WIRE BONDER TECHNICAL SPECIFICATIONS

MACHINE TYPE, WORKING AREA, ACCURACY & PERFORMANCE, WIRE & RIBBON SPECIFICATIONS





Parameter	SERIES 53	SERIES 56i	SERIES 58	SERIES 86	SERIES 90
MACHINE TYPE					
Type Designation	Series 53	Series 56i	Series 58	Series 86	Series 90
Automation Level	Manual / semi-automatic	Semi-automatic / fully automatic	Semi-automatic / fully automatic	Semi-automatic / fully automatic	Semi-automatic / fully automatic
Application	Development, R&D, laboratory	R&D, small series, production	High productivity, production	Battery bonding, large components, heavy wire, R&D	High production thin & heavy wire, pull & shear testing
Key Features	6-in-1 multifuctional device, manual tabletop bonder, unbeatable price-per-formance ratio	7-in-1 multifunctional device, changeable bond heads, P/S, BAMFIT	4-in-1 multifuctional device,, flexible in production	4-in-1 multifuctional device, max. flexibility, cleaning, bonding, testing, P/S, BAMFIT	7-in-1 multifunctional device, changeable bond heads, flexible in production and automation, BAMFIT
WORKING AREA					
Max. Bonding Area (X × Y)	18 x 18 mm (0.71 x 0.71") Manipulator	100 x 100 mm (3.94 x 3.94")	200 x 150 mm (7.87 x 5.91")	Up to 700 x 480 mm (28.3 x 20.2")	700 x 480 mm (27.6 x 18.9")
Z-Axis Travel	60 mm (2.36")	60 mm (2.36") - optional extension to 140 mm (5.51")	100 mm (3.94")	100 mm (3.94")	100 mm (3.94")
Standard Working Height	-	-	-	Partial SMEMA specification	SMEMA compliant
ACCURACY & PERFORMANCE					
Positional Accuracy (Placement)	-	± 5 µm @ 3σ (PRU/Wire/Tool/Application)	± 5 µm @ 3σ (PRU/Wire/Tool/Application)	± 10 µm @ 3σ (PRU/Wire/Tool/Application)	± 5 µm @ 3σ (PRU/Wire/Tool/Application)
Repeatability	-	± 3 µm @ 3σ (PRU/Wire/Tool/Application)	± 3 µm @ 3σ (PRU/Wire/Tool/Application)	± 5 µm @ 3σ (PRU/Wire/Tool/Application)	± 3 µm @ 3σ (PRU/Wire/Tool/Application)
Speed / Cycle Time	Manual operation	Bonding 1 Wire > 1sec (application dependent)	1 Wire > 1sec (application dependent)	1 Wire approx. 1sec (application dependent)	1 Wire < 1sec (application dependent)
Axis Resolution	-	0.1 µm	0.1 µm	0,5µm	<0,1µm
WIRE & RIBBON SPECIFICATIONS (depending on bond head)					
Wire Diameter - Gold (Au)	17.5 - 50 µm (0.7 - 2.0 mil)	12 - 50 µm (0.5 - 2.0 mil)	12 - 50 µm (0.5 - 2.0 mil)	-	12 - 50 µm (0.5 - 2.0 mil)
Wire Diameter - Aluminum (Al) Thin	17.5 - 75 µm (0.7 - 3.0 mil)	12 - 75 µm (0.5 - 3.0 mil)	12 - 75 µm (0.5 - 3.0 mil)	-	12 - 75 µm (0.5 - 3.0 mil)
Wire Diameter - Aluminum (Al) Heavy	100 - 500 µm (4 - 20 mil)	100 - 500 µm (4 - 20 mil)	100 - 500 µm (4 - 20 mil)	100 - 500 µm (4 - 20 mil)	100 - 500 µm (4 - 20 mil)
Wire Diameter - Copper (Cu)	100 - 300 µm (4 - 12 mil)	100 - 300 µm (4 - 12 mil)	100 - 300 µm (4 - 12 mil)	100 - 300 µm (4 - 12 mil)	100 - 300 µm (4 - 12 mil)
Ribbon - Aluminum (Al) Thin	Up to 250 x 25 µm (10 x 1 mil)	Al, Au ribbons	Al, Au ribbons	-	Al, Au ribbons
Ribbon - Aluminum (Al) Heavy	Up to 2 mm (0.08") width	Up to 2 mm (0.08") width	Up to 2 mm (0.08") width	Up to 2 mm (0.08") width	Up to 2 mm (0.08") width

FMS BONDTEC

WIRE BONDER TECHNICAL SPECIFICATIONS

ULTRASONIC GENERATOR OPTIONS, BOND HEAD OPTIONS, PROCESS CONTROL & FEATURES





Parameter	SERIES 53	SERIES 56i	SERIES 58	SERIES 86	SERIES 90
ULTRASONIC GENERATOR OPTIONS					
USG-16 (Standard Digital Generator)	50 Watt | Frequency range: 20-200 kHz (digitally adjustable) | 2 Frequency presets via digital potentiometers | Manual switching between presets for different bond heads				
D-USG X (Premium Digital Generator)	50 Watt | Frequency range: 20-200 kHz (digitally adjustable) | Unlimited frequency files | Automatic head-specific loading | Frequency sweep function | Transducer health check with visualization				
D-USG XL (Premium Digital Generator)	200 Watt | Frequency range: 20-200 kHz (digitally adjustable) | Unlimited frequency files | Automatic head-specific loading | Frequency sweep function | Transducer health check with visualization				
BOND HEAD OPTIONS (Exchangeable)					
Gold-Ball / Ball-Wedge Bond Head	5310	10i	10i	-	10
Thin Wire Wedge-Wedge	5330	30i	30i	-	30
Thin Wire Deep Access	53XX BDA	32i	32i	-	32
Heavy Wire	5350	50i	50i	50i	50
Heavy Ribbon	5350 HR	50HRi	50HRi	50HRi	50HR
Die Bonder	5380	-	-	-	-
Bond Tester	-	00Ci	-	00Ci	00C
BAMFIT	-	BFi	-	BFi	BFi
PROCESS CONTROL & FEATURES					
Max. Bond Force (Heavy Ribbon)	Up to 4,000 cN	Up to 4,000 cN	Up to 4,000 cN	Up to 4,000 cN	Up to 4,000 cN
Touchdown Sensor	Measure height for each bond	Measure height for each bond	Measure height for each bond	Measure height for each bond	Measure height for each bond
Wire Guide Angles	45° (30°, 60°, 90° optional)	45° (30°, 60°, 90°)	45° (30°, 60°, 90°)	45° (others optional)	45° (30°, 60°, 90°)
Deformation Limit Control (DLC)	-	Yes (real-time quality checks)	Yes (real-time quality checks)	Yes (real-time quality checks)	Yes (real-time quality checks)
Loop Control	Programmable (dual wire clamp)	Fully programmable loop shapes	Fully programmable loop shapes	Fully programmable loop shapes	Fully programmable loop shapes
Bond Programs	Storable	Unlimited storage	Unlimited storage	Unlimited storage	Unlimited storage

FMS BONDTEC

WIRE BONDER TECHNICAL SPECIFICATIONS

VISION & SOFTWARE, AUTOMATION & CONTROL, SPECIAL FEATURES & OPTIONS





Parameter	SERIES 53	SERIES 56i	SERIES 58	SERIES 86	SERIES 90
VISION & SOFTWARE					
Control System / PC	Singleboard PC	Intel i5 Industrial PC, 8GB RAM, 2x SSD, min. 2x Gigabit Ethernet, USB 3	Intel i5 Industrial PC, 8GB RAM, 2x SSD, min. 2x Gigabit Ethernet, USB 3	Intel i5 Industrial PC, 8GB RAM, 2x SSD, min. 2x Gigabit Ethernet, USB 3	Intel i5 Industrial PC, 16GB RAM, 2x SSD, min. 2x Gigabit Ethernet, USB 3, high performance graphics card
Pattern Recognition	-	Edge detection, grey scale search, binary search, battery search, add-on AI pattern recognition	Edge detection, grey scale search, binary search, battery search, add-on AI pattern recognition	Edge detection, grey scale search, binary search, battery search, add-on AI pattern recognition	Edge detection, grey scale search, binary search, battery search, add-on AI pattern recognition
Software	Menu-guided teach-in	BONDSTAR 2.0, innovative & intuitive programming with drag-and-drop in live view, real-time try-and-error feedback for pattern recognition	BONDSTAR 2.0, innovative & intuitive programming with drag-and-drop in live view, real-time try-and-error feedback for pattern recognition	BONDSTAR 2.0, innovative & intuitive programming with drag-and-drop in live view, real-time try-and-error feedback for pattern recognition	BONDSTAR 2.0, innovative & intuitive programming with drag-and-drop in live view, real-time try-and-error feedback for pattern recognition
Operating System	Windows 10 IoT	Windows 11 IoT	Windows 11 IoT	Windows 11 IoT	Windows 11 IoT
Traceability & Interfaces	-	GRPC for Industrie 4.0, OPC UA for monitoring, SMEMA and Hermes for inline automation	GRPC for Industrie 4.0, OPC UA for monitoring, SMEMA and Hermes for inline automation	GRPC for Industrie 4.0, OPC UA for monitoring, SMEMA and Hermes for inline automation	GRPC for Industrie 4.0, OPC UA for monitoring, SMEMA and Hermes for inline automation
AUTOMATION & CONTROL					
Axis Control	Stepper motor driven Z/Y axis	Room curve trajectory with closed loop field rotation drives, P ± 380°	Room curve trajectory with closed loop field rotation drives, P ± 380°	Room curve trajectory with closed loop field rotation drives, P ± 380°	Room curve trajectory with closed loop high voltage linear drive, P ± 380°
Parts Feeding	Manual	Manual part loading or automation with robots	Manual part loading or automation with robots	Manual loading or fully automation conveyor or robots	Manual loading or fully automation conveyor or robots
Manipulator Reduction	1:7	-	-	-	-
SPECIAL FEATURES & OPTIONS					
Head Change Time	Quick & simple	< 2 minutes	< 2 minutes	< 2 minutes	< 2 minutes
CO2 Cleaning	-	-	-	JetBox integrated (optional)	JetBox (optional)
Calibration System	-	MCS-20 compatible	MCS-20 compatible	MCS-20 compatible	MCS-20 compatible
Compatible Generators	Standard US generator	D-USG X + XL	D-USG X + XL	D-USG X + XL	D-USG XL

FMS BONDTEC

WIRE BONDER TECHNICAL SPECIFICATIONS

MECHANICAL DATA, COMPLIANCE & STANDARDS, CONTACT





Parameter	SERIES 53	SERIES 56i	SERIES 58	SERIES 86	SERIES 90
MECHANICAL DATA					
Dimensions (W × D × H)	700 x 630 x 475 mm (27.6 x 24.8 x 18.7“) - Note: power socket at rear, add depth clearance	710 x 740 x 580 mm (28.0 x 29.1 x 22.8“)	915 x 765 x 650 mm (36.0 x 30.1 x 25.6“) - Width with monitor: 1150 mm (45.3“) - Note: power socket at rear, add depth clearance	1300 x 1250 x 2290 mm (51.2 x 49.2 x 90.2") with signal lamp / 1990 mm (78.3") without signal lamp	1300 x 1275 x 1910 mm (51.2 x 50.2 x 75.2“) with signal lamp / 1704 mm (67.1“) without signal lamp
Machine Type	Tabletop	Tabletop	Tabletop	Stand alone	Stand alone
Weight	Approx. 30 kg (66 lbs)	Approx. 75 kg (165 lbs)	Approx. 80 kg (176 lbs)	Approx. 800 kg (1,764 lbs)	Approx. 800 kg (1,764 lbs)
COMPLIANCE & STANDARDS					
Certification	CE Declaration of Conformity	CE Declaration of Conformity	CE Declaration of Conformity	CE Declaration of Conformity	CE Declaration of Conformity
Z-Axis Travel	Directive 2006/42/EG	Directive 2006/42/EG	Directive 2006/42/EG	Directive 2006/42/EG	Directive 2006/42/EG

Notes:

- All specifications are typical values unless otherwise stated
- Technical specifications subject to change without notice
- Bond head specifications depend on selected configuration
- For detailed specifications and custom configurations, please contact F&S BONDTEC sales team

F&S BONDTEC Semiconductor GmbH

Industriezeile 49a | 5280 Braunau am Inn | Austria

+43-7722-670 52-8270

info@fsbondtec.at

www.fsbondtec.at

Wire Bonder Technical Specifications Version 1.0.0