

PRODUCT BROCHURE

Chip-to-Chip Bonder

The idonus CCB is a versatile tool enabling chip-to-chip alignment and bonding by means of anodic bonding and a variety of gluing processes

Chip to Chip Bonder

General Information

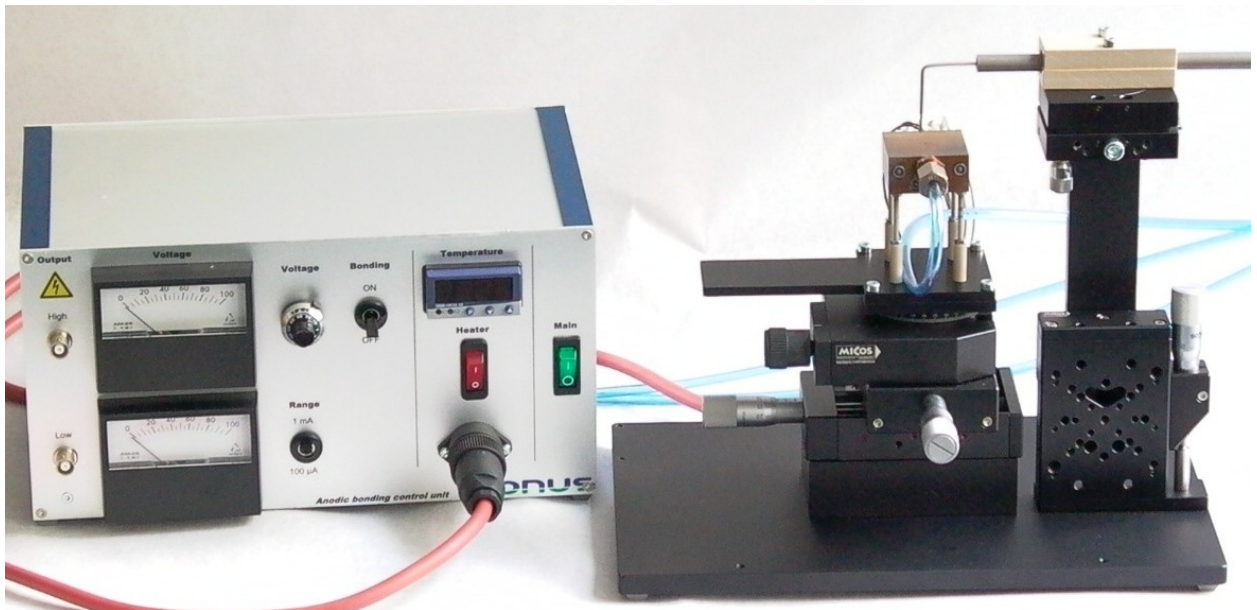
Precise alignment and bonding of two single chips is very often needed for building three dimensional structures or packaging in MEMS fabrication.

With the chip to chip bonder it becomes possible to align two chips manually. The chips can then be brought into contact in order to perform anodic bonding or various gluing processes. The single chip alignment stage includes three linear axis and three rotation axis, which provides enough degrees of freedom for most alignment applications.

The lower chip is clamped on a base plate, the upper chip is held by a needle. Both vacuum holders can be adjusted and switched separately.

In order to perform the anodic bonding process a heating plate as well as a high voltage source are provided. The bond-voltage is adjusted on a controller unit, which monitors the voltage and the bond-current. The temperature of the heating plate is as well adjusted on the controller unit.

The device is designed for research institutions and can be adapted for your special applications.



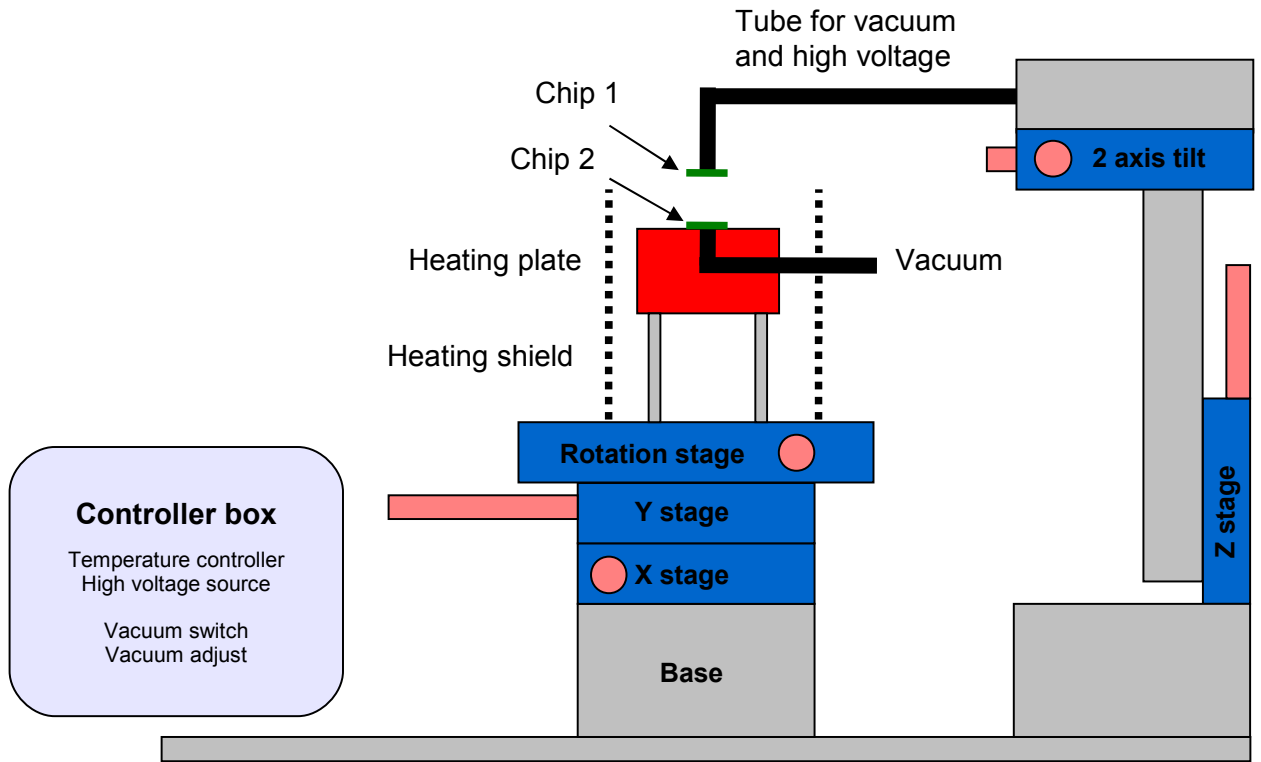
Chip to chip bonder equipped for anodic bonding: The system includes a heating plate and a controller box for anodic bonding.

Features of the chip to chip bonder

- 3 linear axis
- 3 rotation axis
- Heating plate up to 500°C
- High voltage source for anodic bonding
- Chip alignment under microscope
- Safe operation

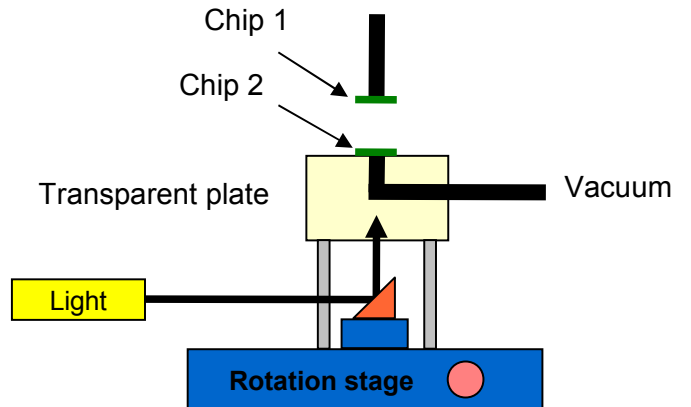
Chip to Chip Bonder

Schematic Design



Schematic design of the chip to chip bonder. All six adjustable axis are shown in the picture. The alignment stages are operated manually .

For special gluing processes (i.e. UV-glue) the heating plate can be replaced with a transparent plate, which allows to illuminate the chips from the backside. All the chip holding units are designed for a quick and simple exchange.



Chip to Chip Bonder

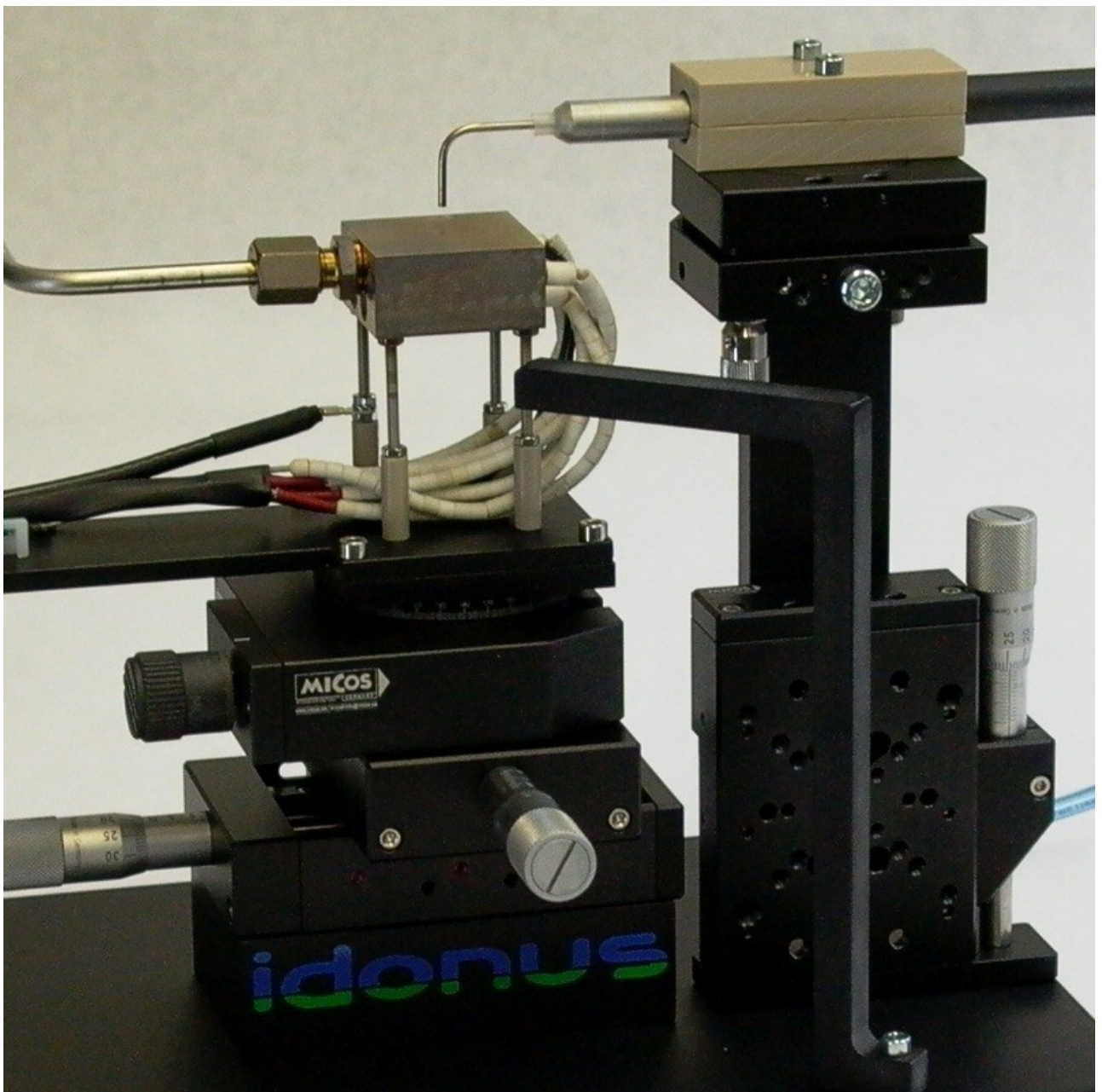
Applications and Benefits

Applications:

- Alignment of chips
- Anodic bonding
- Packaging
- Various gluing processes (UV-, epoxy-, thermal glue, etc.)

Benefits:

- Quick alignment of chips
- Safe operation
- Can be customized for various processes
- Small footprint
- Easy to use



Detailed view of the heating plate and the alignment stages. The bar in the middle serves as support for the operator to place the hand during the positioning of the chips on the heating plate and the vacuum needle by tweezers.

Chip to Chip Bonder

Product Details

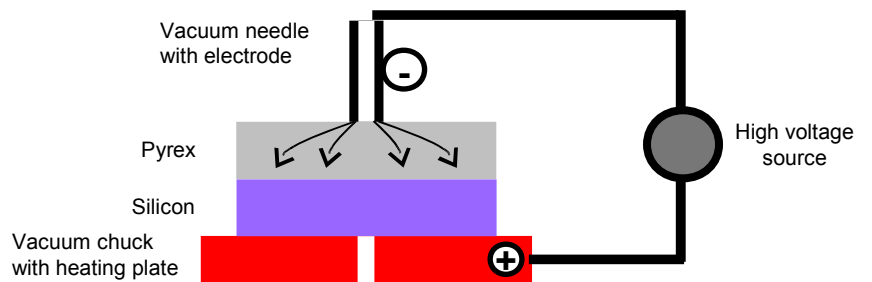


Detailed view of the controller box: The temperature controller for the heater is on the right side, the high voltage regulator on the left side. The bond-voltage and the bond-current are displayed separately.



Control unit for the vacuum holders: The vacuum at the heating plate and the needle is switched separately. Additionally, the holding force can be regulated for each holder.

Principle of anodic bonding



Chip to Chip Bonder

Technical Specifications

Product Code	CCB
Chip size Max Min Chip clamping mechanism	25 x 25 mm 3 x 3 mm Vacuum
Heating Chuck Max temp. Size heating plate Hole for vacuum clamping Heating power Temperature controller Temperature sensor	520°C 40 x 40 mm Ø 1.5 mm 200 W Jumo PT100
Needle holding upper chip Vacuum hole	Ø 1.6mm
High voltage source Voltage Power Display	Adjustable 200 to 1500 V DC Max. 1.5 W Analog for voltage and current
Transparent chuck (optional) Size Hole for vacuum clamping	40 x 40 mm Ø 1.5 mm
Adjustable range Range in X and Y Range in Z Rotation Tilt	For the heating plate, 25 mm, scale step 10 µm -> sensitivity 2 µm For vacuum pin, 25 mm, scale step 10 µm -> sensitivity 2 µm 360° endless, sensitivity 0.01° ± 4°, sensitivity 0.005°
Requirements for installation	Power supply 115 / 230 V AC Microscope, vacuum

Note: Idonus reserves the right to change specifications without notice at any time (Version 14.02.2012). Copyright © 2012 Idonus Sarl.

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