

by VELP Scientifica


Instruction Manual


CG-1994-V-10


CG-1994-V-10E

Digital Heating Magnetic Stirrer

General Information

 Before using the unit, please read the following instruction manual carefully.
Avant d'utiliser l'instrument, il est recommandé de lire attentivement le présent manuel d'instructions.

 Caution, hot surface!
Attention, surface chaude!

 Do not dispose of this equipment as urban waste, in accordance with EEC directive 2002/96/CE.
Ne pas recycler l'appareil comme déchet solide urbain, conformément à la Directive 2002/96/CE.

This unit must be used for laboratory applications only. The manufacturer declines all responsibility for any use of the unit that does not comply with these instructions. If the product is used in a not specified way by the manufacturer or with non specified accessories, product's safety may be compromised.

Cet instrument ne peut être utilisé que pour des applications de laboratoire. Le fabricant décline toute responsabilité en cas d'utilisation non conforme aux instructions concernant ces instruments. Si le produit est utilisé d'une manière non spécifiée par le fabricant ou accessoires non spécifiés, la sécurité du produit peut être compromise.

**This unit has been designed and manufactured in compliance with the following standards:
L'instrument a été conçu et fabriqué conformément aux normes suivantes:**

Safety requirements for electrical equipment for measurement, control and for laboratory use	IEC/EN 61010-1
Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire	IEC/EN 61010-2-051
Electrical equipment for laboratory use	UL 61010-1
General requirement - Canadian electrical code	CAN/CSA-C22.2 No.61010-1

VELP reserves the right to modify the characteristics of its products with the aim to constantly improving their quality.
Dans le but d'améliorer constamment la qualité de ses produits, VELP se réserve le droit d'apporter des modifications aux caractéristiques de ceux-ci.

Safety Regulations / Consignes de Sécurité

The plug disconnects the instrument. Therefore, place the instrument where it can be quickly disconnected.
Le bouchon est le moyen de déconnexion de l'appareil. Par conséquent, placer l'appareil où il peut être rapidement débranché.

Hotplate temperature: up to 370 °C / Température de la plaque chauffante: jusqu'à 370 °C.

The heated solution may release toxic, dangerous or poisonous gases. Adequate safety measures must be taken, in accordance with the safety regulations in force, including the presence of hood and personal protective equipment (masks, gloves, goggles, etc.).

La solution chauffée peut libérer gaz toxiques ou dangereux. Des mesures de sécurité adéquates doivent être prises, en conformité avec les règlements de sécurité en vigueur, compris la présence de la hotte de laboratoire et équipements de protection individuelle (masques, gants, lunettes, etc.).

Beware of the effect of the magnetic field on cardiac pacemakers and data media.
Veuillez tenir compte de l'influence du champ magnétique sur les stimulateurs cardiaques ou les supports de données.

Position the instrument on a flat surface, with a distance from the wall of 30 cm (at least).
Positionner l'appareil sur une surface plat, avec une distance de la paroi de 30 cm (au moins).

Do not use with explosive and dangerous materials for which the equipment is not designed. The stirrer must not be used in explosive atmospheres, in bain-marie and to stir combustible liquids that have a low combustion temperature. The minimum fire point of flammable solution is 750 °C. Only small amounts (< 50 ml) of flammable liquid can be used with the device.
Ne pas utiliser avec des matières explosives et dangereuses pour lesquelles l'équipement n'est pas conçu. L'agitateur ne peut pas être utilisé dans des atmosphères explosives, dans un bain d'eau et pour remuer les combustibles liquides avec la température de combustion bas. Le point minimale de feu de solution inflammable est de 750 °C. Seules de petites quantités (<50 ml) de liquide inflammable peuvent être utilisés avec l'appareil.

The unit is fitted with two fuses (2xT5 A L 250 V (for 230V), 2xF8 A 250 V (for 115 V)), found in the socket on the back. To replace one or more disconnect the mains cable and, using a screwdriver, lift up the small cover on the fuse box.
L'appareil est équipé de deux fusibles (2xT5 A L 250 V (for 230V), 2xF8 A 250 V (for 115 V)), qui se trouvent dans la douille placée sur le dos. Pour remplacer, débranchez le cordon d'alimentation et, à l'aide d'un tournevis, soulever le petit couvercle sur la boîte à fusibles.

It is responsibility of the user appropriately decontaminate the instrument in case of dangerous substances fall on or in it. It is also responsibility of the user to use safety substances for cleaning or decontaminating, which do not react with internal parts of the instrument or with the material contained in it. In case of doubts on the compatibility of a cleaning solution, contact the manufacturer or local distributor.
Est responsabilité de l'utilisateur la décontamination en cas de déversement de matières dangereuses sur ou à l'intérieur de l'équipement. Est responsabilité de l'utilisateur à utiliser des substances qui ne produisent pas de danger pour le nettoyage ou de décontamination, qui ne réagissent pas avec les parties internes de l'appareil ou avec la matière qu'il contient. En cas de doute sur la compatibilité d'une solution de nettoyage, contactez le fabricant ou le distributeur local.

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The AREX3 Digital PRO heating magnetic stirrer with aluminium alloy plate, is used in the laboratory for general use and for all those applications that require a precise regulation of the stirring speed and of the heating plate temperature.

The heating plate (1) is made out of aluminum alloy with ceramic coating and is specially treated to ensure:

- Optimum heat distribution and a high specific power thanks to the circular configuration
- Optimum temperature homogeneity across the plate
- High resistance to thermal stress and thermal shock, chemical aggressions, scratches and surface abrasions.

The AREX3 Digital PRO is used to mix liquids using a magnetically driven stir bar placed inside the vessel. The size and shape of the magnetic stir bar determines the stirring efficiency at any given speed. Magnetic stirring is generated by the VELP Scientifica Patented Composite Magnet driven by an asynchronous mono-phase brushless motor in alternating current which offers a virtually unlimited duration.

NOTE: It is therefore advisable to choose the most suitable magnetic stir bar in relation to the quantity and characteristics of the liquid and the type of vessel used.

The instrument is turned on using the ON/OFF switch. The stirring speed and the temperature of the heating plate are adjusted using the relative knobs on the front panel, the values are indicated on the digital display.

NOTE: If the heating function is used the vessel must be made of a suitable material to withstand the foreseen temperature.

NOTE: using the heating plate at high temperatures may cause discoloring. This does not alter the thermal, mechanical and chemical resistance of the plate in any way

2. Assembly and installation

Check the integrity of the unit after unpacking. The box includes:

- AREX3 Digital PRO
- Power supply cord
- Instruction manual

2.1 Electrical connections

After having unpacked the instrument, place the unit on the laboratory bench.

Before connecting the instrument to the power supply, make sure that the values on the rating plate correspond to those of the power supply. Connect the unit to the power supply using the transformer supplied.

Ensure that the socket and the relative cut-off device conform to current safety norms and are easy to reach.

NOTE: the mains cable must remain far away from the hot plate.

2.2 Start-up

Rotate the speed (right) and temperature (left) knobs completely to the left. Place the flask containing the sample and a suitable magnetic stirring bar on the stirring plate. Then, set the speed and temperature by turning the dedicated knobs.

3. Operating controls

3.1 Turning on and regulating

Connect the unit to mains and turn it on using the on-off switch. The green led indicates that the instrument is On. In the next 5 seconds, displays shows the software version and the restarting mode (A or b, chapter 3.4 "Setting mode").

Start the stirring function by turning the stirrer knob "Stirrer rpm" on the front panel. Speeds of from 50 to 1500 rpm (10 rpm resolution) can be selected. The speed shown flashes until it reaches the set-point. A microprocessor ensures constant speed even when the viscosity changes (counter-reaction).

To start the heating function turn the heating knob "Heating °C" on the front panel. Temperatures from 5 to 370 °C can be selected at 5 °C intervals. The display shows the real temperature but every 5 seconds the temperature set is shown for 1 second, indicated by the central led on the display "Set" turned on.

NOTE: in case of black-out, once the power is back the device will restart in the restarting mode set (Opt tYpE, chapter 3.4).

When heating is turned Off (Heating knob OFF) and the heating plate temperature exceeds 50 °C, the message "Hot" flashes on the display until the temperature of the heating plate falls to below 50 °C (or until the instrument is turned off using the ON/OFF switch).

NOTE: this warning is not active if the instrument is not powered.

3.2 Using the thermoregulator VTF

Screw the threaded support rod into its seat on the back of the instrument and fasten the VTF thermoregulator onto the support rod. Place the temperature probe in the flask making sure that it is completely immersed in the sample. Connect the two instruments (AREX3 Digital PRO and VTF) by plugging the VTF into the dedicated socket on the back of the AREX3 Digital PRO.

Select the operating temperature required on the VTF thermoregulator.

Turn the temperature control knob on the front panel of the AREX3 Digital PRO to the desired temperature.

NOTE: when the two instruments are connected, the display of the AREX3 Digital PRO does not show the temperature but a dashed line (---). The operating temperature is shown on the display of the VTF thermoregulator.

The AREX3 Digital PRO always has primary control of the heating plate temperature.

When using the VTF thermoregulator always select the max temperature on the AREX3 Digital PRO. The temperature control function of the heating plate can also be used as a safety thermostat. In this case the maximum temperature of the heating plate will not exceed the temperature setting on the AREX3 Digital PRO meaning that a longer heating time is required in order to reach the VTF thermoregulator temperature setting. (chap. 3.4).

3.3 Using the external probe

Screw the threaded support rod (optional accessory) into its seat on the back of the instrument and fasten the clamp (optional accessory) onto the support rod.

Fit the temperature probe onto the clamp making sure that it is completely immersed in the sample.

Plug the temperature probe into the dedicated socket on the back of the AREX3 Digital PRO with the instrument off. A led on the left-hand side of the display indicates that the probe is connected, the display indicates the probe temperature reading. Select the operating temperature using the heating knob on the AREX3 Digital PRO. A led at the center of the display indicates that the set-point temperature is shown; after 5 seconds the led goes out and the display indicates the probe temperature.

3.4 Setting mode

Turn the left knob twice from the minimum to the maximum during the visualization of the software version in order to enter into the setting mode.

Once there, by turning the left knob, it is possible to pass from one of the following parameter to the next ones:

Parameter shown		Default value	Range	Description
CAL	P100	0,0°C	-10,0 ÷ +10,0°C	External probe calibration
CAL	tA	0,0°C	-10,0 ÷ +10,0°C	Probe calibration at 20°C
FS	tCJ	370°C	0 ÷ 370°C	Maximum temperature settable
OPt	tYpE	A	A – b	(*) Restarting mode
OPt	P100	FASt	FlnE - FASt	(**) Type of control with external probe
ALL	P100	POn	POn-POFF	(***) External probe safety

Turn the right knob from the minimum to the maximum and then back to the minimum in order to pass to the parameter you want to modify. The display will show the value saved for 3 seconds, and then the new value according to the position of the right knob.

The new value is automatically saved after 4 seconds, if during this time the right knob is not moved (no change of value). "dOnE" is shown and then the system goes back to the main menu.

Once the new values are set, switch off and restart the instrument.

(*) When **A** is selected: in case of black-out, once the power is back the device will remain off.

When **b** is selected: in case of black-out, once the power is back the device will automatically restart with the latest settings.

(**) Select **FlnE** to minimize overshoot and fluctuations of temperature.

Select **FASt** to save time.

(***) When **POn** is selected: if the instrument don't measure an increase of temperature, a signal of alarm is shown.

3.5 Error messages

If an error message appears on the display, please contact VELP Scientifica's technical service department.

When the display shows an error message, the stirring and heating functions stop automatically.

NOTE: To remove the error message disconnect the instrument from the power supply.

AL1 Overtemperature (temperature is higher than 430 °C)

AL2 Excessive heating time

AL3 The stirring system doesn't run correctly

AL4 Overtemperature of the external probe (temperature is higher than 260 °C) - only when probe is connected

AL5 Overtemperature of the safety probe (temperature is higher than 430 °C)

AL6 Probe not inserted inside the sample.

Should any of the above occur, please contact your nearest VELP Scientifica service centre.

4. Maintenance

No routine or extraordinary maintenance is necessary apart from periodically cleaning the unit as described in this manual.

In compliance with the product guarantee law, repairs to our units must be carried out in our factory, unless previously agreed otherwise with local distributors.

The instrument must be transported in its original packaging and any indications present on the original packaging must be followed (e.g. palletized).

4.1 Cleaning

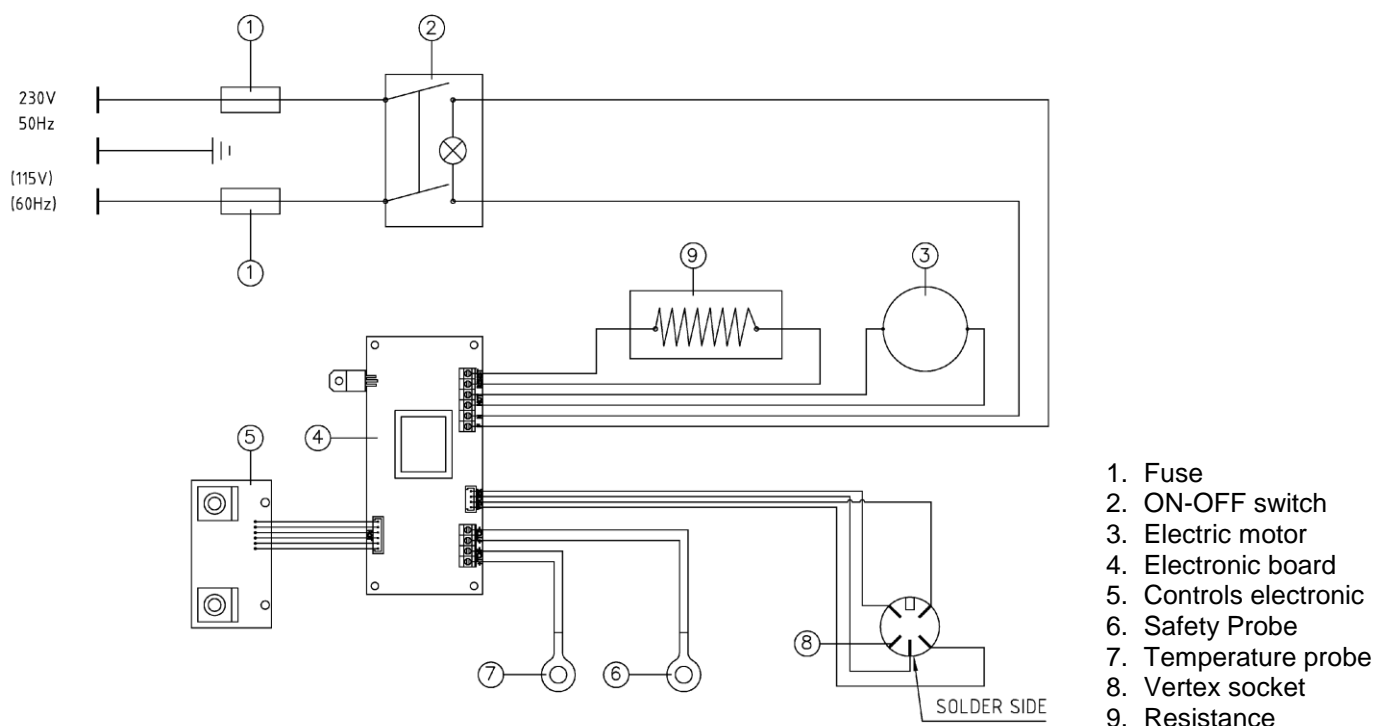
Disconnect the unit from the power supply and use a cloth dampened with an non-inflammable non-aggressive detergent.

5. Technical data

Power supply	230 V / 50-60 Hz or 115V / 60 Hz (+/-10%)
Dimensions WxHxD	165x115x280 mm (6.5x4.5x11 in)
Weight	2.6 Kg (5.7 lb)
Overall power	630 W
Power (heating)	600 W
Power (stirring)	30 W
Continuous operating mode	Admitted
Dimension of the heating plate	Ø 155 mm
Programmable temperature range	Room temp. - 370 °C
Type of temperature control	Digital
Temperature selection	5 °C steps
Reading temperature resolution	1 °C steps
Overtemperature protection	Yes
Stirring capacity	20 liters of H ₂ O
Programmable speed range	50 – 1500 rpm
Type of motor control	Digital
Speed selection	10 rpm steps
Connection	VTF - External probe Pt100
Electric rating for external probe	5 Vdc – 1W (max)
Accuracy of temperature with VTF	+/-0,5°C*
Accuracy of temperature with external probe	+/-1°C*
Noise level	<< 80 dBa
Temperature range	+5...+40 °C
Storage temperature range	-10...+60 °C
Max humidity	80%
Level of electrical protection CEI EN60529	IP 42
Overvoltage category	II
Pollution degree CEI EN61010-1	2
Max altitude	4000 m

* in following conditions: 800ml water in 1 liter glass beaker (diameter 105mm), stirring bar 10x40mm, 600rpm, 50°C.

6. Wiring diagram



7. Accessories

Please get in contact with Chemglass Life Sciences for more details about accessories.

www.cglifesciences.com

Phone: 1-800-843-1794

8. Warranty

The unit is guaranteed against production defects for 25 months from our invoice date.

In accordance with this guarantee Chemglass Life Sciences undertakes to repair any units resulting as faulty due to the quality of the materials used or poor workmanship.

Units rendered faulty due to inexpert handling/use or carelessness will not be replaced or repaired under warranty.

Exclusions:

The guarantee will be considered null and void for faults resulting from:

- inexperience and carelessness of the operator
- repairs, maintenance or replacement of parts carried out by personnel or Companies not authorized by the manufacturer
- use of the instrument that does not comply to the instructions/recommendations given in the present operating manual
- use of non-original spare parts.

9. Declaration of conformity

We, the manufacturer VELP Scientifica, under our responsibility declare that the product is manufactured in conformity with the following standards:

EN 61010-1 (2001)

EN 61326-1 (2006)

2011/65/EU (RoHS)

2002/96/CE (RAEE)

and satisfies the essential requirements of the following directives:

- Machinery directive 2006/42/EC
- Low voltage directive 2006/95/EC
- Electromagnetic compatibility directive 2004/108/EC
- plus modifications