



designed for scientists

IKA MultiDrive basic

ENGLISH

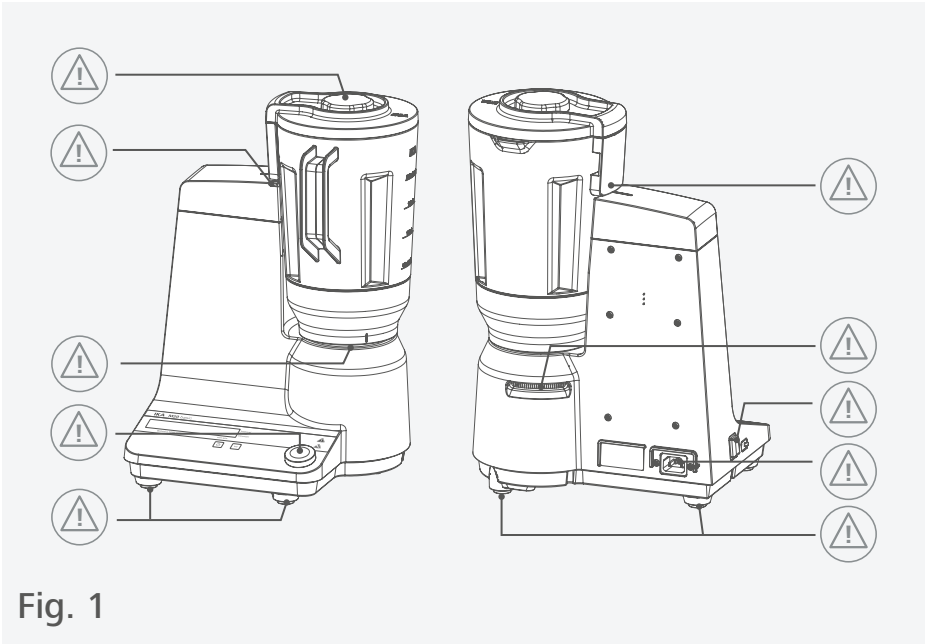


Fig. 1

	EU Declaration of conformity	6
	Explication of warning symbols	6
	Safety instructions.....	7
	Intended use.....	9
	Useful information	10
	Unpacking	12
	Operator panel and display	13
	Installation	14
	Operation	16
	Error codes	21
	Maintenance and cleaning	22
	Interfaces and outputs	23
	Accessories	24
	Technical Data	25
	Warranty	26



EU Declaration of conformity

We declare under our sole responsibility that this product corresponds to the directives 2014/35/EU, 2006/42/EC, 2014/30/EU and 2011/65/EU and conforms with the following standards or normative documents: EN 61010-1, EN 61010-2-051, EN ISO 12100, EN 61326-1 and EN 60529.

A copy of the complete EU Declaration of conformity can be requested at sales@ika.com.



Explication of warning symbols

/// Warning symbols



Danger!

Indicates an (extremely) hazardous situation, which, if not avoided, will result in death, serious injury.



Warning!

Indicates a hazardous situation, which, if not avoided, can result in death, serious injury.



Caution!

Indicates a potentially hazardous situation, which, if not avoided, can result in injury.



Notice!

Indicates practices which, if not avoided, can result in equipment damage.

/// General Symbols

A — Position number



Correct/Result

Shows the correct execution or the result of an action step.



Wrong

Shows the incorrect execution of an action step.



Note

Displays action steps that require particular attention to detail.

Safety instructions

/// General information

- › **Read the operating instructions completely before starting up and follow the safety instructions.**
- › Keep the operating instructions in a place where it can be accessed by everyone.
- › Ensure that only trained staff work with the device.
- › Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- › The device must only be used in a technically perfect condition.

Caution!

- › Wear your personal protective equipment in accordance with the hazard category of the medium to be processed, there is a risk of:
 - splashing of liquids
 - body parts, hair, clothing and jewellery getting caught
 - sharp blade edges.

Notice!

- › Pay attention to the marked sites in Fig. 1.

/// Device setup

Caution!

- › The power switch of the device must be accessed immediately, directly and without risk at any time. If access to the power switch cannot be ensured, an additional emergency stop switch that can be easily accessed must be installed in the work area.

Notice!

- › Set up the device in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- › Make sure that the ventilation slits are not blocked at back of the device.
- › Ensure that the vessel and the cover is firmly attached to the drive unit prior to operating the device.
- › The drive unit cannot be operated without a closed vessel.

/// Working with the device

Danger!

- › Do not use the device in explosive atmospheres, it is not EX-protected.
- › With substances capable of forming an explosive mixture, appropriate safety measures must be applied, e.g. working under a fume hood.
- › To avoid body injury and property damage, observe the relevant safety and accident prevention measures when processing hazardous materials.

Warning!

- › Only process samples 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.



Caution!

- › Please pay attention to avoiding hand injury when operate the device.
- › The vessel may be very hot after operation. Allow it to cool down before remove it from the drive. Use your personal protective equipment.
- › Hearing protection must be worn when working with the device in high speed.

Notice!

- › The device must be operated on flat surface and must not be moved during operation.
- › Covers or parts that can be removed from the device without tools must later be refitted to ensure safe operation. This will prevent the infiltration of foreign objects, liquids and other contaminants.
- › The vessel must always be closed during operation. Switch off the device immediately if any material leaks from the vessel. Clean the device after disconnected power plug.
- › The feet of the device must be clean and undamaged.
- › The device is designed for short term operation. The maximum operating time is 5 minutes. After that, it should be switched off for 10 minutes to cool down.
- › As long as the set speed is not reached, the speed value flashes.

/// Accessories

- › Protect the device and accessories from bumping and impacting.
- › Check the device and accessories beforehand for damage each time when you use them. Do not use damaged components.
- › Safe operation is only guaranteed with the accessories described in the "Accessories" section.
- › Disconnect the power plug before attaching or changing any accessories.

/// Power supply / switching off the device

- › The voltage stated on the type plate must correspond to the power voltage.
- › The device can only be disconnected from the power supply by pulling out the power plug or the connector plug.
- › The device must only be operated with the original power cord set.
- › The socket for the power cord must be easily accessible.
- › Socket must be earthed (protective ground contact).
- › The device does not start up again automatically following a cut in the power supply.

/// Maintenance

- › The device must only be opened by trained specialists, even during repair. The device must be unplugged from the power supply before opening. Live parts inside the device may still be live for some time after unplugging from the power supply.

/// Disposal instructions

- › The device, accessories and packaging must be disposed of in accordance with local and national regulations.

Intended use

/// Use

The **MultiDrive basic** device is a batch mill / mixer that can be operated with different vessels. With this device and different vessels, a variety of grinding (impact grinding, cutting grinding) and mixing tasks can be performed in the laboratory.

› **Milling:**

Impact milling: For use with hard, brittle material, dried material or material that is brittle because of cold (for example grain, coffee, etc.). The granularity of the final product is determined by the duration of the grinding, the level to which the container is filled and the physical property of the material being processed.

Cutting milling: For use with soft, fibrous grinding material (for example hay, paper, etc.).

In this case as well, the granularity of the final product is determined by the duration of the grinding, the level to which the container is filled and the physical property of the material being processed.

› **Blending:**

For mixing and emulsifying food (for example ice cream, milk, and sauces) and other substances. It can be widely used in microbiology and food science field.

Intended use: Tabletop device

/// Range of use

Indoor environments similar to that a laboratory of industry area (EMC class A).

The safety of the user cannot be guaranteed:

- › if the device is operated with accessories that are not supplied or recommended by the manufacturer.
- › if the device is operated improperly or contrary to the manufacture's specifications.
- › if the device or the printed circuit board are modified by third parties.



Useful information

The device can be used in a wide range of applications in conjunction with different vessels.

/// Milling

In conjunction with milling vessel, the device can be used as a batch mill.

The list of grinding materials given below is not complete. It is possible to expand the range of applications further by means of grinding experiments with corresponding grinding procedures and sample preparations, e.g. with cooling.

Impact milling:

The milling vessel with a beater reduces soft, medium hard and brittle materials.

Everything that breaks, is dry, and does not have a high fat content can be ground.

Following is a list of substances that can be ground dry:

Wheat, barley, corn, malt, pectin, roasted coffee, nutshells, bones, ergot, peat, pharmaceutical, feed materials, spices, resin, potash, seeds, salts, cinders, tablets.

Tough grinding material must be cooled, for example by adding pulverized dry ice to the grinding pot.

Also note the operating instructions for the **IKA MultiDrive MI 250** and **IKA MultiDrive MI 400** milling vessel.

Cutting milling:

The milling vessel with the cutting blade reduces bulky, elastic fibrous and soft materials with high cellulose content.

Mixed goods such as trash must be free of iron and non-iron metals. The feed material must not be too moist or fatty.

Otherwise the material may adhere to the sides of the grinding container.

Following is a list of some materials that can be reduced:

Leaves, fibers, hops, cardboard, paper, hay, plastics, tobacco and roots.

Also note the operating instructions for the **IKA MultiDrive MI 250** and **IKA MultiDrive MI 400** milling vessel.

Note: Materials that are not listed in these operating instructions may only be handled with the grinding vessel after confirmed with IKA, especially if there is a risk of explosion (dust explosion due to electrostatic charge).

Working with cooling water:

Also note the operating instructions for the **IKA MultiDrive MI 250** and **IKA MultiDrive MI 400** milling vessel.

Working with coolants – Dry ice cooling (CO₂):

Also note the operating instructions for the **IKA MultiDrive MI 250** and **IKA MultiDrive MI 400** milling vessel.

/// Blending

In combination with the IKA **MultiDrive BL 2000** blending vessel, the device can be used as a blender.

The blender can be used for many applications. The following list is not complete and can be extended by experiments.

List of substances to be blended:

Ice cream, milk, sauces, vegetables, meat, nut butter, spices.

Notice!

The device is designed for short term operation. The maximum operating time is 5 minutes.

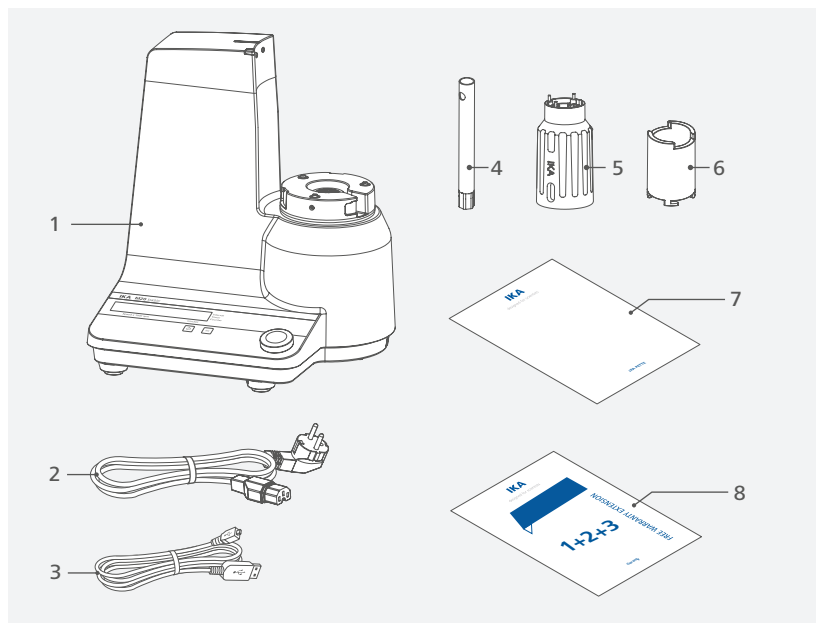
After that, it should be switched off for 10 minutes to cool down.

As long as the set speed is not reached, the speed value flashes.



Unpacking

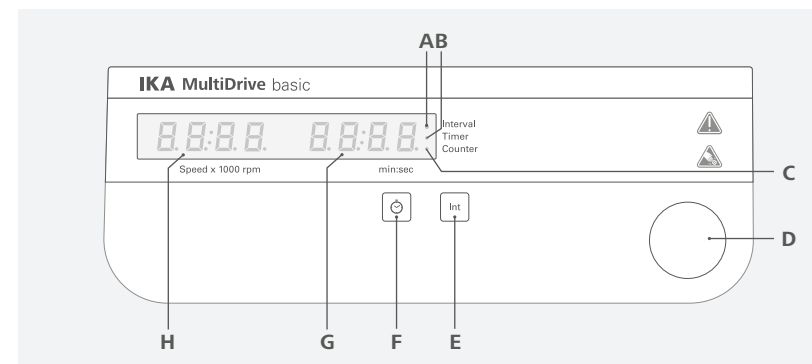
- › Please unpack the device carefully.
- › Any damage should be notified immediately to the shipping agent (post office, railway network or logistics company).



1	IKA MultiDrive basic
2	Power cord set
3	USB cable
4	Socket wrench

5	Assembly tool I
6	Assembly tool II
7	User guide
8	Warranty card

Operator panel and display



A	"Interval" indicator	Indicate the interval function is activated.
B	"Timer" indicator	Indicate the timer function is activated.
C	"Counter" indicator	Indicate the counter function is activated.
D	Rotating/pressing knob	Adjust the speed. Set the timer when the timer setting is enabled. Start/stop running of the device.
E	"Int" button	Activate the interval function.
F	Timer button	Activate the "Timer" function.
G	Time display	Show the timer/counter value.
H	Speed display	Show the speed value.



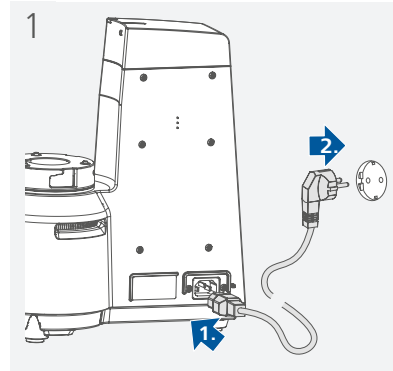
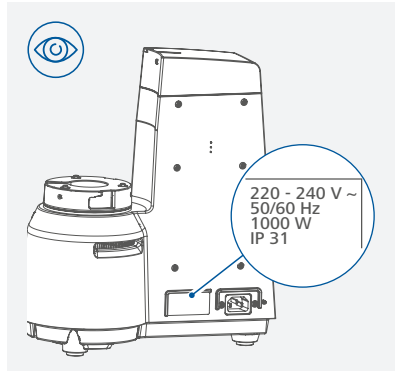
Installation

/// Connecting to power

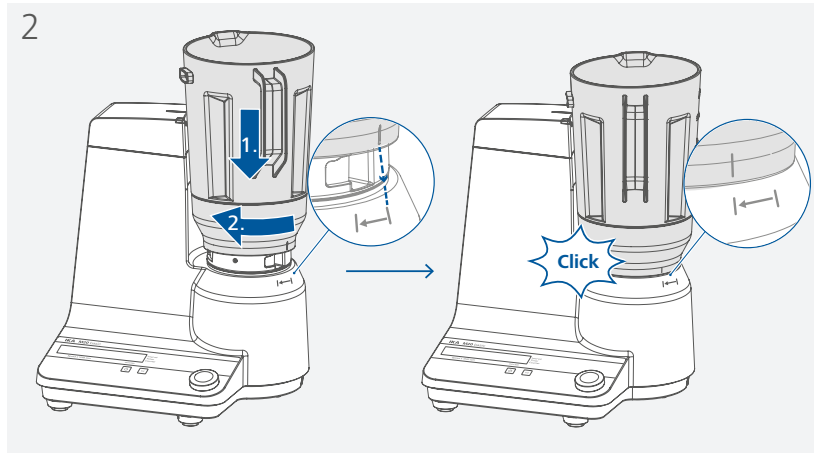
⚠ Notice!

The socket used must be earthed (fitted with earth contact).

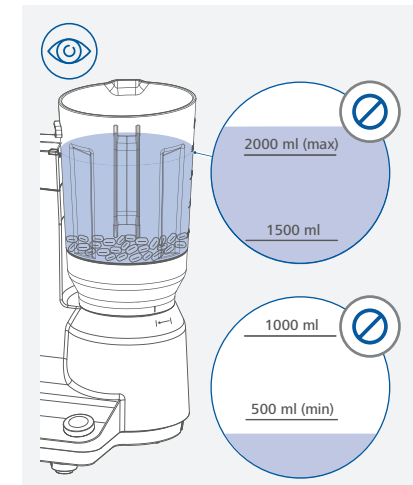
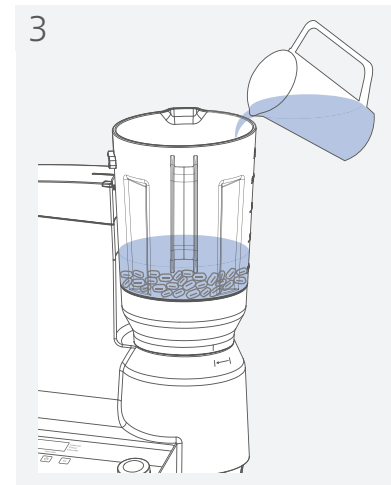
Observe the ambient conditions (temperature, humidity etc.) listed under "Technical Data".



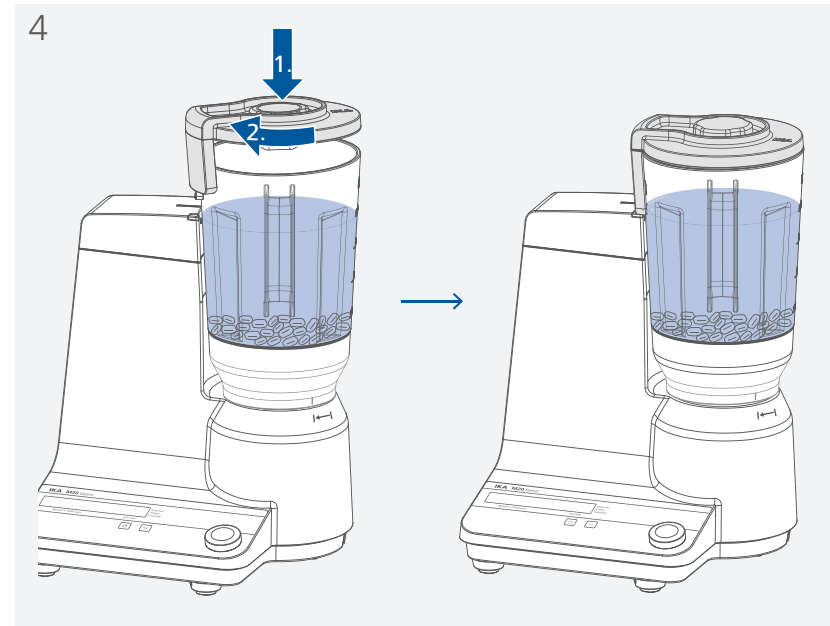
/// Attaching the vessel to the drive unit



/// Filling the vessel



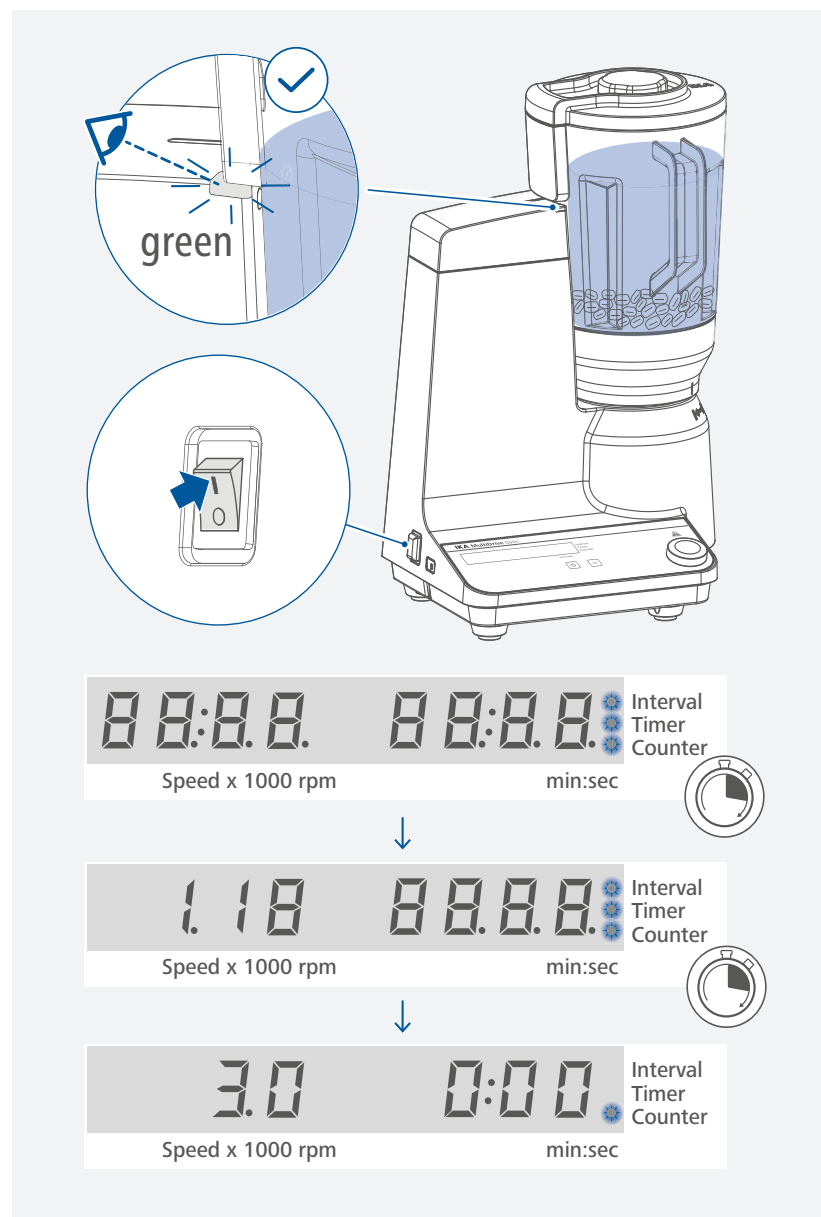
/// Closing the vessel





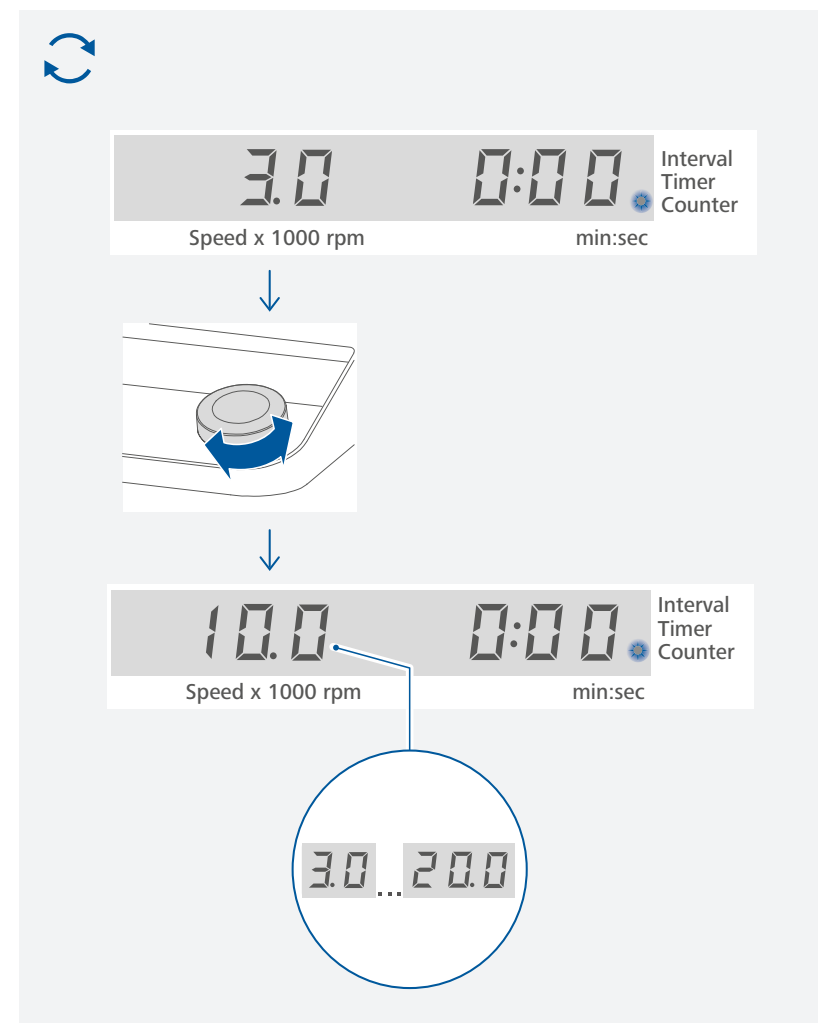
Operation

/// Switching on

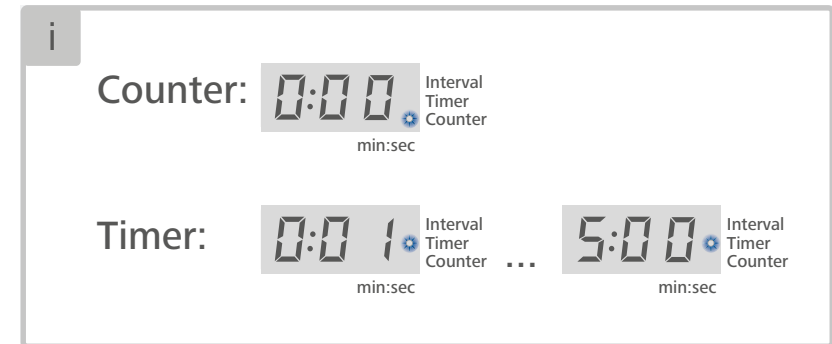
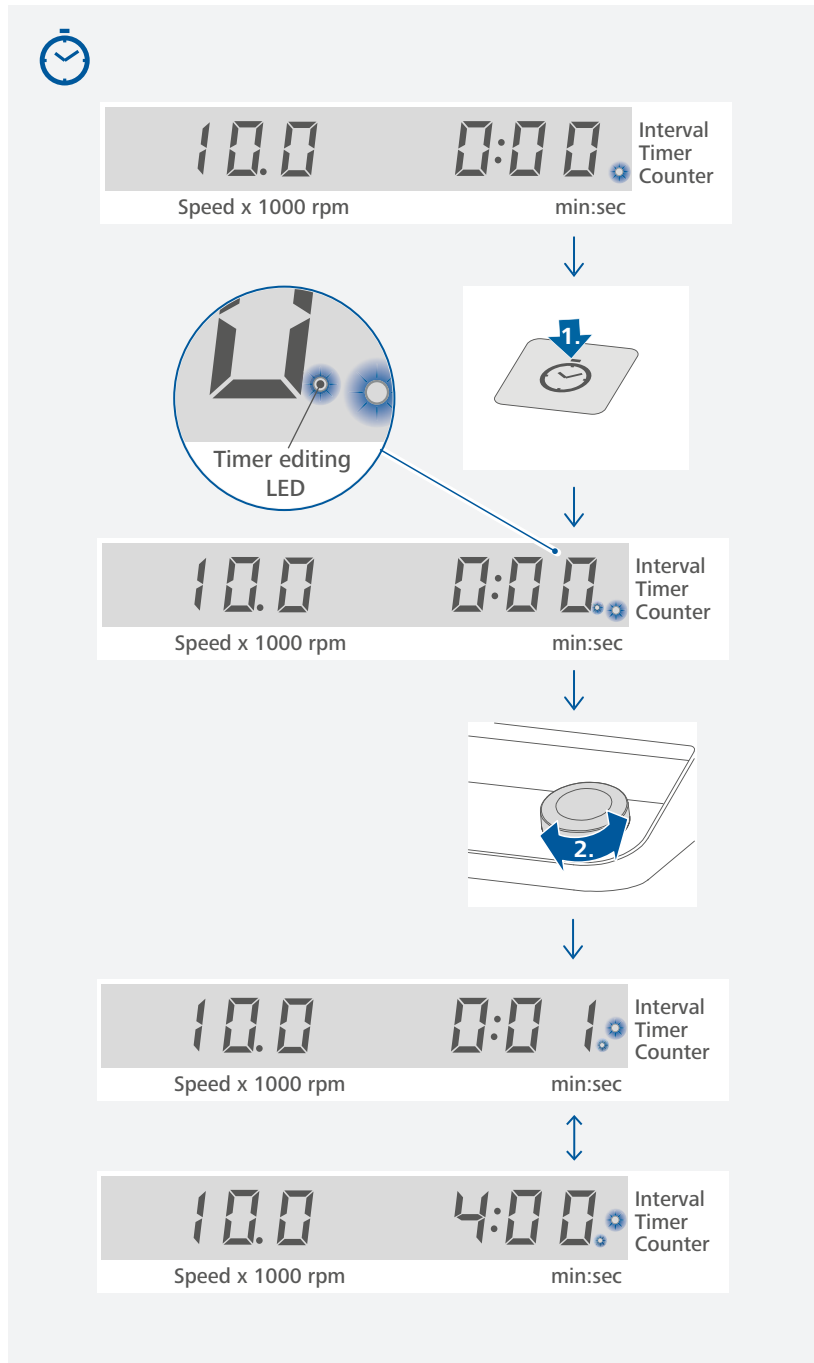


Note: After the cover has been securely closed, the color of the LED signal lamp changes from red to green. The unit is only ready for operation when the LED is green.

/// Setting the speed

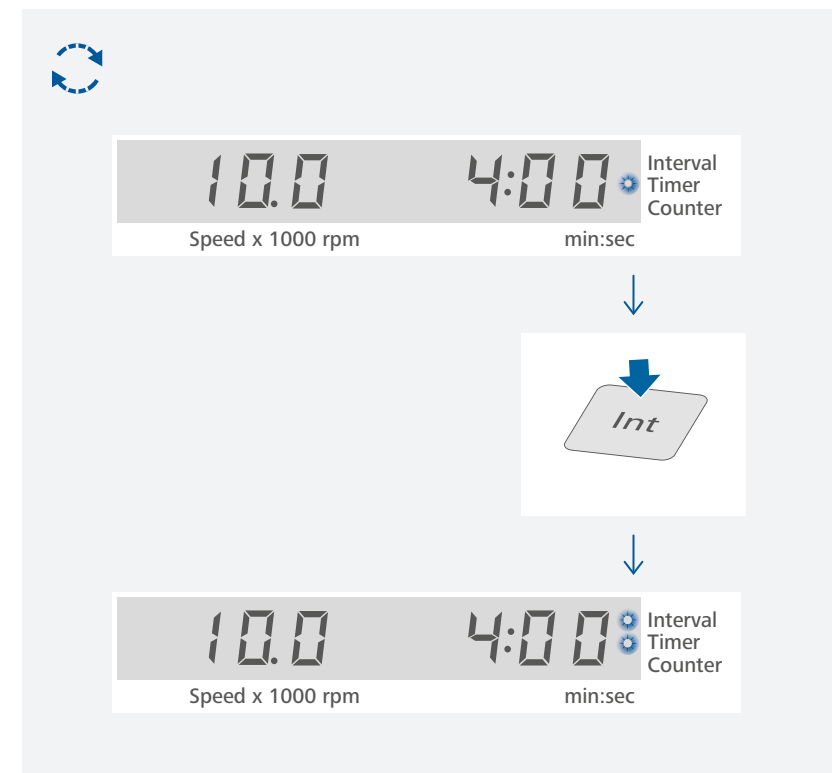


/// Setting the timer

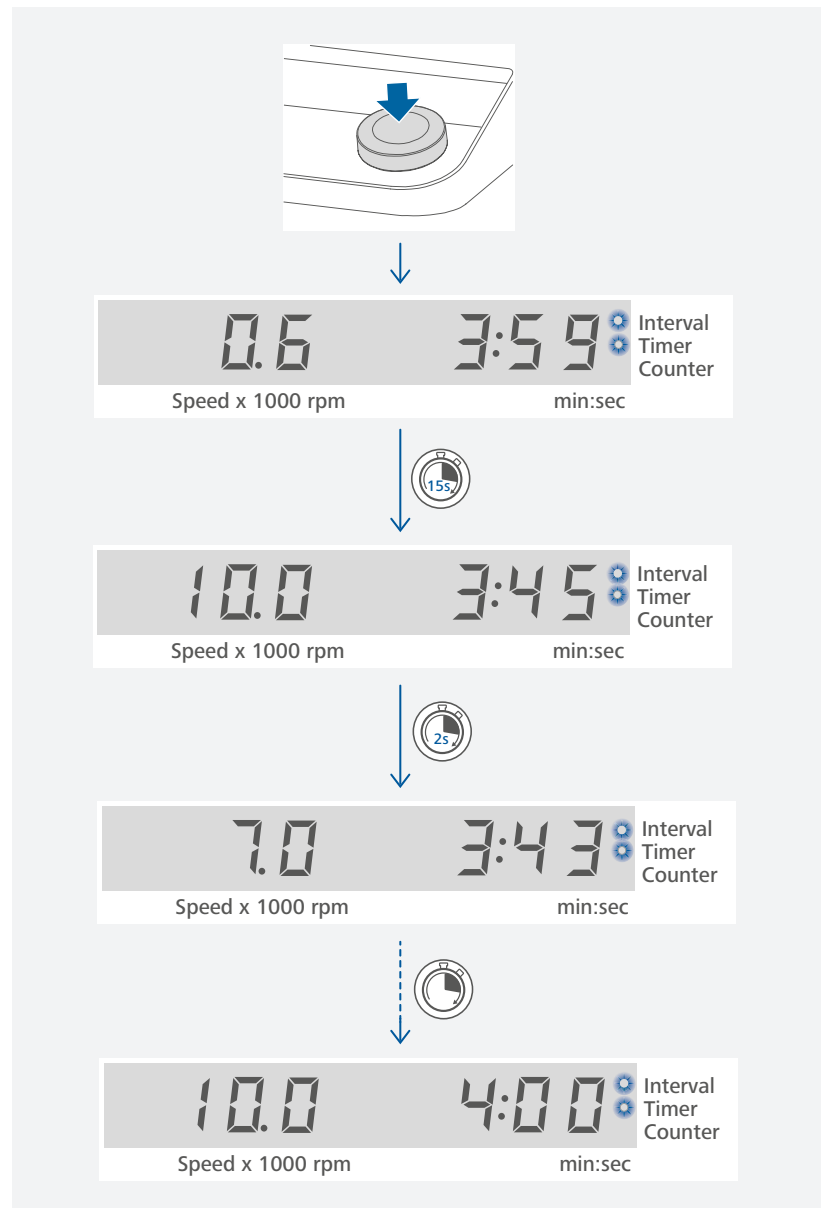


Note: If the counter function is activated, the counter automatically starts to run from 0 seconds to 5 minutes. Then the grinding/blending function of the unit stops.

/// Activating the interval function



/// Starting the running



Note: In interval mode, the unit runs for 15 seconds each and then stops for 2 second. This means that in counter mode the unit runs for 5 minutes or in timer mode for the set time and then the grinding/blending function is switched off.

Error codes

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

Proceed as follows in such cases:

- › Turn off the device by using the power switch.
- › Carry out corrective measures.
- › Restart the device.

E 3

Causes	› Inside temperature is too hot
Effect	› motor off
Solutions	› Switch off the device and allow it to cool down. › Restart the instrument.

E 4

Causes	› Motor can't running normal (can't start or not reach the target speed)
Effect	› motor off
Solutions	› Switch off the device. › Restart the device with power switch.

E 47 / E 48

Causes	› Overload
Effect	› motor off
Solutions	› Switch off the device › Decrease the speed setting or the load.

E 51

Causes	› Error vessel used
Effect	› motor off
Solutions	› Remove the wrong vessel and try again

If the actions described fails 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.

Maintenance and cleaning

The device is maintenance-free. It is only subject to the natural wear and tear of components and their statistical failure rate.

/// Cleaning:

For cleaning disconnect the mains plug!

Use only cleaning agents which have been approved by IKA to clean the devices:

These are: water (containing surfactant) and isopropyl alcohol.

- › Wear protective gloves during cleaning the devices.
- › Electrical devices may not be placed in the cleansing agent for the purpose of cleaning.
- › Do not allow moisture to get into the device when cleaning.
- › Before using another than the recommended method for cleaning or decontamination, the user must ascertain with that this method does not destroy the device.

/// Ordering spare parts:

When ordering spare parts, please indicate:

- › device type.
- › serial number, see type plate
- › item and designation of the spare part, see: www.ika.com, spare parts diagram and spare parts list.
- › software version (Briefly visible in the display when the device is switched on).

/// Repairs:

Please send in device for repair only after it has been cleaned and is free from any materials which may constitute a health hazard.

For repair, please request the "Decontamination Certificate" from **IKA**, or download printout of it from the **IKA** website www.ika.com.

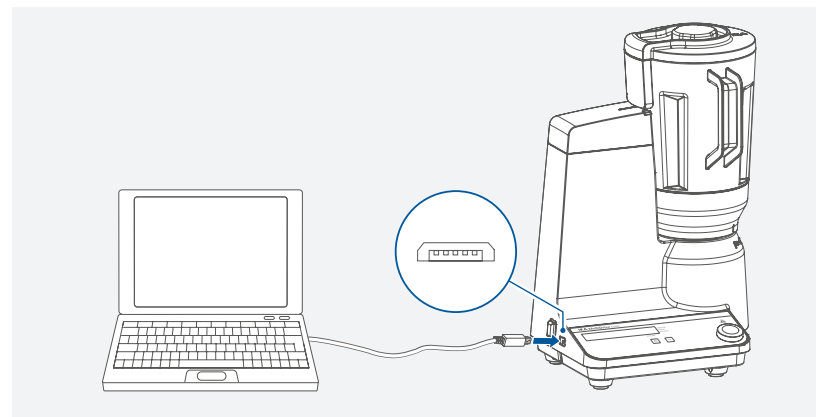
If you require servicing, return the device in its original packaging. Storage packaging is not sufficient. Please also use suitable transport packaging.

Interfaces and outputs

The device can be connected to a PC and operated with the laboratory software *labworldsoft®* through USB interface.

Note! (⚠)

Please comply with the system requirements together with the operating instructions and help section included with the software.



/// USB interface:

The Universal Serial Bus (USB) is a serial bus for connecting the device to the PC. Equipped with USB devices can be connected to a PC during operation (hot plugging).

Connected devices and their properties are automatically recognized.

Use the USB interface in conjunction with *labworldsoft®* for operation in "Remote" mode and also to update the firmware.

/// USB device drivers:

First, download the latest driver for IKA devices with USB interface from:

www.ika.com/ika/lws/download/usb-driver.zip.

Install the driver by running the setup file. Connect the IKA device through the USB data cable to the PC. The data communication runs through a virtual COM port.

/// Command syntax and format:

The following applies to the command set:

- › Commands are generally sent from the computer (Master) to the lab device (Slave).
- › The lab device only sends at the computer's request. Even fault indications cannot be sent spontaneously from the lab device 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 LF (Code: hex 0x0d 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 serve only as low level commands for communication between the device and the PC. With a suitable terminal or communications program these commands can be transmitted directly to the device. The IKA software labworldsoft®, provides a convenient tool for controlling the device and collecting data under MS Windows, and includes graphical entry features, for motor speed ramps for example.

Commands	Function
IN_NAME	Read the device name
IN_PV_4	Read current speed value
IN_SP_4	Read rate speed value
OUT_SP_4 xxx	Change the speed value to xxx
START_4	Start the motor
STOP_4	Stop the motor
RESET	Switch to normal operation mode

Accessories

- › IKA MultiDrive BL 2000 blending vessel
- › IKA MultiDrive MI 250 milling vessel
- › IKA MultiDrive MI 400 milling vessel

See more accessories on www.ika.com.

Technical data



General data		
Voltage	VAC	220 ... 240 ± 10 % 100 ... 120 ± 10 %
Frequency	Hz	50 / 60
Motor rating input	W	1000
Motor rating output	W	800
Interface		USB
Permissible ambient temperature	°C	+5 ... +40
Permissible relative humidity	%	80
Protection class according to DIN EN 60529		IP 31
Dimensions (W × D × H)	mm	300 × 250 × 450
Weight	kg	10
Operation at a terrestrial altitude	m	max. 2000
Grinding/blending function		
Process type		batch
Short time operation (KB)	min.	5 / 10 (5 min. ON / 10 min. OFF)
Grinding methods		Cutting/impact
Speed range	rpm	3000 ... 20000
Speed display		LED
Speed deviation		± 5 % of current speed
Speed setting		knob
Speed setting resolution	rpm	1 (x100)
Timer function		
Timer range		0 / 1 seconds ... 5 minutes
Timer display		LED
Timer setting		Button / knob
Timer setting resolution	sec.	1
Interval function		Yes (not adjustable)

Subject to technical changes!

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 factory, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.

The warranty does not cover worn out parts, nor does it apply to faults resulting from improper use, insufficient care or maintenance not carried out in accordance with the instructions in this operating manual.



designed for scientists

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IKAworlwide



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Technical specifications may be changed without prior notice.