

# 4500 Series Ball Bonders

## Digital / Analog Systems



Model 4522  
Analog

Model 4524AD  
Programmable Digital

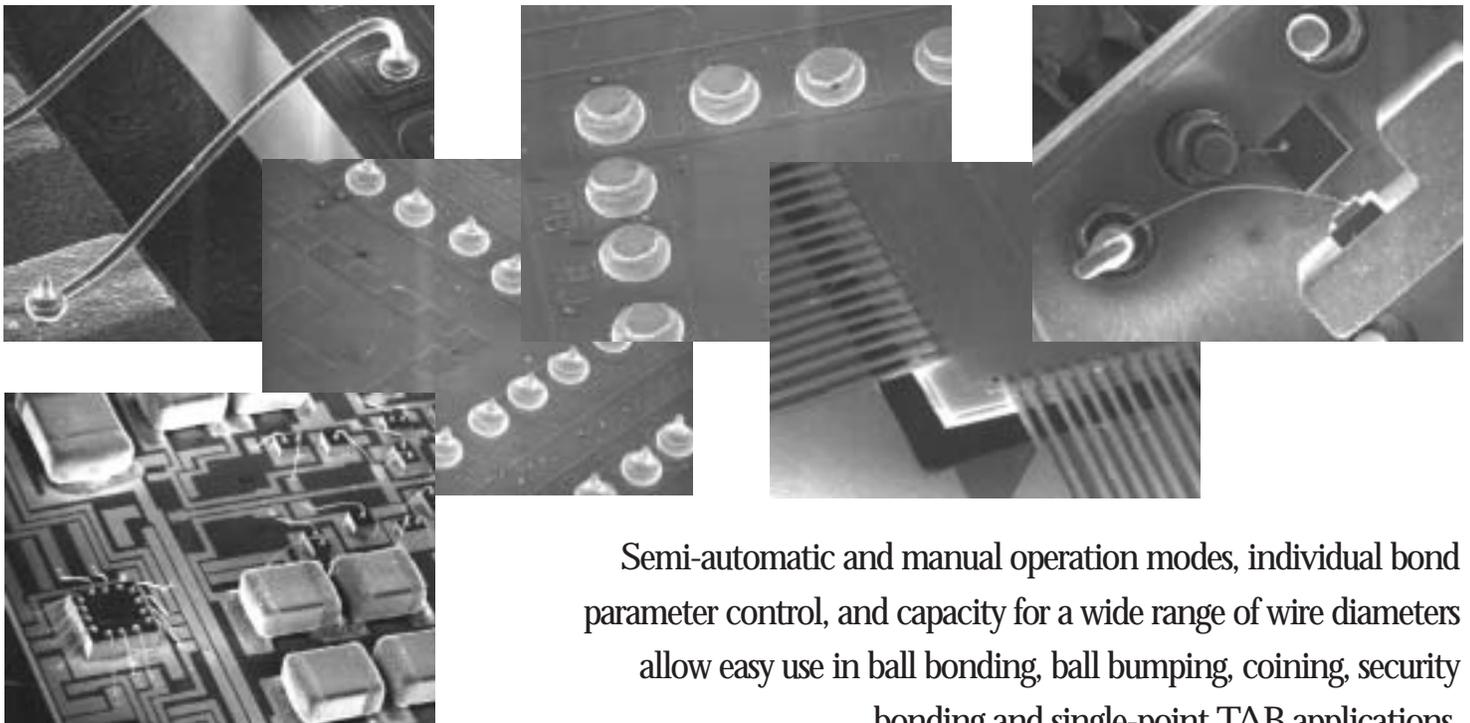
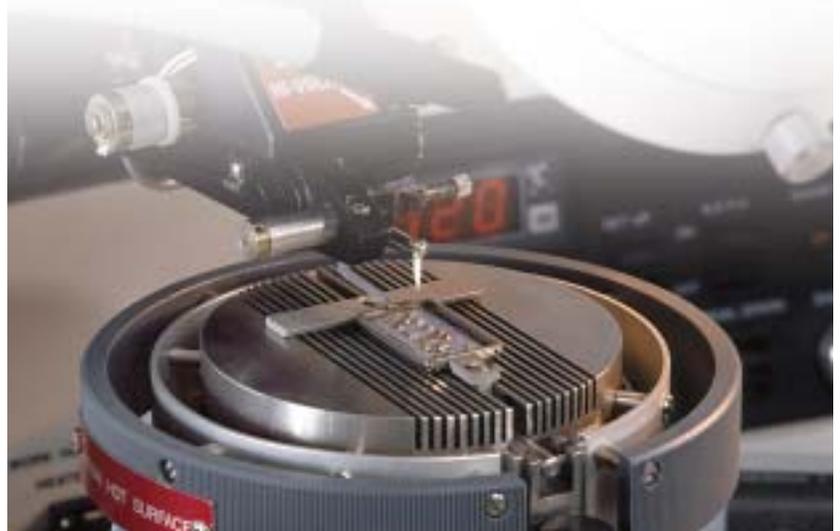
# The precision and reliability of full automation.

## 4500 Series Features

- Consistent ball size via Negative Electronic Flame-Off
- Missing ball detection and auto-stop
- Large 6" x 6" bonding area
- Consistent tail length with fine adjustment on operator panel
- Deep access capability (optional)
- Z axis DC servo motion with closed-loop control
- Phase Locked Loop (PLL) ultrasonic generator and high-Q transducer
- Built-in temperature controller
- Leica™ microscope and spotlight targeting options available
- Ergonomic design with choice of left or right-hand mouse

For process development, production, research or added manufacturing support, the versatile 4500 Series Manual Ball Bonding Systems provide the high yield and excellent repeatability needed for every gold ball bonding application, including:

- Optoelectronic Modules
- Hybrid/MCMs
- Microwave Products
- Discrete Devices/Lasers



Semi-automatic and manual operation modes, individual bond parameter control, and capacity for a wide range of wire diameters allow easy use in ball bonding, ball bumping, coining, security bonding and single-point TAB applications.

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## Digital/Analog Systems

### Model 4524AD Programmable Digital

The 4524AD Programmable Digital System manages 200 programs, with up to six channels per program. You can store process programs and load them instantly. The programmable wire cycle combines flexibility and consistency for high yields.



*Left-hand Mouse  
(includes Manual Z Lever  
on right-hand side)*

Choose from three (3) different mouse configurations to provide your operators the maximum in comfort and process control.



*Right-hand Mouse  
(includes Manual Z Lever on left-hand side)*

*Right-hand Mouse w/ Integrated Z Switch*



- Motorized Y axis and programmable auto-stepback function for precise wire length and loop formation
- 200 program storage capacity w/ six independent channels per program
- Auto-2nd bond mode for complete single wire programmed sequence

- Digital readout of all bonding parameters

### Model 4522

The 4522 analog model is known worldwide.



*Portable Dials Option  
(4522 only)*

*Manual  
Z Lever*

# 4500 Series Ball Bonders

## Digital/Analog Systems

### Functional Comparison

Model 4522

Model 4524AD

#### Modes of Operation

Full Manual Mode (Manual Z Control and Manual X-Y Positioning)	•	•
Semi-automatic Z Mode (Semi-automatic Z control and Manual X-Y)	•	•
Semi-automatic Z & Auto-Stepback Mode (Semi-automatic Z and Auto-Stepback)		•
Auto-2nd Bond Mode (Automatic Second Bond Cycle including Stepback)		•

#### Multi-Process Capability

Ball Bonding, Bumping, Coining, Security Bonding, TAB*	•	•
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#### Motorized Y Axis and Auto-Stepback

for controlled, highly repeatable wire length and loop formation		•
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### 4500 Series Technical Specifications

Wire Diameter	0.7 mil (min) 3 mil (max)	18 µm (min) 76 µm (max)
Spool Size	2"	50.8 mm
Bonding Area	6" x 6"	152 mm x 152 mm
Throat Depth	5.6"	143 mm
Gross Table Motion	5.5"	140 mm
Fine Table Motion	0.55"	14 mm
Mouse Ratio	6:1	
" Z" Axis Movement	DC Servo w/ closed-loop control	
" Z" Axis Travel	0.360"	9.1 mm
Ultrasonic System	high Q 60 kHz transducer PLL ultrasonic generator	
Low Ultrasonic Power	1.3 W	
High Ultrasonic Power	2.5 W	
Bond Time		
Ball Bonding/Bumping	10-200 ms	
Single Point TAB*	20-1000 ms	
Bond Force Force Coil	10-160 g	
Wire Termination	clamp/tear; adjustable tail	
Ball Formation System	Negative Electronic Flame-Off	
Missing Ball System	error indication and auto-stop	
Temperature Controller	up to 250° ± 0.5°C	
Electrical Requirements	100-120/220-240 VAC, 50/60 Hz, 250 VA max.	
Physical Dimensions	27" (680 mm) W x 27.5" (700 mm) D x 21" (530 mm) H	
Weight		
Shipping	122 lbs	55 kg
Net	69 lbs	31 kg

### Options and Accessories

Single-Point TAB Kit w/  
Programmable Z Axis  
ESD Protection Kit  
Portable Dials Kit (4522 Only)



For sales, service and manufacturing locations, visit:

[www.kns.com](http://www.kns.com)

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Literature ID# DID-810/Revision 11/02

