



# Wire Bonder

HB05 HB10 HB16 HB30

# What kind of products?

## Thin Wire Bonders



HB05



HB16/HB10

## Heavy Wire Bonder



HB30

## Kits & Accessories:



Video



Pull Tester



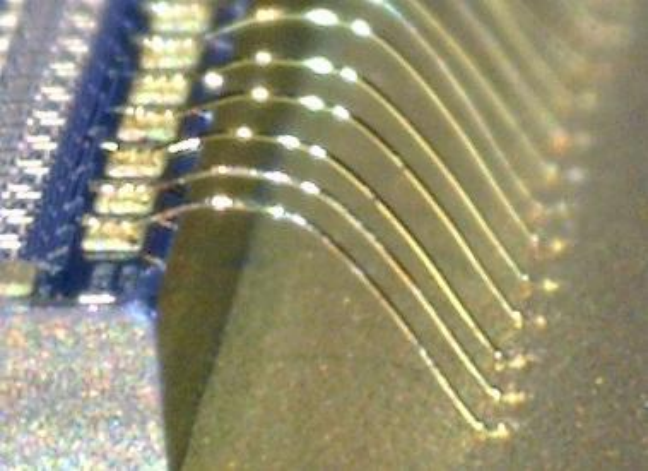
Pick & Place



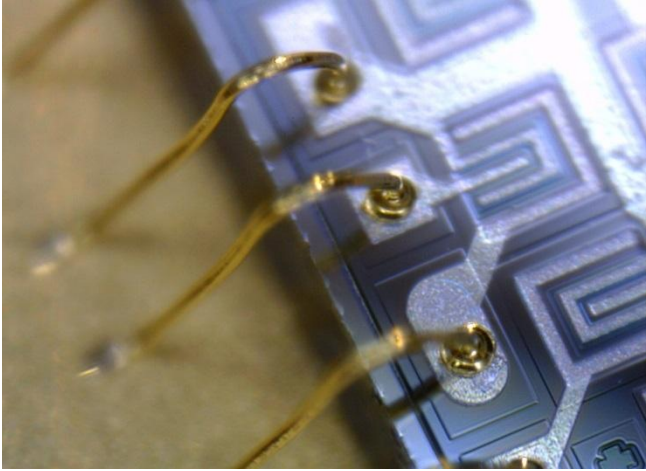
Copper Kit

# What kind of applications?

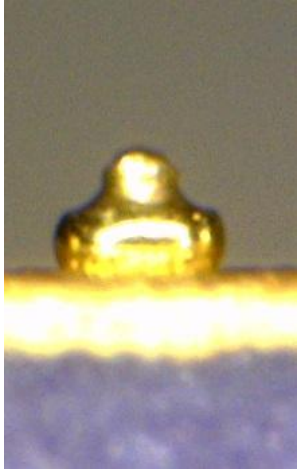
Wedge/Wedge & Ribbon



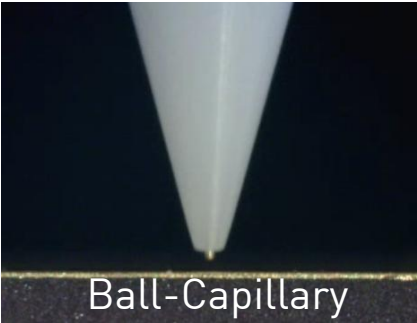
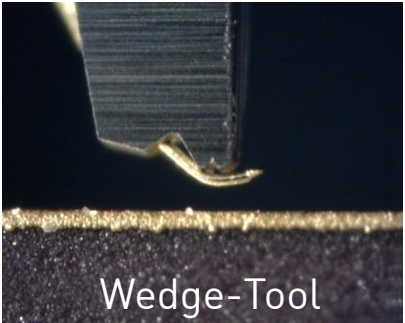
Ball/Wedge



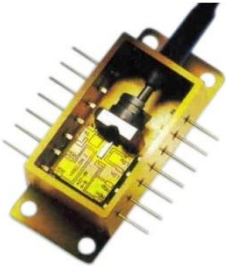
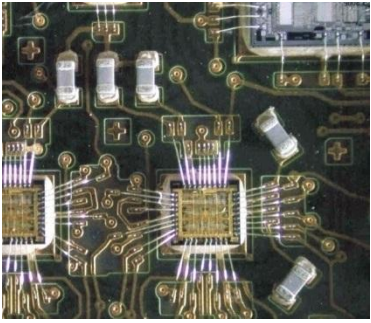
Bump



## Tools:

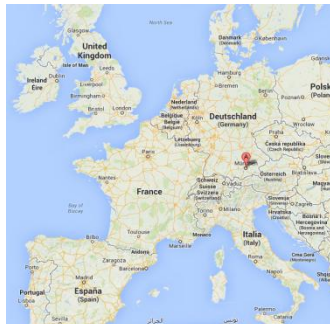


## Applications:



# What kind of company?

- TPT is expert in manual wire bonding for 25 years
- We distribute our own bonders for 10 years
- We have provided 700 machines to 45 countries so far
- We develop & manufacture in the high tech city of Munich
- Our target is top quality, innovation and powerful service
- We are **Made in Germany**





# Customers





## EASY USER INTERFACE



### TFT Touch-Screen:

- parameters on one screen
- 100 memory sets

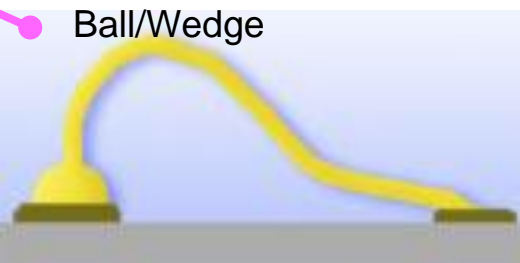
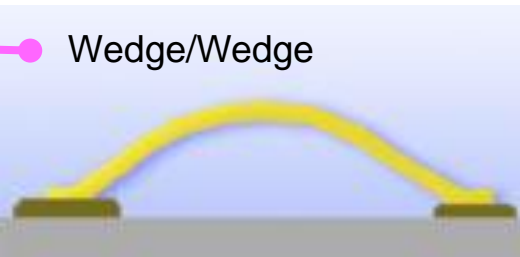
### Puck Control:

- one hand bonding control
- Buttons for bonding, reset and wire feed



## WEDGE, BALL & BUMP BONDING

- one bond head for all modes
- quick tool exchange <5min
- program change via touchscreen



## APPLICATION - SOLUTIONS

- many **accessories** to support applications
- **extension kits** to add further functions
- **know-how** to create individual solutions





# HB05 manual wire bonder



**Compact Design & Intuitive Control**  
Everything you need for your bonding



**4" TFT Controller with Multi Button**  
Easy control with 20 programs



**Simple Change Between Ball & Wedge**  
Change tool & mode



**Deep & Wide Bond Access**  
Ample work space



**Precise tail up & down control**  
Electronic wire clamp

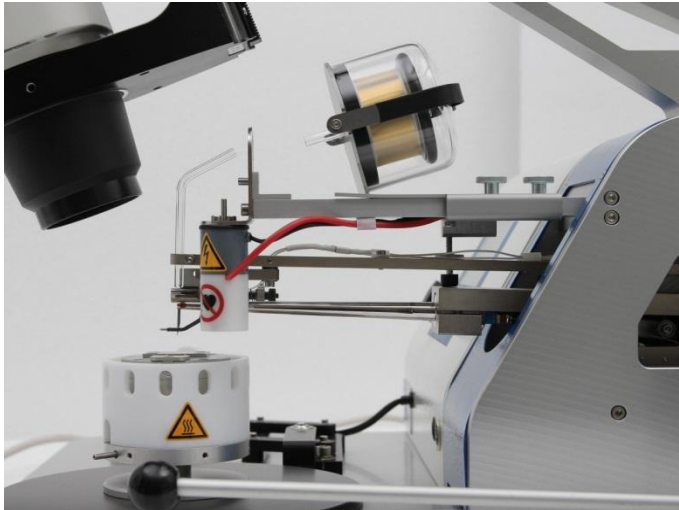


**Extension Kits for Additional Functions**  
Pull Tester, Pick & Place, Video Kit, Copper Ball Bonding

# HB05 manual wire bonder

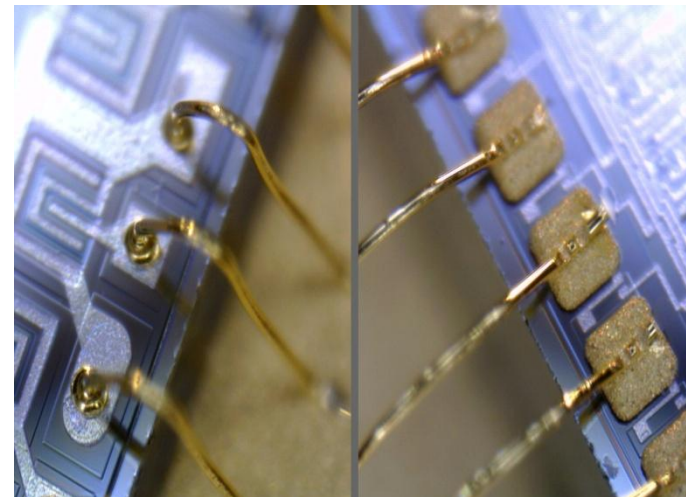
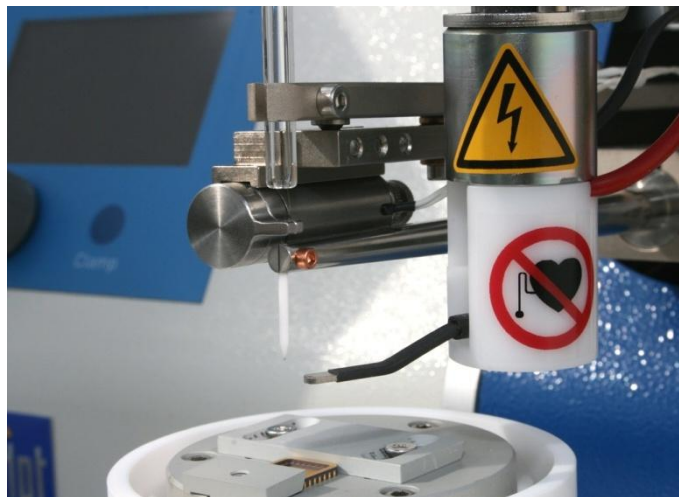


compact design



TFT & multi-button

deep access bond head



wedge & ball bonds

# HB05 specifications



Wedge bond	17-75 $\mu$
Ribbon max.	25x250 $\mu$
Ball & bump bond	17-50 $\mu$
Axis control	Manual X, Y & Z
Bondarm reach	165 mm
Vertical access depth	16 mm
Storage capacity	20 parameter sets
Wirespool handling	2" manual, motorized optional
Fine table motion	15 x 15 mm
Mouse ratio	6 : 1
Ultrasonic system	PLL controlled 62kHz transducer
Ultrasonic power	0 – 10 Watt output
Bond time	20 – 1,000 msec.
Bond force	15 – 130 cN
Heater stage controller	Built-in, 250°C max.
Light system	Dual LED spot light
Electric requirements	100-240 V, 10 A max.
Weight	29 kg

# HB16/HB10 semiautomatic wire bonder



**Ball, Wedge, Ribbon & Bump Bonding**  
Motorized Z- & Y-axis (HB10 Z-axis)



**6,5" Touch Controller**  
Easy control of all bond parameters



**Simple Change Between Ball & Wedge**  
Change tool & mode



**Deep & Wide Bond Access**  
Ample work space



**Precise tail up & down control**  
Electronic wire clamp



**Extension Kits for Additional Functions**  
Pull Tester, Pick & Place, Video Kit, Copper Ball Bonding





# HB16/HB10 semiautomatic wire bonder

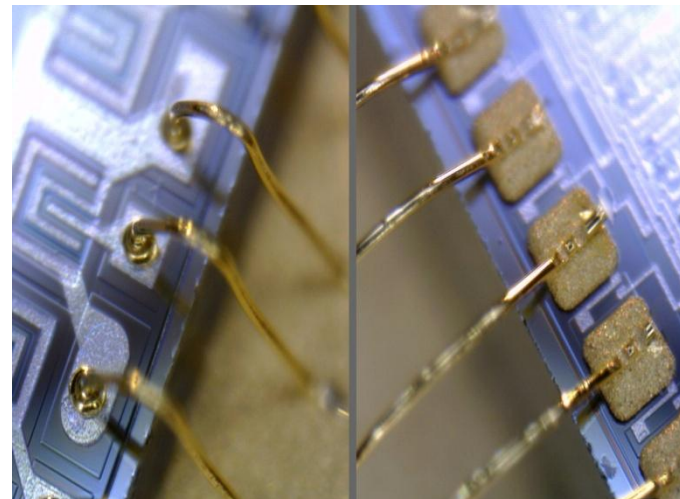
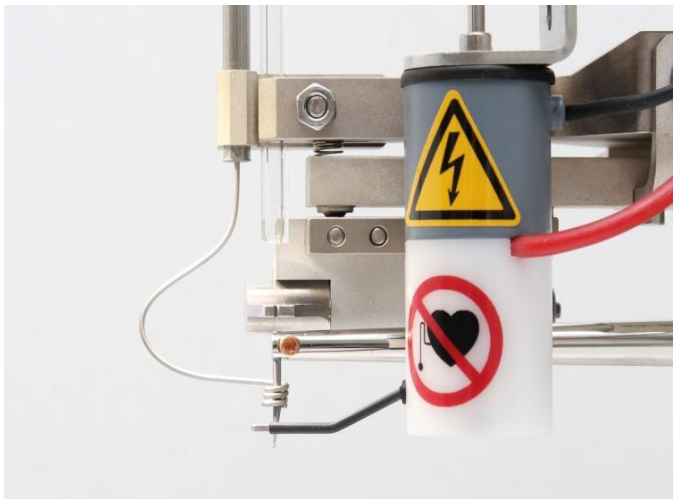


HB16 with video cam, cross hair generator



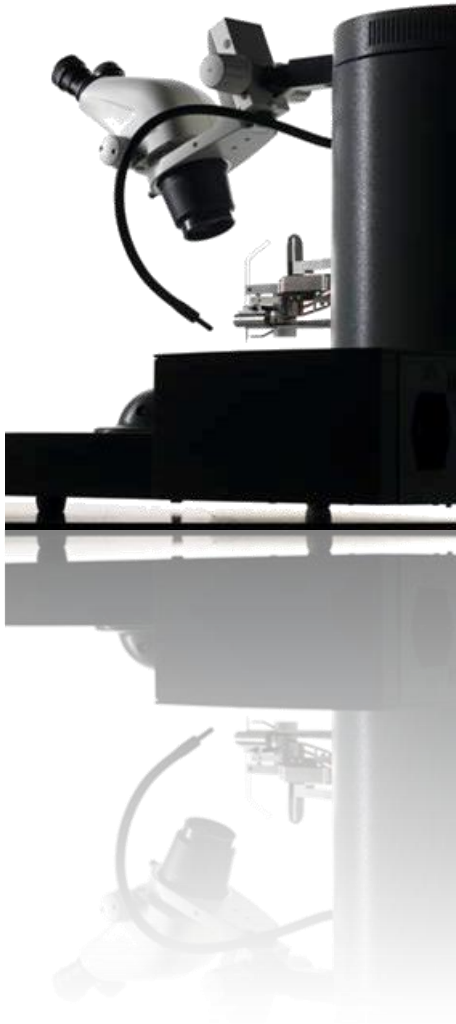
6,5" TFT touch screen

deep access bond head



wedge & ball bonds

# HB16/HB10 specifications



Wedge bond	17-75 $\mu$
Ribbon max.	25x250 $\mu$
Ball & bump bond	17-50 $\mu$
Axis control	Motorized Z & Y (HB10: Z only), Manual X
Bondarm reach	165 mm
Vertical access depth	16 mm
Storage capacity	100 bonding programs
Wirespool handling	2" motorized
Fine table motion	10 x 10 mm
Mouse ratio	6 : 1
Ultrasonic system	PLL controlled 62kHz transducer
Ultrasonic power	0 – 10 Watt output
Bond time	15 – 10,000 msec.
Bond force	15 – 150 cN
Heater stage controller	Built-in, 250°C max
Light system	Dual fiber optic illuminator
Electric requirements	100-240 V, 10 A max.
Weight	45 kg

# HB30 heavy wire bonder



Wire size 100-500 $\mu$ , Ribbon size 2,000 x 300 $\mu$   
Suitable for all heavy wire applications



**Semi-automatic bonding**  
Motorized Z- & Y-axis



**6,5" Touch Controller with 100 programs**  
Easy control of all bond parameters



**Deep & Wide Bond Access**  
Ample work space



**Precise wire cutting**  
Knife force & movement adjustable



# HB30 heavy wire bonder

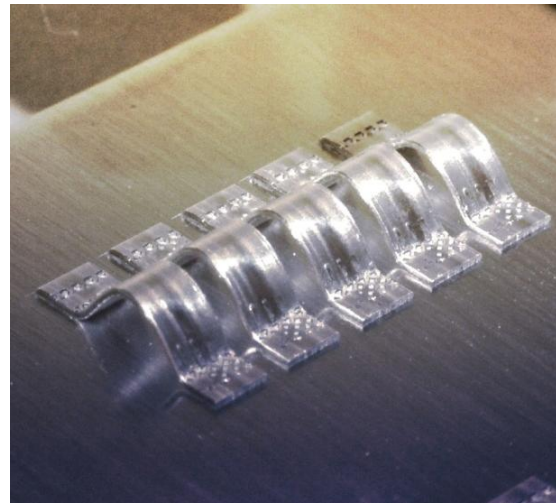
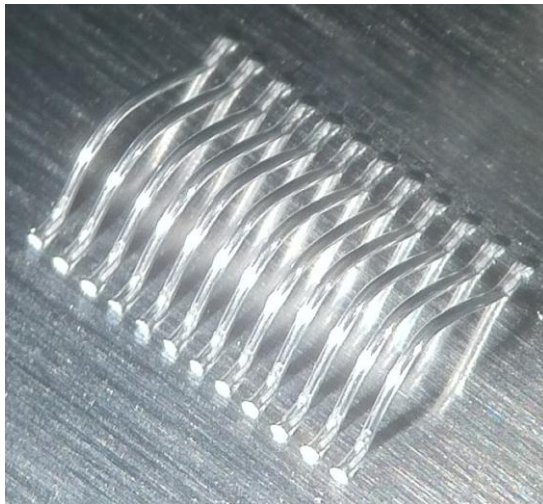


deep access  
bond head



6,5" TFT  
touch-screen

300 $\mu$  wire  
& ribbon



H28 work holder





# HB30 specifications



wire guide  
wedge  
knife

Wire size	100-500 $\mu$
Ribbon max.	2,000x300 $\mu$
Materials	Aluminum, Copper (not up to max. sizes)
Axis control	Motorized Z & Y, Manual X
Bondarm reach	165 mm
Vertical access depth	17 mm
Storage capacity	100 bonding programs
Wirespool handling	4"
Fine table motion	15 x 15 mm
Mouse ratio	3 : 1
Ultrasonic system	PLL controlled 60kHz transducer
Ultrasonic power	0 – 20 Watt output
Bond time	0 – 10 sec.
Bond force	50 – 1800 cN
Wire termination	Front cut
Light system	Dual fiber optic illuminator
Electric requirements	100-240 V, 10 A max.
Weight	50 kg

# Heater Stages



Type	H26	H29	H29R	H21	H22	H23	H28 heavy wire
Surface dimension:	ø 60mm	ø 90mm	ø 90mm	100x100mm	100x150mm	150x200mm	ø 90mm
Clamping width max.:	39mm	65mm	65mm	85mm	85mm	125mm	65mm
Substrate fixation:	mechanical & vacuum	mechanical & vacuum	mechanical	mechanical & vacuum	mechanical & vacuum	mechanical & vacuum	mechanical
Height range:	62-80mm	62-80mm	70-90mm	70-90mm	70-90mm	70-90mm	75-115mm
Temperature max.:	250°C	250°C	250°C	250°C	250°C	250°C	no
Voltage/Power:	40V/100W	40V/200W	40V/200W	230V/400W	230V/600W	230V/1000W	no
Weight:	600g	1.000g	1.100g	2.000g	2.600g	4.000g	2.000g

Exchangeable heater plates



Pick & Place



H76 Vacuum pump



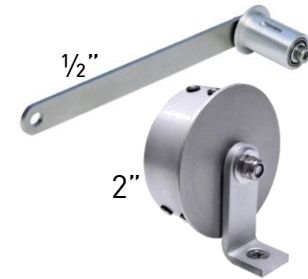
# Accessories, Wire & Tools



H69 Starter kits



H50 Targeting system



H72 Manual wire spools



H51 Manual-Z



H52 Dynamic Search



H58 Stitch pedal



H41 Tool heater



H86 Ext. heater controller



H89 Video systems

# H69 Bond Starter Kits



Three different kits available:

- H69-WB Wedge and Ball Bonding
- H69-W Wedge Bonding
- H69-B Ball Bonding

Content of H69-WB:

H60-21	Wedge Tool for 25 $\mu$ Gold Wire	3 pc
H60-43	Wedge Tool for 33 $\mu$ Aluminum Wire	3 pc
H61-1	Capillary for 25 $\mu$ Gold wire	3 pc
H70-21	Gold Wire 25 $\mu$ 100 Meter	1 pc
H74-42	Aluminium Wire 33 $\mu$ 100 Meter	1 pc
H65	Probe Needles for Unplugging, 25 pcs	1 pc
H66	Tungsten Wire for Unplugging, 25 pcs	1 pc
H67	TPT Tweezer	2 pc
H68	TPT Bond Sample	5 pc

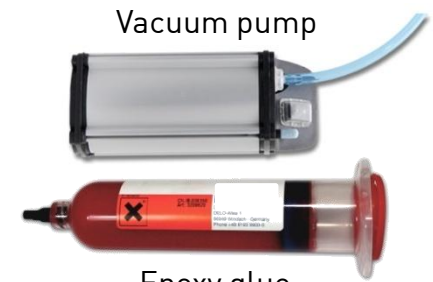




# H80 Pick & Place Kit



1. Stamping tool
2. Pick-up tool
3. Wedge bond tool
4. Ball bond capillary



Vacuum pump

Epoxy glue

# H89 Video Targeting Kit



The kit has two application areas:

- Bonding of repeatable bonds via TFT
- Showing and documentation of bonds

The kit consists of:

- H85 camera
- H50 spot light with red laser dot ~50 $\mu$
- H84 15"-TFT installed on bonder

The kits are available with different cameras:

- H85-1 HDMI-video camera
- H85-2 S-video camera



# H53 Pull Tester Kit



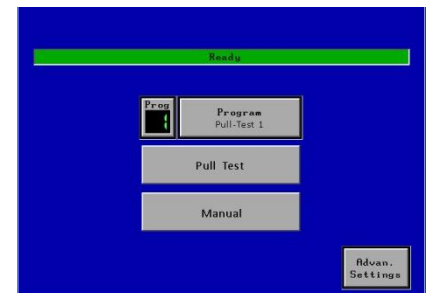
- Mechanical pull tester for destructive bond tests
- Easy installation on bond head
- Works on the complete bonder range HB02 - HB16
- Measurement gauges max.15g or 30g
- Manual-Z required for HB10/HB16



easy fixation on bond head



pull test with hook

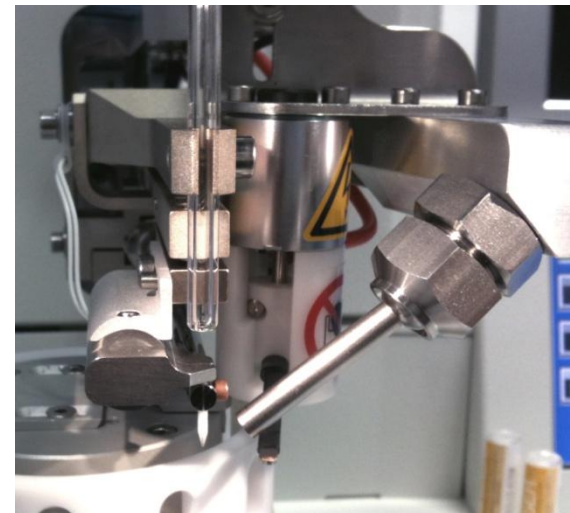


Software pull test mode

# H47 Copper Ball Bonding Kit



- Copper and silver ball bonding with increasing demand
- Major constraints are oxidation & bondability
- Forming gas prevents oxidation ( $N_2$  95%/  $H_2$  5%)
- Controlled gas flow 2s, before & during flame off





# Find more on [www.tpt.de](http://www.tpt.de) Thank you!



Deutsch | ▾

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## TPT Wire Bonder the bonding experts



**HB05**  
Manual Bonder  
17µm - 70µm

**HB10**  
Automatic Z-Axis  
17µm - 70µm

**HB16**  
Automatic Z-G Y-Axis  
17µm - 70µm

**HB30**  
Automatic Z-G Y-Axis  
100µm - 500µm

## Bond Start Kit



## Exhibitions

**EXPO Solar** **PV KOREA**

04. - 06. September 2013



INTERNATIONAL MICROELECTRONICS  
AND PACKAGING SOCIETY

9. - 12. September 2013

[Mehr Messetermine »](#)

## Contact

-- Land wählen -- ▾

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<http://www.tpt.de> »

[alle Kontaktdaten »](#)



# Wire Bonder

HB05 HB10 HB16 HB30

BACKUP

# Equipment overview



**HB05**  
Manual Bonder  
17µm - 70µm

**HB10**  
Automatic Z-Axis  
17µm - 70µm

**HB16**  
Automatic Z- & Y-Axis  
17µm - 70µm

**HB30**  
Automatic Z- & Y-Axis  
100µm - 500µm

## Manual Bonder

- HB05 Wedge & Ball
- HB04 Ball
- HB02 Wedge

## Automatic Z-Axis

- HB10 Wedge & Ball
- HB08 Ball
- HB06 Wedge

## Automatic Z- & Y-Axis

- HB16 Wedge & Ball
- HB14 Ball
- HB12 Wedge

## Heavy Wire

- HB30 Heavy Wire

# Wire bonding – basic info

## What is Wirebonding?

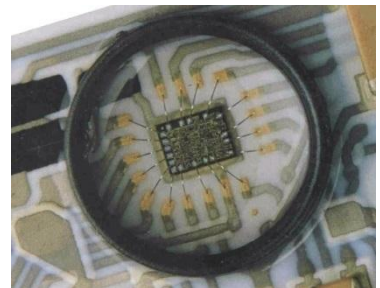
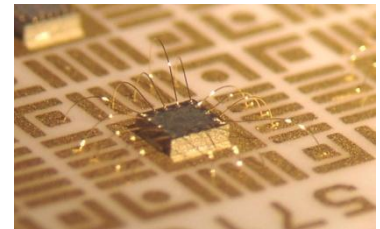
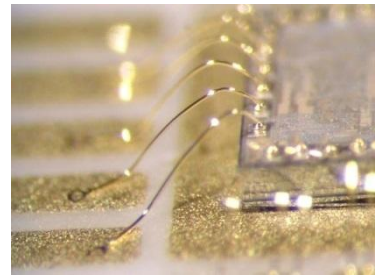
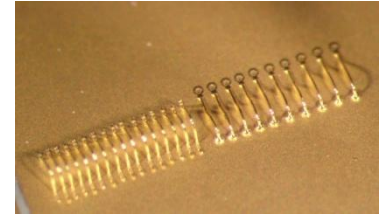
- Bonding machines realize **interconnections between a microchip and other electronics** as part of semiconductor device fabrication.
- Main parameters are **ultrasonic energy, force and heat**.

## What kind of wire bonding methods offers TPT?

- Wedge-, ball-, stud-bump-, stitch- and ribbon bonding.

## What type of wire can TPT bonders handle?

- Wire sizes are  $17\mu$  to  $70\mu$  Gold- and Aluminum Wire
- Gold ribbon up to  $25\mu \times 200\mu$
- Heavy wire bonder: wires from  $100\mu$ - $500\mu$  Aluminum
- Other bonding materials are i.e. copper, silver, ...



# Microscopes



Type	H10	H13	H11	H13	H48
Name:	Leica S6	Leica S6D	Leica EZ5	Leica M60	Leica LED1000
Description:	TPT's recommended microscope	microscope with video port	entry level microscope	top class microscope with modular design	LED ring light for additional lighting
Magnification:	80x	80x	50x	65x	40 LEDs
Comment:	installed with Leica microscope holder	left ocular switches between video or view	installed with Leica microscope holder	installed with Leica microscope holder	additional options like polarizer available



# H98 Bond Height Increase

- Option H98 allows to increase the bond height
- Standard height is 76mm. Increased height is 100, 125 or 150mm
- Side chassis with fixation holes for bond head



# H88 Side View Camera

- Camera can be installed for side view on the bond head or on a separate stand for substrate inspection
- Photo or video output via Computer
- Camera setup sometimes tricky
- Specification:
  - USB 2.0
  - 1.3M pixels
  - Magnification 20x-50x, 200x
  - Up to 30 frames/s
  - Lightning per LED

