

# IKATRON® ETS-D5



<i>BETRIEBSANLEITUNG</i>	<i>DE</i>	<b>5</b>
<i>OPERATING INSTRUCTIONS</i>	<i>EN</i>	<b>9</b>
<i>MODE D'EMPLOI</i>	<i>FR</i>	<b>13</b>
<i>ADVERTENCIAS DE SEGURIDAD</i>	<i>ES</i>	<b>18</b>
<i>VEILIGHEIDSINSTRUCTIES</i>	<i>NL</i>	<b>19</b>
<i>NORME DI SICUREZZA</i>	<i>IT</i>	<b>20</b>
<i>SÄKERHETSANVISNINGAR</i>	<i>SV</i>	<b>21</b>
<i>SIKKERHEDSHENVISNINGER</i>	<i>DA</i>	<b>22</b>
<i>SIKKERHETSANVISNINGER</i>	<i>NO</i>	<b>23</b>
<i>TURVALLISUUSOHJEET</i>	<i>FI</i>	<b>24</b>
<i>INSTRUÇÕES DE SERVIÇO</i>	<i>PT</i>	<b>25</b>
<i>WSKAZÓWKI BEZPIECZEŃSTWA</i>	<i>PL</i>	<b>26</b>
<i>BEZPEČNOSTNÍ POKYNY</i>	<i>CS</i>	<b>27</b>
<i>BIZTONSÁGI UTASÍTÁSOK</i>	<i>HU</i>	<b>28</b>
<i>VARNOSTNA OPOZORILA</i>	<i>SL</i>	<b>29</b>
<i>BEZPEČNOSTNÉ POKYNY</i>	<i>SK</i>	<b>30</b>
<i>OHUTUSJUHISED</i>	<i>ET</i>	<b>31</b>
<i>DROŠĪBAS NORĀDES</i>	<i>LV</i>	<b>32</b>
<i>NURODYMAI DĖL SAUGUMO</i>	<i>LT</i>	<b>33</b>



## Contents

	Page
Safety instructions	9
Correct use	10
Unpacking	10
Factory settings	10
Installation	10
Operating modes	11
Setting the HI-TEMP	11
Adjusting the set-point temperature	11
Replacing extension cable and sensor	11
Error messages	12
Accessories	12
Technical data	12

## Safety instructions



**Warning:** The supply voltage (Limited Power Supply) for the ETS-D5 **must** be provided via a safety/isolation transformer that complies with **DIN EN IEC 61558**.

**Note:** This equipment must only be used with media that have a flash point higher than the temperature safety limit set for the magnet agitator and/or heating system used.

The equipment must not be operated in areas where there is a risk of explosion.

The stainless steel temperature sensor must not be used with aggressive media such as acids, caustic solutions or distilled water, due to the risk of corrosion. The H66 glass sensor should be used in such cases.

Please ensure that the spiral cable does not come into contact with the heating plate.

Take care when touching the temperature sensor!

**Burn hazard!** The temperature sensor may heat up to 450°C when inserted in the media!

Please observe all accident prevention regulations applicable to the activity and the work station. Personal protective equipment should be worn when operating the equipment.

### **Danger:**

The user must check that all conditions have been met for the safe and correct operation of the equipment before operating the IKA-TRON® ETS-D5 with a heater that does have a DIN 12878 compliant connector, and therefore does not provide cut-out protection. (The cut-out protection is a mechanism that ensures that the electrical heating circuit is switched off should the contact thermometer (ETS-D5) be broken or if the connector is removed.)

### **H+P magnetic agitator systems (no break fuse protection included)**

When the supply current for the ETS-D5 is interrupted, the electronics for the heatable magnetic agitator system will take over the temperature control. This means that the magnetic agitator system will heat up to the temperature set (e.g. 300 °C). Readjust the set-point temperature for the magnetic agitator system or switch the heating off.

### **! Danger when using flammable media with a low boiling temperature.**

#### **Corning Magnetic Agitator PC-400, PC-420, PC-600, PC-620**

When using the ETS-D5 in conjunction with a Corning Magnetic Agitator it is absolutely essential that the rotary "heat" dial on the magnetic agitator is set to the **"O"** (off) position. The ETS-D5 will only control the set temperature when it is in this position.

**Warning:** The heating plate temperature limiter is not active in this operating mode.

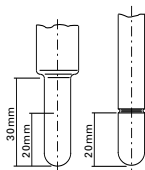
If the rotary "heat" dial on the magnetic agitator is not in the **"O"** position then the magnetic agitator will heat up to the temperature set, regardless of the settings on the ETS-D5.

**Warning:** ETS-D5 is inactive.

The safety advice given above represents the current status of the known risks. Nonetheless, the user must check equipment for correct and safe operation before operating any system comprising the ETS-D5 and a magnetic agitator/heating system.

## Correct use

The IKATRON ETS-D5 is an instrument for the precise control of temperature. The sensor on this instrument must be inserted at least 20mm into the medium to be tempered. The instrument can be connected to any magnetic agitator or heating plate that has a contact thermometer connection, provided this conforms with the requirements listed in the technical data (see section Technical Data).



## Unpacking

Please unpack the equipment carefully and inspect for damage. It is important that any transit damage should be identified at the time of unpacking. If necessary the equipment should be returned immediately for inspection (by post, rail or freight forwarder).

As supplied, the package contains: one IKATRON ETS-D5 and one set of operating instructions.

## Factory settings

The ETS-D5 is supplied with the following factory settings:

Operating mode	<b>A</b>
Set-point temperature	<b>-10 °C</b>
HI-TEMP	<b>450 °C</b>

### Restoring parameter to factory settings (RESET)

The following steps must be followed to restore factory settings:

- Switch off the equipment
- Press and hold down the membrane keys “▲” and “▼” and switch on the equipment
- The factory settings will now be restored (see above)

## Installation

Plug the instrument into the contact thermometer jack on the magnetic agitator (e.g. IKA RCT basic, IKA RET basic, RH basic, RH digital KT/C, Heidolph MR3001K, Heidolph MR3002, VWR VMS-D, VWR VMS-A, H+P Variomag, etc.).

Please observe all safety instructions in this respect.

Procedure for connecting a Corning Magnetic Agitator:

Turn the rotary "heat" dial on the magnetic agitator to the 'O' (off) position. Next, connect the ETS-D5 to the magnetic agitator using the AD-C1 adapter provided.

Please observe all safety instructions in this respect.

The device will be activated when the magnetic agitator is switched on. If the supply voltage at the contact thermometer connector is not between 8V and 16V DC then it will be necessary to power the device using the H52 power supply set (H50 double connector adapter and H51 plug-in power supply unit). The power supply and/or double connector adapter will provide the necessary supply voltage for the device. An automatic self-test will be performed when the device is activated. All segments on the LCD display will be visible during this test (Figure 1).

## Operating modes

The ETS-D5 can be run in three different operating modes (**A**, **B**, **C**).

The selected operating mode will be permanently displayed (Figure 4).

Operating mode "A" This is the factory-setting mode for this instrument. When the instrument is switched on, the set-point temperature is always set to -10°C. The set-point temperature can be adjusted using the "▲" and "▼" keys. The HI-TEMP (maximum set-point temperature) can only be set in this mode.

Operating mode "B" In this mode the most recent set-point temperature is used, and will become active when the instrument is switched off and on again. The settings can be adjusted using the "▲" and "▼" keys.


Operating mode "C" In this mode the current settings are used and will become active when the instrument is switched off and on again. The setting cannot be adjusted. Holding down the "▲" key when switching on the instrument switches to the next operating mode in the sequence **A-B-C-A-B-C-A** etc.

## Setting the HI-TEMP

The "HI-TEMP" (maximum set-point temperature) can only be set when in operating mode "A". After the self-test, HI-TEMP will be visible on the LCD display (**Fig.2**). The HI-TEMP can now be set between 0 and 450°C using the "▲" and "▼" keys. The displayed HI-TEMP value will be set and stored if no key is pressed for approximately 5 seconds. The LCD display will then appear as shown **Fig.3**.

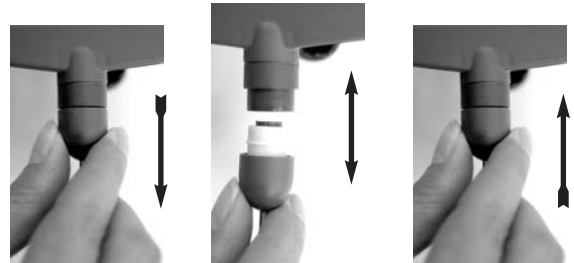
## Adjusting the set-point temperature

The set-point temperature can be adjusted in 0,1K steps by pressing the "▲" and "▼" keys. If the key is held down for longer than 5 seconds then the set-point temperature will change in 1K or 10K steps.

The LCD display (Figure 4) shows: the instantaneous actual temperature with physical units; the set-point temperature (underneath actual temperature);  to indicate that the heating for the connected device is switched on; the selected operating mode (top left).

## Replacing extension cable and sensor

To replace the sensor or the extension cable, pull the sensor and protective cap downwards until the plastic snap fastener is released. Then push the sensor or extension cable and protective cap over the fitting on the instrument to re-establish the connection.



## Error messages

The following error messages may be displayed (**Fig.5**) and have the causes listed below:

- Er 1 Sensor not connected or defective (open circuit).
- Er 5 Sensor not in media (no change in temperature of the media after heater active for 3 minutes).
- Er 6 Sensor short circuit.
- Er 7 Maximum temperature for the media exceeded (HI-TEMP setting).
- Er 8 Calibration error (re-calibration by field service required).

## Accessories

- H 38** Retaining bar
- H 44** Retaining clip
- H 50** Twin-jack adapter
- H 52** Power supply kit
- H 62** Standard sensor 270 mm stainless steel
- H 66** Glass sensor 270 mm glass
- H 70** Extension cable, 1 m long
- AD-C1** Adapter (for Corning magnetic stirrer)

## Technical data

Measuring range:	°C	-50 ... 450
Resolution:	K	0.1)
Measuring accuracy:	K	±0,2 + sensor tolerance PT 1000 DIN IEC 751 Class A
Setting accuracy:	K	0,1
Type of control:		PID
Control deviation:	K	± 0,5
Supply voltage:	V DC	8 ... 16 (Limited Power Supply)
Current consumption:	mA	8 (at 9V)
Ambient temperature:	°C	0 ... 60
Relative humidity:	%	80
Duty cycle:	%	100
Protection type:		IP 44
Cable length:	mm	350
Male connector:		6-pin DIN 45322
Socket:		DIN 12878 Class 2
Dimensions: (W x D x H)	mm	80 x 20 x 90 (without sensor)
Weight:	kg	0.2