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# IKA®

CMAG\_HS 4\_7\_10 d\_062016

**IKA® C-MAG HS 4 digital**  
**IKA® C-MAG HS 7 digital**  
**IKA® C-MAG HS10 digital**



C-MAG HS 7 digital



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## Safety instructions

### *To your protection*

- **Read the operating instructions in full before starting up and follow the safety instructions.**
- Keep the operating instructions in a place where they can be accessed by everyone.
- Ensure that only trained staff work with the appliance.
- Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- Socket must be earthed (protective ground contact).
- **Attention-Magnetism!** Effects of the magnetic field have to be taken into account (e.g. data cardiac, carriers pacemakers...).
- **Risk of burns!** Exercise caution when touching the housing parts and the heating plate. The heating plate can reach temperatures in excess of 500 °C. Pay attention to the residual heat after switching off.
- Please make sure that the mains cable does not contact the heating plate.



- Wear your personal protective equipment in accordance with the hazard category of the medium to be processed. Otherwise there is a risk of:
  - splashing liquids
  - projectile parts
  - release any toxic or combustible gases.
- Set up the appliance in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- The feet of the appliance must be clean and undamaged.
- Position the knob at the left stop before starting up. Gradually increase the speed.
- Reduce the speed if
  - the medium splashes out of the vessel because the speed is too high
  - the appliance is not running smoothly
  - the container moves on the set-up surface.
- **Caution!** Only process and heat up any media that has a flash point higher than the adjusted target temperature (0 to 500 °C) that has been set.  
The target temperature must always be set to at least 25 °C lower than the fire point of the media used.
- Check the appliance and accessories beforehand for damage each time you use them. Do not use damaged components.
- Only replace damaged parts with spare parts identical to the original in function and quality.
- Do not use the device if the ceramic set-up surface is damaged, e.g. scratches, splinters or corrosion. A damaged set-up surface could break if used.
- Beware of the risk of
  - flammable materials
  - glass breakage
  - incorrect container size
  - too much medium
  - unsafe condition of container
- Only process media that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.
- Process pathogenic materials only in closed vessels under a suitable

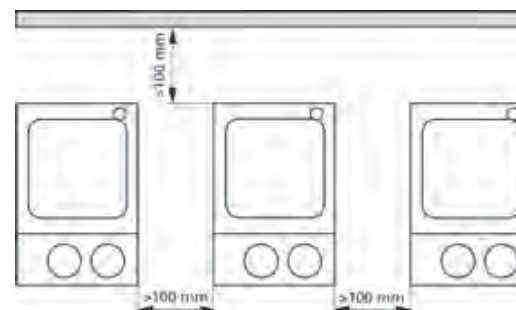
extractor hood. Please contact **IKA®** if you have any questions.

- **Do not** operate the appliance in explosive atmospheres, with hazardous substances or under water.
- Please observe the operating instructions for any accessories used.
- The socket for the mains cord must be easily accessible.
- Ensure that the external temperature sensor PT 1000 is inserted in the media to a depth of at least 20 mm.
- The external temperature sensor PT 1000 must always be inserted in the media when connected.
- The appliance can only be disconnected from the mains supply by pulling out the mains plug or the connector plug.
- Safe operation is only guaranteed with the accessories described in the "Accessories" chapter.
- Always disconnect the plug before fitting accessories.
- Accessories must be securely attached to the device and cannot come off by themselves. The center of gravity of the assembly must lie within the set-up surface.
- The appliance starts up again automatically following a cut in the power supply (in operating mode B / C).
- The appliance may heat up when in use.
- Abrasion of the dispersion equipment or the rotating accessories can get into the medium you are working on.
- When using PTFE-coated magnetic bars, the following has to be noted: *Chemical reactions of PTFE occur in contact with molten or dissolved alkaline and alkaline - earth metals, as well as with fine-particled powders of metals of the 2. and 3. group of the periodical system at temperatures above 300-400 °C. Only elementary fluorine, chlorine trifluoride und alkaline metals do attack PTFE, halogen hydrocarbons have a reversibly swelling effect.*

Source: Römpps Chemie-Lexikon and "Ullmann" Bd.19

#### To the protection of the equipment

- The appliance may only be opened by experts.
- The voltage stated on the nameplate must correspond to the mains voltage.
- Do not cover the device, even partially e.g. with metallic plates or film. This results in overheating.
- Protect the appliance and accessories from bumps and impacts.
- Ensure that the base plate is kept clean.
- Observe the minimum distances between devices, between the device and the wall and above the assembly (min. 800 mm).



## Unpack

- **Unpack**
  - Please unpack the device carefully
  - In the case of any damage a fact report must be set immediately (post, rail or forwarder)
- **Delivery scope**
  - Heating magnetic stirrer
  - PT 1000
  - Mains cable
  - Operating instructions

## Correct use

- **Use**
  - For mixing and/or heating liquids
- **Range of use**
  - Laboratories
  - Schools
  - Pharmacies

This device is suitable for use in all areas except:

- Residential areas
- Areas that are connected directly to a low-voltage supply network that also supplies residential areas.

The safety of the user cannot be guaranteed if the appliance is operated with accessories that are not supplied or recommended by the manufacturer or if the appliance is operated improperly contrary to the manufacturer's specifications.

## Setting operating mode

Operating the device in mode A, B or C  
The mode selected will be shown on the display (J).

### Operating mode A

The target temperature selected will be reset to 0 °C if the device is switched off or disconnected from the power supply. The heating function will be set to OFF when the device is powered on.

- Heating is only possible in connection with the temperature sensor PT 1000.
- Setting the HI TEMP-function is possible.

*Factory setting: mode A*

### Operating mode B

All settings will be stored if the device is switched off or disconnected from the power supply.

- Heating is possible without the temperature sensor PT 1000. The target temperature selected corresponds to the heating plate temperature.
- Setting the HI TEMP - function is **not** possible.

### Operating mode C

All settings will be stored if the device is switched off or disconnected from the power supply.

Functions see mode B.

The settings are preset and not changeable.

For changing the settings select the operating mode A or B.

### Changing the operating mode

The operating modes can only be selected successively!

- Put device switch (A) in the OFF position
- Press and hold the rotating knob (B)
- Put device switch (A) in the ON position
- Release the rotating knob (B) when fig. 1 is indicated on the display
- Sequence A-B-C-A-B-C-A etc.

## Safe temperature limit

The temperature set for the heating plate (maximum 500 °C) will be limited by a preset safe temperature limiter. The heating function will be set to OFF if this temperature limit is reached.



**Warning! The safe temperature limit must always be set at least 25 °C lower than the flash point of the media to be processed!**

## Setting HI TEMP

HI TEMP limits the adjustable target temperature .

After switching on the device the display indicates the value 500 °C instead of the actual temperature (K) and the blinking signal SET next to the symbol HI TEMP (N).

The target temperature max. (L) can be set in the range of 0 - 500 °C by turning the rotating knob TEMP as long as the signal SET blinks.

## Warranty

In accordance with **IKA®** warranty conditions, the warranty period is 24 months. For claims under the warranty please contact your local dealer. You may also send the machine direct to our works, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.

The warranty does not cover wearing parts, nor does it apply to faults resulting from improper use or insufficient care and maintenance contrary to the instructions in this operating manual.

## Commissioning

**Commissioning** Put device switch (A) in the OFF position  
 Plug in (G) mains cable  
 Once connected to the power supply the device is in "stand-by" mode

**Stirring** Put device switch (A) in the ON position  
 Set the engine speed with the operating button (MOT)  
 Any set values are retained when device is switched off and even after the device is disconnected from the power!

### Heating

**with external temperature sensor (direct temperature control in the medium)** - - - - Put device switch (A) in the OFF position  
 Plug in the PT 1000 sensor into the socket (I)  
 Put device switch (A) in the ON position  
 Adjust the set-point temperature with the operating button (TEMP)

- LED (F) lights up
- the instantaneous temperature (K) is indicated on the display (corresponds sensor- and/or medium temperature)
- indicated set point temperature (L) corresponds the desired medium temperature
- LED (E) lights up and the symbol for energy input (M) is indicated on the display (with the heating is switched on)
- indicate HOT (D) on the display with over 50 °C on the heating plate (in the agitating and stand-by-mode)

**without external temperature sensor (not in operating mode A)** - - Put device switch (A) in the ON position  
 Set the operating mode (see capture "Operating modes")  
 Adjust the set-point temperature with the operating button (TEMP) (only be set in operating mode B)

- indicate the adjusted set point temperature on the LCD display (D) position (L)
- indicated the set point temperature corresponds the heating plate temperature
- LED (E) lights up and the symbol for energy input (M) is indicated on the display (with the heating is switched on)

- indicate HOT (D) on the display with over 50 °C on the heating plate (in the agitating and stand-by-mode)

## Error codes

Any malfunctions during operation will be identified by an error message on the display (D).

Proceed as follows in such cases:

- Switch off device using the main switch (A)
- Carry out corrective measures
- Restart device

Error code	Cause	Solution
E1	Sensor not connected (operating mode A)	<ul style="list-style-type: none"> <li>• Connect sensor</li> <li>• Change operating mode</li> </ul>
E3	Temperature inside device too high	<ul style="list-style-type: none"> <li>• Switch off device and allow to cool down</li> </ul>
E5	Sensor not in media	<ul style="list-style-type: none"> <li>• Sensor in medium immerse</li> </ul>
E6	Sensor defectively	<ul style="list-style-type: none"> <li>• Exchange the sensor</li> </ul>
E7	Hi-Temp temperature border exceeded	<ul style="list-style-type: none"> <li>• Medium to cool down</li> </ul>
E9	Initializations error	<ul style="list-style-type: none"> <li>• Switch off/on the device</li> </ul>
E11	Motor blocks	<ul style="list-style-type: none"> <li>• use other stirring bar</li> <li>• reduce viscosity</li> </ul>

If the actions described fail to resolve the fault or another error code is displayed then take one of the following steps:

- Contact the service department
- Send the device for repair, including a short description of the fault.

## Accessories

### Stirring organs

stirring bars:	Ø 6 mm, length to 15 mm
	Ø 8 mm, length to 50 mm
	Ø10 mm, length to 80 mm

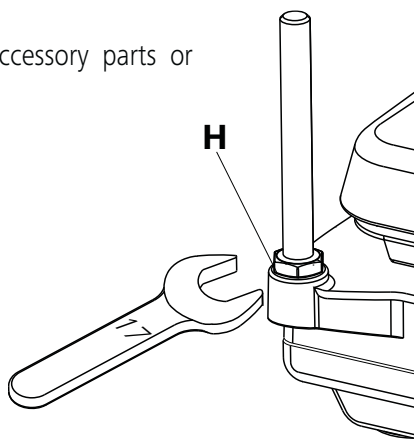
### Any other accessories

RSE	stirring bar remover
RS1	stirring bar set
H15	bath top
H28	bath top
H16V	support rod
H38	holding rod
H44	cross sleeve

## Assembling the support rod

The support rod is attached using the threaded support bore (H).

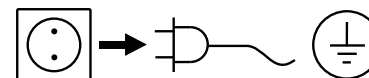
- Screw nut M10 on to the support rod as far as the stop
- Screw on the support rod as far as the stop by hand
- Tighten the support rod and nut M10 using a flat wrench (SW17).
- Use bossheads to assemble accessory parts or accessory devices.



## Maintenance

The appliance is maintenance-free.

### Cleaning



Only use cleansing agents which have been recommended by **IKA®**.

Use to remove:

Dyes	isopropyl alcohol
Construction materials	water containing tenside/ isopropyl alcohol
Cosmetics	water containing tenside/ isopropyl alcohol
Foodstuffs	water containing tenside
Fuels	water containing tenside

- Do not allow moisture to get into the appliance when cleaning
- Wear protective gloves during cleaning the devices.
- Before using another than the recommended method for cleaning or decontamination, the user must ascertain with **IKA®** that this method does not destroy the instrument.

### Ordering spare parts

When ordering spare parts, please give:

- Machine type
- Manufacturing number, see type plate
- Item number and designation of the spare part, see **www.ika.com**

### Repair

Please only send devices in for repair that have been cleaned and are free of materials which might present health hazards.

For this, use the **"certificate of compliance"** form which you can obtain from **IKA®** or can download a version for printing from the **IKA®** website at **www.ika.com**.

If your appliance requires repair, return it in its original packaging. Storage packaging is not sufficient when sending the device - also use appropriate transport packaging.



## Technical data

### Temperature control in the medium with PT 1000 temperature sensor

Minimum depth of immersion sensor	<b>mm</b>	20
Measuring accuracy	<b>K</b>	± 0,2 + sensor tolerance DIN IEC 751 class A
Setting accuracy	<b>K</b>	1
Resolution - display	<b>K</b>	0,1
Standard tolerance	<b>K</b>	± 0,5
Control system		PID
Operating voltage	<b>VAC</b>	220 - 230 ±10%
	<b>VAC</b>	120 ±10%
	<b>VAC</b>	100 ±10%
Nominal voltage	<b>VAC</b>	230 / 50 Hz
	<b>VAC</b>	115 / 60 Hz
	<b>VAC</b>	100 / 60 Hz
Design frequency	<b>Hz</b>	50 / 60
Input power max. at 230 and 115 VAC 100 VAC	<b>W</b> <b>W</b>	270 <b>HS 4</b> 270 <b>HS 4</b>
Input power max. at 230 and 115 VAC 100 VAC	<b>W</b> <b>W</b>	1020 <b>HS 7</b> 1020 <b>HS 7</b>
Input power max. at 230 and 115 VAC 100 VAC	<b>W</b> <b>W</b>	1520 <b>HS 10</b> 1070 <b>HS 10</b>
Power consumption in stand-by mode	<b>W</b>	2,5
Perm. duration of operation	<b>%</b>	100
Perm. ambient temperature	<b>°C</b>	+5...+40
Perm. relative humidity	<b>%</b>	80
Protection type acc. to DIN EN 60529		IP 21
Protection class		I
Overvoltage category		II
Contamination level		2

Operation at a terrestrial altitude	<b>m</b>	max. 2000
Dimensions (W x D x H) <b>HS 4</b> <b>HS 7</b> <b>HS 10</b>	<b>mm</b> <b>mm</b> <b>mm</b>	150 x 260 x 105 220 x 330 x 105 300 x 415 x 105
Weight <b>HS 4</b> <b>HS 7</b> <b>HS 10</b>	<b>kg</b> <b>kg</b> <b>kg</b>	3 5 6
<b>Motor</b>		
Speed range (infinitely)	<b>rpm</b>	0/100 - 1500
Speed display		Scale
Power consumption	<b>W</b>	15
Power output	<b>W</b>	1,5
Max. stirring quantity (water) <b>HS 4</b> <b>HS 7</b> <b>HS 10</b>	<b>ltr</b> <b>ltr</b> <b>ltr</b>	5 10 15
<b>Heating plate</b>		
Heating plate-/ Setting up plate dimensions	<b>mm</b> <b>mm</b> <b>mm</b>	120 x 120 <b>HS 4</b> 200 x 200 <b>HS 7</b> 280 x 280 <b>HS 10</b>
Heating power (±10%) at 230 and 115 VAC at 100 VAC	<b>W</b> <b>W</b>	250 <b>HS 4</b> 250 <b>HS 4</b>
Heating power (±10%) at 230 and 115 VAC at 100 VAC	<b>W</b> <b>W</b>	1000 <b>HS 7</b> 1000 <b>HS 7</b>
Heating power (±10%) at 230 and 115 VAC at 100 VAC	<b>W</b> <b>W</b>	1500 <b>HS 10</b> 1050 <b>HS 10</b>
Surface temperature Room temperature at	<b>°C</b>	500
Temperature fluctuation	<b>K</b>	± 5
Limit of safety temperature (firmly adjusted)	<b>°C</b>	550
Range of adjustment Hi-Temp	<b>°C</b>	0 - 500

*Subject to technical changes!*