Edmund Bühler GmbH
Since 1880

Operating Instructions
Bühler Infrared Heater

POWERCUBE IRB 1

POWERCUBE IRB 2

POWERCUBE IRB 6

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1 General Notes

You have chosen a Bühler high-quality product for supporting you in your work.

All Bühler heaters were developed for the use in laboratories in a neutral environment.

To ensure a long life and optimal operation of the device we recommend to observe the following points.

Read the operating manual carefully before initial operation.

The user must acquaint himself with the safety instructions and oerating conditions in order to avoid damage / injuries to material and personnel. Liability and all claims under warranty end immediately in case of damages which result from misuse and / or abuse.

- The devices were carefully checked for perfect functioning and condition before delivery.
- Necessary servicing or repair work may only be done by personnel of the manufacturer (*Edmund Bühler GmbH)* , their authorized agents or personnel trained by *Bühler.*
- For shipping, the device must be adequately and safely packed. If possible, use the original packing.
- If the device is returned to *Bühler* for repair, it should be cleaned and free from any harmful substances or residues.

2 Description:

2.1 IRB 1

The infrared heater POWERCUBE 1 is a compact laboratory heater for contactless heating tasks in laboratories, factories and schools. It is especially well suited for hydrous solutions, which have a high absorbancy in the infrared range. They can be heated fast and efficiently.

2.2 IRB 2

Laboratory heater with integrated power control for fast heating of larger volumes. Thanks to its high safety standard it can be used in laboratories where traditional heaters with open flame cannot be employed.

2.3 IRB 6

Modular laboratory heater with 6 x IRB 1 in a housing with 6 power control units. Each heater can be individually used and controlled.

3 Appropriate Use:

- Large flat-bottomed – heat resistant – vessels (generally Duran glass, glass etc.) can be placed directly on the upper heat shield for heating up the filled-in liquid
- Small vessels or round-bottom vessels have to be mounted on a stand, in appropriate distance above the radiator.
- For special applications, the POWER CUBE itself can also be fixed in a stand by means of the support rod (see accessories).

4 Technical Data:

3.1 IRB 1

Max. temperature:	700°C
Heating power:	200 W
Heating area:	60 x 60 mm
Max. ambient temperature:	30°C
Electrical supply:	230 V or 115 V, 50 / 60 Hz
Dimensions (w x d x h):	100 x 105 x 105 mm
Weight:	0.7 kg

3.2 IRB 2

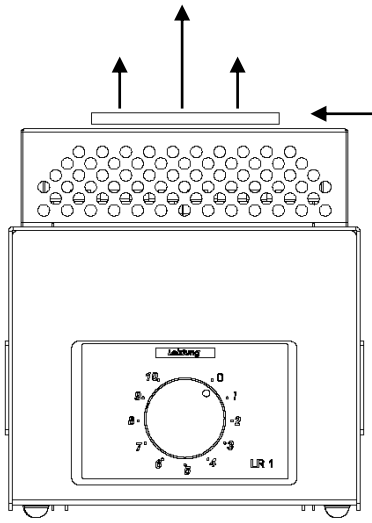
Max. temperature:	900°C
Heating power:	800 W
Heating area:	100 x 100 mm
Power control:	stepless control between 0 – 100%
Max. ambient temperature:	30°C
Electrical supply:	230 V, 50 / 60 Hz
Dimensions (w x d x h):	150 x 150 x 170 mm
Weight:	2.5 kg

3.3 IRB 6

Max. temperature:	each 700°C
Heating power:	6 x 200 W
Heating area:	6 x 60 x 60 mm
Power control:	6 stepless controls between 0 – 100%
Max. ambient temperature:	30°C
Electrical supply:	230 V, 50 / 60 Hz
Dimensions (w x d x h):	697 x 305 x 122 mm
Weight:	9 kg

IRB 2:

(Heat is emitted upwards)



Heating power IRB 2

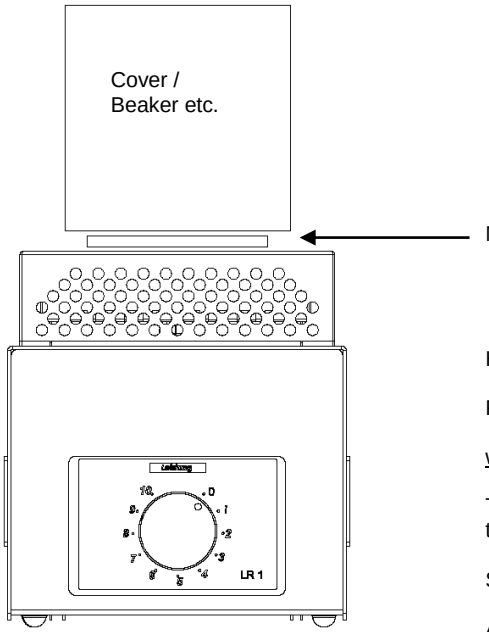
Power control at position 10,

without vessel on the support cross

Temperature measurement at the level of the support cross:

Start:	20°C
After 10 min:	520°C
Max. Temp.:	520°C

IRB 2:



Heating power IRB 2

Power control at position 10,

with vessel on the support cross

Temperature measurement at the level of the support cross:

Start:	20°C
After 3 min:	800°C
After 7 min:	900°C

5 Operation:

5.1 IRB 1

After connection to a 230 V or 115 V mains the system is ready for operation and can be switched on by actuating the rocker switch at the front. (The switch illuminates).

5.2 IRB 2

After connection to a 230 V mains the system is ready for operation and can be switched on by actuating the rocker switch at the back (LED at the front illuminates).

The power can be steplessly adjusted with the rotary switch at the front between 60 W (position 1) and 800 W (position 10).

5.3 IRB 6

After connection to a 230 V mains the device is ready for operation and can be switched on by actuating the rocker switch (the switch illuminates).
The power can be steplessly adjusted with the rotary switches.

6 Safety Instructions:

Attention!!! The safety instructions must be followed!!!

- While the device is switched on, but also the first 15 minutes after the system has been switched off (cooling off), the upper part (infrared radiator and stainless steel sheets) may not be touched, nor be brought close to objects which can catch fire (paper, cloth, fabric, etc.). In a distance of approx. 1-2 cm from the ceramic radiator temperatures are reached that can inflame the above mentioned objects.

- Do not heat up objects or vessels in direct contact with the ceramic heating element. Use the support cross and place the vessel on the cross.

- Empty vessels with little distance to the ceramic heating element risk to break.

- The IRB 2 has an excess temperature protection. If the bottom of the housing reaches temperatures above 60°C, the system is switched off automatically. For safety reasons, the device should be switched off completely for some time. When it has cooled down, it can be heated up again as usual.

7 Special Features:

- The electronic parts are shielded against spilling liquids.
- Additional lateral safety shields for the heating element.
- Touch-proof housing during operation. Built-in handles for safe transportation even when the heater is hot. (IRB 2)

8 Accessories:

8.1 IRB 1

Power control LR 1:	No. 6070 000
Support rod for stand connection (Ø 10 x 130 mm):	No. 0012 164

8.2 IRB 2

Support rod for stand connection: (Ø 10 x 130 mm):	No. 0012 164

8.3 IRB 6

Support base (length approx. 75 cm):	No. 0052 060
Horizontal PVC rod for support base:	No. 0052 091

Clamps for PVD rods (Nr. 0052 091):

Ø D50 (NS45) – with distance piece, e.g. for Soxleth:	No. 0001 140
Ø D32 (NS29) – with distance piece	No. 0001 138
Ø D20 (NS19) – with distance piece	No. 0001 136
Ø D25 (NS15) – with distance piece	No. 0000 789

9 Maintenance:

The heaters, especially the infrared radiator, is maintenance-free. Appropriate use ensures extremely long life of the heating element (approx. 7000 h).

10 Technical Service Department:

In case of failure, please contact the Technical Service Department of the Edmund Bühler GmbH.

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11 CE Declaration of Conformity:

We declare under our sole responsibility that this product corresponds to the EC directives 89/336EEC and 73/23EEC und
The following harmonised standards apply: EN 61 010; VDE 700 part 1.

12 Warranty:

The *Edmund Bühler GmbH* warrants that this device has the properties guaranteed by contract and that it does not have any defects which rescind its value or its use for customary and usual applications or applications foreseeen by the contract.
(See General Terms and Conditions of the *Edmund Bühler GmbH*).

The warranty period ends 24 months after delivery (date of invoice). The warranty does not include wear parts. Excluded from warranty are malfunctions caused by misuse or improper use, installation, or maintenance. Warranty ends immediately if the device is subjected to technical modifications which are not authorized **in advance** by Edmund Bühler GmbH