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RET basic

/// Data Sheet

The New Benchmark for Digitization, Laboratory Safety, and Efficiency
The new IKA RET magnetic stirrer sets a new industry standard: As the smallest magnetic stirrer currently available with 800□W of heating power and a maximum temperature of 340°C, it combines uncompromising safety, exceptional durability, and maximum efficiency with intuitive and extremely simple operation. For seamless integration into networked laboratory infrastructures, the RET basic comes standard with Wi-Fi and LAN interfaces. This makes it ideal for digitization and documentation projects in which devices need to be centrally networked, monitored, controlled, or integrated into software solutions.

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Solid and compact design – manufactured to ensure process reliability
The high IP54 protection rating and the solid die-cast aluminum housing reliably protect the device from liquids, corrosive vapors, and mechanical stress—ensuring trouble-free continuous operation even under harsh laboratory conditions. The compact design (only 160 x 200 x 100 mm) saves valuable space in the fume hood, fits on almost any laboratory lift platform, and enables flexible, parallel experimental setups. As a result, users benefit from greater safety, greater efficiency, and more freedom in their daily laboratory work.

Made in Germany
RET basic is manufactured in Germany in a fully automated production facility using state-of-the-art robotic systems. This guarantees the highest quality and absolute reliability for maximum safety and a long service life.

New heating plate, more functionality
The RET basic is optionally available with an anodized heating plate. The high-quality anodized heating plate provides reliable protection against scratches and a wide range of chemicals. As a result, the heating plate remains in perfect condition - both visually and functionally - even after prolonged use. The aluminum substrate ensures uniform temperature distribution and rapid energy transfer to the sample vessel. For the first time, the RET basic comes with integrated menu functionality, which significantly expands its range of features - for example, through timer and counter functions. This also enables the integration of wireless temperature sensors* (accessories required).

Performance and Efficiency
The brushless EC motor and high-quality magnets ensure excellent magnetic coupling at speeds of up to 1,700 rpm. The insulated and thus energy-optimized heating plate delivers 800 W and enables heating rates of up to 9 K/min.

18 Security Features - The user decides what is secure
For decades, IKA has followed the approach that the safety temperature specified by the user must be set deliberately and independently of setpoints using a tool. A new feature is the monitoring of the medium temperature.

IKA is thus one of the few manufacturers that not only fully complies with the EN IEC 61010-2-010 standard for laboratory equipment—specifically for heated devices—but actually exceeds it in many respects. Safety is not only attested by a CE declaration but is also independently tested and certified by TÜV Süd in accordance with the internationally recognized NRTL standard—the same safety standard followed by UL and CSA.

The customizable display gives users complete freedom. You decide for yourself which parameters are relevant for your application and can have them displayed continuously—whether it’s speed, temperature, pH, or a timer. When used with the PT.Wireless and ETS-D7 wireless sensors, the RCT/RET even becomes a full-fledged pH meter. This saves space, reduces investment costs, and simplifies the experimental setup.

IKA takes safety to a new level—beyond mere equipment safety. In addition to the ability to monitor and control the RET basic via software (e.g., IKA Laboratory Software Labworldsoft®) or through the integrated interfaces, direct communication with IKA devices, such as the stirrers (EUROSTAR), is now possible. The IKA app then enables digital monitoring of the devices in the lab.

This can be a crucial safety advantage when tempering and mixing viscous samples while using the RET basic as a heating plate only, and it enables unattended 24/7 operation. In this case, the RET basic automatically detects when the stirrer's speed falls below a critical value and, if this occurs, shuts off the heating. This actively protects not only the individual device but the entire experimental setup.

The new IKA RET basic offers a well-thought-out, multi-level safety concept, innovative operation, and maximum flexibility—all while requiring minimal space and delivering the highest quality "Made in Germany." IKA is taking safety to the next level: Through intelligent networking and digitalization, not only individual devices but entire laboratory processes become safer, more efficient, and better prepared for the future.

Overview of Security Features
1. Independent safety circuit in accordance with EN IEC 61010-2-010
Two separate temperature sensors are located beneath the heating plate: one controls the setpoint temperature, while the other monitors an individually adjustable safety limit (e.g., flash point). The setting is adjusted mechanically directly on the device—regardless of the process setpoint. This ensures maximum safety even when handling flammable liquids and in worst-case scenarios (e.g., glass breakage).

2. Monitoring the temperature in the medium using the Delta-T safety function
A configurable temperature differential relative to the target medium temperature ensures that, if this differential is exceeded (due to an unexpected reaction or an external heat source), the heating is shut off until the system restarts (stirring remains active). This allows for safe approach to critical temperatures without risking a shutdown due to slight overshoots.

3. Detection of sudden drops in temperature
The RCT detects sudden drops in the medium temperature (e.g., due to glass breakage or evaporation of the medium) and, depending on the settings, can permanently shut off the heating.

4. Detection of a lack of temperature increase
If no increase in temperature is detected despite the energy input (e.g., due to a misaligned sensor), the device automatically deactivates the heating.

5. Dual-sensor system for the medium and the carrier medium
Up to two temperature sensors (wired and wireless) can be connected—for redundant or spatially differentiated monitoring, such as that of a carrier medium.

6. Temperature Limits for the Medium and Carrier
On the software side, strict temperature limits can be set for the medium and the carrier medium to prevent operating errors and hazardous conditions.

7. Warning: Hot Surface (>□50□°C)

A visual warning indicates when the heating plate is hot—even when the appliance is turned off. This provides reliable protection against burns.

8. Combination with IKA contact thermometer (ETS-D5)
Combining it with the ETS-D5 contact thermometer creates an additional, independent safety circuit. In addition, this results in even greater measurement accuracy and a clear display at the measurement location.

9. Combination with IKA PT wireless and ETS-D7 wireless temperature sensors
By eliminating cables, the risk of a cable break is significantly reduced, and the entire experimental setup becomes clearer and more organized.

10. Networked Security Through Communication with Other IKA Devices
The RET basic can communicate directly with IKA overhead stirrers (via an interface or wirelessly). If the stirring speed falls below a user-defined critical value, the device automatically shuts off the heater. This ensures the safety of the entire experimental setup—not just that of the individual device.

11. Safe Monitoring in the Lab with the IKA App
The IKA app enables wireless monitoring within the lab—for maximum flexibility and control. *Accessories required

12. “Always Stir” – Stirring continues even if an error occurs
In case of errors or a safety shutdown, the stirring function remains active to prevent delayed boiling and hot spots.

13. Rugged, sealed design (IP54) & die-cast aluminum housing:
The nearly completely sealed housing is resistant to corrosive vapors and liquids. The aluminum ensures durability and mechanical safety.

14. Mechanical Safety & Construction:
Two mounting points for tripod poles allow for flexible, stable sensor and assembly mounting without additional clamps.

15. Operating modes with access protection:
Behavior after power-on and access to setpoints can be specifically restricted to prevent unintended state changes.

16. Customizable Display
Decide for yourself which process parameters are important to you and should be displayed continuously.

17. TÜV-certified
Compliant with strict safety and performance standards and regulatory requirements.

18. Plain-text LED display:
Intuitive plain-text LED display.

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Overview of Additional Features

Timer/Counter

The freely programmable timer can be set to start either immediately or once the target temperature is reached, and it emits an audible signal when the cycle is complete. You decide whether to turn off the heating and/or stirring.

Adjustable Heating Rate

The heating speed can be adjusted in four levels—for slow, gentle, or rapid heating, depending on the application.

Adjustable operating modes

The device's behavior after power-up and access to setpoints can be customized—for maximum process reliability and ease of use.

Brilliant 14-segment glass display

High-quality, easy to clean and easy to read.

Even Better Temperature Control

Whether you prefer speed, precision, or compatibility with IKA synthesis blocks.

Integrated Interfaces

RS232, USB-C, LAN, Wi-Fi / Communication via ASCII-based commands (Namur standard).

Scope of delivery

- RET basic
- PT 1000.60 Temperature sensor, stainless steel
- H 80 Temperature sensor holder
- IKAFLON® 30 Magnetic stirring bar
- IKAFLON® 40 Magnetic stirring bar
- Screwdriver

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Technical Data

Number of stirring positions	1
Stirring quantity max. per stirring position (H2O) [l]	20
Maximum load [kg]	25
Motor rating output [W]	9
Motor principle	Brushless DC
Direction of rotation	right
Speed display set-value	LED
Speed display actual-value	LED
Speed adjustment	Control knob (Rotating / Pressing)
Speed range [rpm]	50 - 1700
Setting accuracy speed [rpm]	10
Stirring bar length [mm]	20 - 80
Self-heating of the set-up plate by max. stirring (RT:22°C/duration:1h) [K]	+15
Heat output [W]	800
Temperature display set-value	LED
Temperature display actual-value	LED
Temperature unit	°C
Heating temperature range [°C]	Room temp. + device self heating - 340
Heat control	Control knob (Rotating / Pressing)
Display resolution [K]	0.1
Temperature setting range [°C]	0 - 340
Temperature setting resolution of heating plate [K]	1
Connection for ext. temperature sensor	PT1000, ETS-D5, ETS-D7, PT wireless
Temperature setting resolution of medium [K]	0.1
Operating temperature min. (with external cooling) [°C]	-20
Adjustable safety circuit [°C]	50 - 360
Set-up plate material	Aluminium alloy
Set-up plate dimensions [mm]	Ø 135
Automatic reverse rotation	optional (with IKA HUB)
Intermittent mode	optional (with IKA HUB)
Viscosity trend measurement	optional (with IKA HUB)
Break detection stirring bar	optional (with IKA HUB)
Timer	yes
Timer display	LED
Time setting min. [s]	1
Time setting max. [min]	5999
pH measurement	optional (with ETS-D7, PT wireless)
Programs	optional (with IKA HUB)
Sensor in medium detection	yes
Temperature measure range PT1000 [°C]	-20 - 340
PT 1000 deviation;DIN EN 60751 Kl. A [K]	≤ ± (0.15 +0.002xITI)
Speed deviation (no load,nominal voltage, at 1500rpm + 25 °C) [%]	±2
Heating rate (1l H2O in H1500) [K/min]	9
Heat control accuracy of heating plate centre without vessel (at 100°C) [K]	±5
Heat control accuracy with ext. PT1000 (500ml H2O in 600ml beaker,40mm stirring bar,600rpm,50°C) [K]	±0.5
Heat control accuracy with ETS-D5 (500ml H2O in 600ml beaker,40mm stirring bar,600rpm,50°C) [K]	±0.5
Heat control accuracy with ETS-D7 (500ml H2O in 600ml beaker, 40mm stirring bar, 600rpm, 50°C) [K]	±0.2
Heat control accuracy with PT wireless (500ml H2O in 600ml beaker, 40mm stirring bar, 600rpm, 50°C) [K]	±0.2

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Dimensions (W x H x D) [mm]	160 x 100 x 200
Weight [kg]	2.3
Permissible ambient temperature [°C]	5 - 40
Permissible relative humidity [%]	80
Protection class according to DIN EN 60529	IP 54
RS 232 interface	yes
USB interface	USB-C
WPAN interface	yes
WiFi Interface	yes
Ethernet interface	yes
Voltage [V]	220 - 230
Frequency [Hz]	50/60
Power input [W]	820
Power input standby [W]	0.45