø, -30...+200 °C)	W 5780 NN HT	Order no. 28 510 5238
Tripod rod incl. fastening nut M 8 (stainless steel; 450 mm long; Ø 10 mm):	Z 601	Order no. 28 541 6492
Holder for temperature sensor (clamp with extension rod made out of stainless steel; connector)	Z 602	Order no. 28 541 6505
Magnetic stirrer for standard applications (AlNiCo5; circular cross section; PTFE-walled; set of one from each 15, 20, 30, 40, 50, 60, 70, 80 mm item):	Z 603	Order no. 28 541 6554
Magnetic stirrer for medium-sized volumes (SmCo; circular cross section; PTFE-walled; set of five 9 x 15 mm items):	Z 604	Order no. 28 541 6562
Magnetic stirrer for large volumes (SmCo; elliptical cross section; PTFE-walled; set of one 19 x 75 mm item):	Z 605	Order no. 28 541 6579

For safety and guarantee reasons only original accessory parts are to be used!

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EG - KONFORMITÄTSERKLÄRUNG
EC - DECLARATION OF CONFORMITY
CE - DÉCLARATION DE CONFORMITÉ
CEE - DECLARATIÓN DE CONFORMIDAD

Wir erklären in alleiniger Verantwortung, dass das folgende Produkt	We declare under our sole responsibility that the following product	Nous déclarons sous notre seule responsabilité que les produit ci-dessous	Declaramos bajo nuestra única responsabilidad, que los produit listados a continuación
Labohrrührer	**laboratory stirrer**	**Agitateur de laboratoire**	**Agitador de laboratorio**
SLR			
auf das sich diese Erklärung bezieht, übereinstimmt mit den folgenden EG Richtlinien.	to which this declaration relates are in conformity with the following EC directives.	auquel se réfère cette déclaration est conforme directives CE soul vantes.	todo lo relative a esta declaración está en conformidad con las directivas CEE siguientes
EMV EG-Richtlinie 2004/108/EG Sicherheit EG Richtlinie 2006/ 95	EMC EC-Directrive 2004/108/EG Safety EC-Directrive 2006/ 95	CEM CE-Directive 2004/108/EG Sécurité CE-Directive 2006/ 95	CEM CEE siguientes 2004/108/EG Seguridad CEE siguientes 2006/ 95
Angewandte harmonisierte Normen oder normative Dokumente	Applied harmonized standards or normative documents	Normes harmonisées ou documents normative appliquées	Estándares armonizados aplicados o documentos normativos
EMV EN 61326-1:2006 Sicherheit EN 61010-1 :2001	EMC EN 61326-1:2006 Safety EN 61010-1 :2001	CEM EN 61326-1:2006 Sécurité EN 61010-1 :2001	CEM EN 61326-1:2006 Seguridad EN 61010-1 :2001

Mainz den 01.04.2009

Dr. Robert Reining
Geschäftsführer, Managing Director

Konf. No.: Hotpl 001

SI Analytics GmbH
Hattenbergstraße 10
55122 Mainz
Deutschland, Germany, Allemagne

Typ / type / type / tipo **SLR**

Bescheinigung des Herstellers

Wir bestätigen, dass das oben genannte Gerät gemäß DIN EN ISO 9001, Absatz 8.2.4 „Überwachung und Messung des Produkts“ geprüft wurde und dass die festgelegten Qualitätsanforderungen an das Produkt erfüllt werden.

Supplier’s Certificate

We certify that the above equipment has been tested in accordance with DIN EN ISO 9001, Part 8.2.4”Monitoring and measurement of product” and that the specified quality requirements for the product have been met.

Certificat du fournisseur

Nous certifions que le produit a été vérifié selon DIN EN ISO 9001, partie 8.2.4 ”Surveillance et mesure du produit” et que les exigences spécifiées pour le produit sont respectées.

Certificado del fabricante

Certificamos que el aparato arriba mencionado ha sido controlado de acuerdo con la norma DIN EN ISO 9001, sección 8.2.4 „Seguimiento y medición del producto“ y que cumple con los requisitos de calidad fijados para el mismo.

SI Analytics

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