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# IKA®

## IKA® ULTRA-TURRAX® Tube Drive control



Operating instructions EN

**EG-KONFORMITÄTSERKLÄRUNG****DE**

Wir erklären in alleiniger Verantwortung, dass dieses Produkt den Bestimmungen der Richtlinien 73/23/EG, 89/336/EG und 98/37/EG entspricht und mit den folgenden Normen und norminativen Dokumenten übereinstimmt: DIN EN IEC 61010-1; DIN EN IEC 61326-1; DIN EN ISO 12100-1, -2 und EN 60204-1.

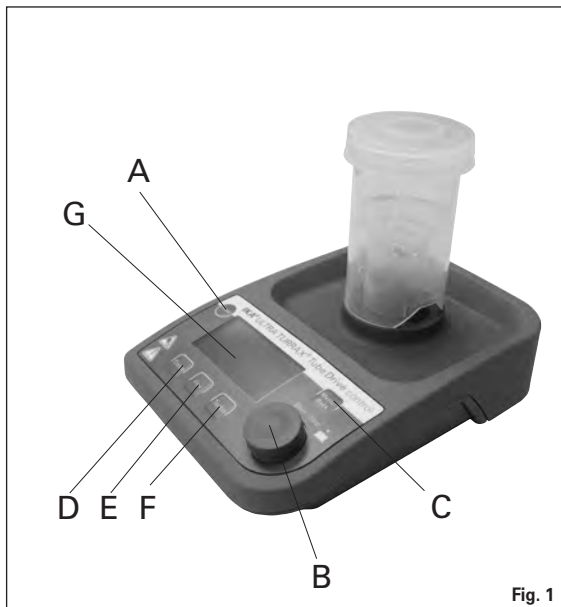
**EC-DECLARATION OF CONFORMITY****EN**

We declare under our sole responsibility that this product corresponds to the regulations 73/23/EEC, 89/336/EEC and 98/37/EEC and conforms with the standards or standardized documents DIN EN IEC 61010-1; DIN EN IEC 61326-1; DIN EN ISO 12100-1, -2 and EN 60204-1.

**DÉCLARATION DE CONFORMITÉ CE****FR**

Nous déclarons sous notre propre responsabilité que ce produit est conforme aux réglementations 73/23/CEE, 89/336/CEE et 98/37/CEE et en conformité avec les normes ou documents normalisés suivant DIN EN IEC 61010-1; DIN EN IEC 61326-1; DIN EN ISO 12100-1, -2 et EN 60204-1.





**Item Designation**

- A " Power" button
- B Rotating/Pressing knob
- C "Menu/Back" button
- D "Timer" button
- E "Rev" button
- F "Turbo" button
- G Display

## Explanation of symbols



This symbol identifies information **that is absolutely essential for your safety and health**. Failure to observe this information may result in negative effects for your health and injuries.



This symbol identifies information **that is absolutely essential for your safety and health**. Failure to observe this information may result in biohazardous infection.



This symbol identifies information **that is absolutely essential for your safety and health**. Failure to observe this information may result in injuries for your hand.

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## Safety instructions

### *For your protection*

- **Read the operating instructions in full before starting up and follow the safety instructions.**
- Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- Keep the operating instructions in a place where they can be accessed by everyone.
- Ensure that only trained staff work with the appliance.
- The device must be supervised at all times when in operation.
- Hearing protection must be worn when working with BMT-20 or BMT-50 tubes.



### **Caution!**

- 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
  - body parts, hair, clothing and jewellery getting caught.
- 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.
- The appliance is not suitable for manual operation.
- The appliance may heat up when in use.
- Check the appliance and accessories beforehand for damage each time you use them. Do not use damaged components.
- Ensure that the cover is screwed on tightly.
- Ensure that the tube is firmly attached to the bayonet lock connector on the drive unit prior to operating the device.
- The tube must only be attached and removed whilst the motor is stationary.
- The **IKA** tubes must always be closed when the device is in operation. Switch off the device immediately if any material leaks from the tube. Clean the equipment.
- Always open the tube carefully after use as the media in the tube

EN



may heat up due to transfer of energy during operation, leading to pressurization of the container: risk of material spraying, protective equipment must be worn.



**Danger!**

- When handling infectious or toxic sample materials, do NOT touch the sample, mixture or waste with your hands. Wear gloves and lab coat and, if necessary, goggles.

- The temperature of the material must not exceed 40 °C.
- Only use tubes approved by **IKA**.
- 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.
- Beware of the risk of flammable materials
- **Do not** operate the appliance in explosive atmospheres, with hazardous substances or under water.
- The appliance doesn't start up again automatically following a cut in the power supply.
- Safe operation is only guaranteed with the accessories described in the "Accessories" chapter.

*For protection of the equipment*

- The voltage stated on the name plate must correspond to the mains voltage.
- The device must only be operated with the original plug-in power supply unit.
- Protect the appliance and accessories from bumps and impacts.
- The appliance may only be opened by experts.

## Unpacking

• **Unpack**

- Please unpack the device carefully
- In the case of any damage a fact report must be set immediately (for post, rail or forwarder)

• **Delivery scope**

- **Tube Drive**
- Power supply unit with 4 exchangeable plugs
- Removal hook
- Operating instructions

## Correct use

• **Use**

	<b>Application</b>	<b>Volume</b>	<b>Mode</b>
▶With Tube ST-20... ▶With Tube ST-50...	Mixing Stirring	Minimum quantity  2 - 15 ml max. 15 - 50 ml max.	A, B, P1-P9, Turbo, Rev
▶With Tube DT-20... ▶With Tube DT-50...	Dispersing Stirring	Minimum quantity  2 - 15 ml max. 15 - 50 ml max.	A, B, P1-P9, Turbo
▶With Tube BMT-20... ▶With Tube BMT-50...	Crushing Mixing wet/dry	Minimum quantity  2 - 15 ml max. 15 - 50 ml max.	A, B, P1-P9, Turbo, Rev

#### • Range of use

- Laboratories
- Pharmacies
- Schools
- Universities

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 protection for the user is not ensured no more, if the equipment with accessories is operated, which are supplied or are not recommended not by the manufacturer or if the equipment in not correct use is operated against the manufacturer default.

### Useful facts

Changes in viscosity and volume caused by processing of dispersion media may cause small fluctuations in the speed of the device.

### Interfaces and outputs

#### Remote control

The device can be operated in "Remote" mode via USB interface using labworldsoft® laboratory software. The USB interface is located on the back side on the device and can be connected to a PC using the USB cable supplied.

*Note:* Please note the system requirements as well as the operating instructions and help section included with the software.

#### USB Interface

The Universal Serial Bus (USB) is a serial bus system used to connect the device with the PC. Devices that support USB can be connected to each other whilst they are running (hot pluggable) and provide automatic recognition of the connected devices and their properties.

Use the USB interface in conjunction with labworldsoft® for operation in "Remote" mode.

#### Installation

Connect the device to the PC using the USB data cable. The device will then transmit information to the Windows operating system to tell it which device drivers are required. Windows will then either:

- Load the driver.
- Install the driver automatically if not already installed.
- Prompt the user to perform a manual installation.

Navigate to <http://www.ika.net/ika/lws/download/stmcxdc.inf>.

#### Command syntax and format

The following applies to the command set:

- Commands are generally sent from the computer (Master) to the device (Slave).
- The stirrer machine sends only at the computer's request. Even fault indications cannot be sent spontaneously from the stirrer machine to the computer (automation system).
- Commands are transmitted in capital letters.
- Commands and parameters including successive parameters are separated by at least one space (Code: hex 0x20).
- Each individual command (incl. parameters and data) and each response are terminated with Blank CR Blank LF (Code: hex 0x20 hex 0x0d hex 0x20 hex 0x0A) and have a maximum length of 80 characters.
- The decimal separator in a number is a dot (Code: hex 0x2E).

The above details correspond as far as possible to the recommendations of the NAMUR working party (NAMUR recommendations for the design of electrical plug connections for analogue and digital signal transmission on individual items of laboratory control equipment, rev. 1.1).

The NAMUR commands and the additional specific IKA commands Commissioning serve only as low level commands for communication between the rotary evaporator and the PC. With a suitable terminal or communications program these commands can be transmitted directly to the rotary evaporator. The IKA software package, labworldsoft,

provides a convenient tool for controlling rotary evaporator and collecting data under MS Windows, and includes graphical entry features, for motor speed ramps for example.

The following table summarize the (NAMUR) commands understood by the UTDD Tube Driver Version 2.0.


Abbreviation used:

X =                                      Numbering parameter (integer)  
 X =         4                         Speed

NAMUR Commands	Function	Remark
IN_NAME	Request designation. Start the Remote control function.	Device Keypad not available except "power" button is pressed, after this command is sent to device. "Remote" symbol is displayed.
RESET	Switch to normal operation	Device Keypad available again, and clear the "Remote" symbol.
IN_PV_X X=4	Read actual speed value	
IN_SP_X X=4	Read target value input	
OUT_SP_X m X=4	Set target speed value, input: rpm	
START_X X=4	Switch on appliance remote function. Start value function with setting.	
IN_SOFTWARE	Request software ID, number, date and version	

## Commissioning

Pay attention to the ambient conditions listed in the "Technical Data".

If these conditions are met, the unit is ready for operating when the mains plug has been plugged in. 

### Attaching the tube

Fit the tube carefully and ensure it is properly attached.

### Switching on

Press "Power" button (A), see Fig. 1.

### Basic guide for using the menu system:

#### Entering a main menu

☞ Press "Menu/Back" button (C), see Fig. 1.

#### Selecting a menu item

☞ Turn the "Rotating/Pressing" knob (B) to the right/left to select the desired menu option.

*Note:* The activated menu item is shown with a yellow background on the display.

#### Editing values

☞ Press the "Rotating/Pressing" knob (B), see Fig. 1.

☞ Turn the "Rotating/Pressing" knob (B) to change the value.

☞ Press the "Rotating/Pressing" knob (B) again to complete the editing.

#### Exiting a main menu

☞ Press "Menu/Back" button (C), see Fig. 1.

⇨ Current values are stored.

⇨ The working screen is displayed.

## Functional description (in as-delivered state)

### Factory settings

The values specified below correspond to the as-delivered state (display output/factory language setting is English).

⇒ The start-up screen will be displayed for several seconds. This screen shows the software version for the device.





⇒ Then, the system check screen will be displayed for several seconds.

Symbols are shown on the screen, including the working mode setting, the speed setting, the maximum rotation speed (rpm) and timer maximum value for the device.



### Symbols Explanation

1. Maximum rotation speed for the device (In "Turbo" mode, the maximum rotation speed is 8000 rpm).
2. Rotation symbol (The symbol will change into  or  when in "Rev" mode operation).
3. Rotation speed setting.

4. Operation mode.
5. Timer maximum value for the device.
6. Timer symbol.

⇒ After the system check screen, the working screen will appear and the device is ready for operation.




### Setting menu

Enter the main menu by pressing "Menu/Back" button (C). Then, you could see the default settings as shown in following image:



### Setting "max rpm" value (maximum rotation speed limited):

1. Turn the "Rotating/Pressing" knob (B) to select the "max rpm" item in the main menu.
2. Press the "Rotating/Pressing" knob (B).
3. ⇒ A mark  appear to indicate the activated item.
4. Turn the "Rotating/Pressing" knob (B) to adjust the value.
5. Press the "Rotating/Pressing" knob (B) again to complete the process.
6. Press the "Menu/Back" button (C) to return the working screen.



Factory setting: 600 rpm

Note: "max rpm" range is between 400 to 6000 rpm and adjusting magnitude for "rpm max" is 10 rpm with "Rotating/Pressing" knob (B). In remote control mode via computer, adjusting magnitude is 1 rpm.

#### **Setting "timer max" value (maximum timer limited):**

- ☞ Turn the "Rotating/Pressing" knob (B) to select the "timer max" in the main menu.
- ☞ Press the "Rotating/Pressing" knob (B)
- ⇒ A mark ▶ appear to indicate the activated item.
- ☞ Turn the "Rotating/Pressing" knob (B) to change the value
- ☞ Press the "Rotating/Pressing" knob (B) again to complete the process
- ☞ Press the "Menu/Back" button (C) to return the working screen.

Factory setting: 30 minutes

Note: The "timer max" range is from 10 seconds to 30 minutes and adjusting magnitude for "timer max" is 10 seconds with "Rotating/Pressing" knob (B). In remote control mode via computer, adjusting magnitude is 1 second.

#### **Setting operation mode:**

The mode can be set as mode A, mode B or mode P1 to P9. Press down both "Menu/Back" and "Timer" button, meanwhile, re-plug the power cable. Then, operation mode will recover A mode.

#### Mode A

All settings will not be stored. When current operating is over, the device will be set to factory settings.

#### Mode B

All settings will be stored if current operating is over or the device is switched off.

#### Mode P1-P9

In mode P1-P9, the user could set and save required parameters (rotation speed, timer and reverse) in every program. The para-

meter settings can only be changed in the menu program. These settings could be used directly when necessary. If the program setting timer value is more than 3 minutes, the speed upper limit is 4000 rpm.

Factory setting: mode A

#### Setting the mode between A and B

- ☞ Turn the "Rotating/Pressing" knob (B) to select the "mode" item in the main menu.
- ☞ Press the "Rotating/Pressing" knob (B).
- ☞ Turn the "Rotating/Pressing" knob (B) to select mode A or B in submenu.
- ☞ Press the "Rotating/Pressing" knob (B) again to complete the process.
- ☞ Press the "Menu/Back" button (C) to return the working screen.

#### Setting the mode between P1 and P9

- ☞ Turn the "Rotating/Pressing" knob (B) to select the "mode" item in the main menu.
- ☞ Press the "Rotating/Pressing" knob (B).
- ☞ Turn the "Rotating/Pressing" knob (B) to select the "mode" item in mode P1 and P9 in submenu.
- ☞ Press the "Rotating/Pressing" knob (B) and enter desired menu program.
- ☞ Turn the "Rotating/Pressing" knob (B) to select desired item.
- ☞ Press the "Rotating/Pressing" knob (B) .
- ⇒ A mark ▶ appear to indicate the activated item.
- ☞ Turn the "Rotating/Pressing" knob (B) to change the value.
- ☞ Press the "Rotating/Pressing" knob (B) again to complete the setting.
- ☞ Press the "Menu/back" to complete the process and display will return working screen.

Note: the rotation speed, timer setting in the program should be less than "rpm max" and "timer max" setting in menu. Otherwise, the device will work according to the setting in the menu.

### **Setting operating language:**

- ☞ Turn the “Rotating/Pressing” knob (B) to select the “language” item in the main menu (English, Chinese, German, French, Spanish, Italian, Korean is available).
- ☞ Press the “Rotating/Pressing” knob (B) at selected main menu item.
- ☞ Turn the “Rotating/Pressing” knob (B) to select language.
- ☞ Press the “Rotating/Pressing” knob (B) again to complete the setting.
- ☞ Press the “Menu/Back” button (C) to return the working screen.

*Factory setting: English.*

### **Setting “target rpm” value in working screen:**

After set “max rpm” (maximum rotation speed limited) in menu, you could set “target rpm” value in the working screen.

- ☞ Turn the “Rotating/Pressing” knob (B) to change the value.
- ☞ Press “Rotating/Pressing” knob (B) to start the working.

*Factory setting: 400 rpm*

*Note:* When set “target rpm” value with the “Rotating/Pressing” knob, the value could be set from 400 to 6000 rpm and adjustment magnitude is 10 rpm. In remote control mode via computer, adjusting magnitude is 1 rpm.

For tube protection, if timer setting value is more than 3 minutes, the speed will be limited to less than 4000 rpm. If the timer value is less than 3 minutes the speed can be set no more than speed limited which is set in the main menu.

If the timer isn't in use, and the customer can adjust a speed over 4000 rpm, also the speed value will change to 4000 rpm after 3 minutes working.

### **Setting “timer sec” value in working screen:**

- ☞ Press “Timer” button (D) to active the timer setting in the working screen.
- ☞ Turn the “Rotating/Pressing” knob (B) to change the value.
- ☞ Press “Timer” button (D) again to complete the setting.

⇒ Current values are stored.

*Factory setting: off*

*Note:* When set “timer sec” value with the “Rotating/Pressing” knob, the value could be set from 10 seconds to 30 minutes and adjustment magnitude is 10 second. In remote control mode via computer, adjusting magnitude is 1 second.

If the timer did not been activated when start the device, the timer will count automatically, from 0 to up to 99 minutes and 59 seconds, and then it will re-count again until stop the device.

### **Setting “rev sec” value in working screen:**


- ☞ Press “Rev” button (E) to active the reverse setting the working screen.
- ☞ Turn the “Rotating/Pressing” knob (B) to change the value.
- ☞ Press “Rev” button (E) again to complete the setting.
- ⇒ Current values are stored.

*Factory setting: off.*


*Note:* When set “rev sec” value with the “Rotating/Pressing” knob, the value could be set from 10 to 60 seconds and adjustment magnitude is 1 second.

The “rev sec” value should less than “timer sec” value. Otherwise, the “rev sec” setting will not work. In the setting, “rev sec” value is a part of “timer sec” value. In the running state, press “Rev” button to stop or restart the reverse function depend on the current reverse state.

### **Active “Turbo” function in working screen:**

- ☞ Press down “Turbo” button (F) over 2 seconds when the device is working, the “Turbo” function will be activated.
- ⇒ The “Turbo” mark  appear and change alternately to indicate the the “Turbo” function is activated and rotation speed will rise to 8000 rpm in short time.
- ☞ Release “Turbo” button (F).
- ⇒ “Turbo” function will be stopped and rotation speed recover to



original setting. A mark  appear to indicated the “Turbo” function is stopped.

*Note:* For tube protection, “Turbo” function can only last 60 seconds at most if you press down “Turbo” button in operation.

## Error message

It is possible for the media to become jammed between the cutters. The unit will automatically change the direction of rotation of the cutting device up to three times in an attempt to free the cutters. The unit will switch off automatically if this is not possible.

If the device becomes blocked on three occasions within a certain period of time the following error message will occur:

→ Display: **1 Err**

→ An audible signal will be given

*Corrective action:* Switch off the device, check contents, switch on the device.

## Maintenance

The appliance is maintenance-free.

For cleaning disconnect the main plug. 

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.

## Spare parts order

When ordering spare parts, please give:

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

## Repair

In case of repair the device has to be cleaned and free from any materials which may constitute a health hazard.

If you require servicing, return the appliance in its original packaging. Storage packaging is not sufficient. Please also use suitable transport packaging.

## Accessories

- ST-20 Tube with stirring device 20 ml
- ST-20-M Tube with stirring device 20 ml, with pierceable membrane
- ST-20-M-gamma Tube with stirring device 20 ml, γ-sterilized, with pierceable membrane
- ST-50 Tube with stirring device 50 ml
- ST-50-M Tube with stirring device 50 ml, with pierceable membrane
- ST-50-M-gamma Tube with stirring device 50 ml, γ-sterilized, with pierceable membrane
- DT-20 Tube with dispersing device 20 ml
- DT-20-M Tube with dispersing device 20 ml, with pierceable membran

- DT-20-M-gamma Tube with dispersing device 20 ml,  $\gamma$ -sterilized, with pierceable membran
  
- DT-50 Tube with dispersing device 50 ml
- DT-50-M Tube with dispersing device 50 ml, with pierceable membran
  
- DT-50-M-gamma Tube with dispersing device 50 ml,  $\gamma$ -sterilized, with pierceable membran
  
- BMT-20-S Tube for grinding with stainless balls 20 ml,
- BMT-20-S-M Tube for grinding with stainless balls, 20 ml, with pierceable membran
  
- BMT-20-S-M-gamma Tube for grinding with stainless balls, 20 ml,  $\gamma$ -sterilized, with pierceable membran
  
- BMT-50-S Tube for grinding with stainless balls 50 ml,
- BMT-50-S-M Tube for grinding with stainless balls 50 ml, with pierceable membran
  
- BMT-50-S-M-gamma Tube for grinding with stainless balls 50 ml,  $\gamma$ -sterilized, with pierceable membran
  
- BMT-20-G Tube for grinding with glass balls 20 ml
- BMT-20-G-M Tube for grinding with glass balls 20 ml, with pierceable membran
  
- BMT-50-G Tube for grinding with glass balls 50 ml
- BMT-50-G-M Tube for grinding with glass balls 50 ml, with pierceable membran
  
- TC-20 Tube cover 20 ml
- TC-20-M Tube cover 20 ml with pierceable membran
  
- TC-50 Tube cover 50 ml
- TC-50-M Tube cover 50 ml with pierceable membran

## 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.

## Technical data

Dimensions (W x D x H) without tube **mm** 122 x 178 x 48  
 Weight **kg** 1,0

*Subject to technical changes!*

### Power supply unit

Input **VAC** 100 - 240  
**A** 0,6  
**Hz** 50-60

Output **VDC** 24  
 24W.LPS  
 (limited power source)

**Hz** 50-60  
 Protection class 2 (double insulated)

### Tube Drive

Operating voltage **VDC** 24  
**mA** 1000

Power consumption, normal operation **W** 20

Power consumption, standby operation **W** 2

Power output **W** 17

Drive EC flat motor

Speed range **rpm** 400 - 6000  
 infinitely adjustable,  
 adjustment magnitude 10 rpm

Turbo speed up to 8000

mode A up to 6000

mode B up to 6000

mode P1-P9 up to 6000

Speed setting rotating/pressing knob

Speed display digital

Timer 10 seconds-30 minnutes

Reverse timer 10-60 seconds

Display-timer digital

Perm. ambient temperature **°C** +5 to +40

Perm. rel. humidity **%** 80

Protection to DIN EN 60529 IP 20

Contamination level 2

Overtoltage category II

Operation at a terrestrial altitude **m** max. 2000 above sea level

Europe  
Middle East  
Africa

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