








Comparison Table

ESU Model	ForceTriad™	VIO 300D	Alsa NHP 250/DA	ARC 350	Maxium	DRE Citadel X3	TOM 412A	Iconic IS410S								
Company	Covidien (Valleylab)	ERBE	Alsa	Bowa	KLS Martin	DRE	TEKNO	Kavandish System								
Picture																
Output configuration	Isolated output	Isolated output	Isolated output	Isolated output	Isolated output	Isolated output	Isolated output	Isolated output								
Cooling	Natural and forced convection, and fan		by convection, without fan	Convection, Temperature-controlled fan			by convection	Natural convection								
Fundamental Frequency	472KHZ	350 KHZ	440 kHz ± 5%		357 to 961KHZ	440 KHz	450 KHz ±3%	410 KHZ								
Display	3 LCD, touch screens, 14.5 cm (5.7 in) diagonal	TFT-Display and Focus View	Number of displays /indicators: 5	Display and indicators	Clear 8.4" screen	TFT color touchscreen panel	Number of displays /indicators: 5	LCD display has 4 lines of 20 characters for setting modes and memories and displaying alarms and messages / 9x seven-Segment, for displaying output powers								
Dimensions and Weight	457 x508 x254/ mm / 13.6 kg	410 x 380 x 165 mm / 9.5 kg	380x380x160mm/ 16kg	430 x 180 x 475 mm/ 12.5 kg	390 x 182 x435 mm/ 8.3 kg	420 x 450 x 175 mm/ 7.5 kg	400 x 400 x 180 mm/ 18Kg	400 x 440 x 170mm/ 8kg								
Monopolar Cut Output Characteristics	<ul style="list-style-type: none"> Pure: 300W Blend: 200W 	<ul style="list-style-type: none"> Auto cut: 300W HIGH Cut: 300W Dry cut: 200W 	<ul style="list-style-type: none"> Pure: 280W Blend I: 280W Blend II:140W Auto Pure: 280W Auto Blend: 280W Auto Endo: 220W 	<ul style="list-style-type: none"> Standard: 100W Micro: 20W Dry:100W Argon:100W Resection: -- MertaLOOP:-- Laparoscopy :100W 	Max cutting power: 360 W <ul style="list-style-type: none"> Pure cut: 360W Blend: 250W Super Blend: 150W Uro Pure Cut: 360W Uro Blend Cut:320W Polyp I,II: 350W Papilla I,II,III: 180W ESD:180W Soft Cut: 180W Argon Cut:360W 	<ul style="list-style-type: none"> Low Cut: 400 W Pure Cut: 400 W Blend1: 250 W Blend2: 200 W Endo1: 400 W Endo2: 400 W Hydro: 400 W 	<ul style="list-style-type: none"> PURE: 400W BLEND SOFT: 300W BLEND STRONG:130W CV PURE: 400W CV BLEND: 300W CV ENDO: 250W 	<table border="1"> <tr><td>Pure</td><td>360W</td></tr> <tr><td>Blend1</td><td>330W</td></tr> <tr><td>Blend2</td><td>300W</td></tr> <tr><td>Blend3</td><td>270W</td></tr> </table>	Pure	360W	Blend1	330W	Blend2	300W	Blend3	270W
Pure	360W															
Blend1	330W															
Blend2	300W															
Blend3	270W															
Monopolar Coag Output Characteristics	<ul style="list-style-type: none"> Fulgurate: 120W Spray: 120W 	<ul style="list-style-type: none"> Swift coag: 200W Forced coag:120W Soft coag: 200W Spray coag: 120W 	(ADC System) <ul style="list-style-type: none"> Fulg Forced:150W PIN POINT CONTACT:250W Soft :280W Spray:140W 	<ul style="list-style-type: none"> Moderate:60W Forced non cutting:50W Forced mixed:60W Forced cutting:80W Spray:80W Resection:60W 	Maximum coagulation power:320W <ul style="list-style-type: none"> Clamp Coag: 250W Forced Clamp: 150W Forced Prep: 150W Contact Coag: 250W 	<ul style="list-style-type: none"> Soft: 300 W Desiccate: 200 W Swift: 120 W Force:120 W Spray:120 W Hi-Spray: 70 W 	<ul style="list-style-type: none"> FLUG:140W PIN POINT:250W SOFT: 270W SPRAY:130W 	<table border="1"> <tr><td>Swift</td><td>200W</td></tr> <tr><td>Forced</td><td>140W</td></tr> <tr><td>Spray</td><td>120W</td></tr> <tr><td>Soft</td><td>100W</td></tr> </table>	Swift	200W	Forced	140W	Spray	120W	Soft	100W
Swift	200W															
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				<ul style="list-style-type: none"> • Cardiac mammary:15W • Cardiac Thorax: 15W • SimCoag:60W • Gastro Coag:15W • Laparoscopy:60W 	<ul style="list-style-type: none"> • Forced Coag: 150W • Uro Coag: 150W • Forced Uro Coag: 150W • Spray: 150W • Air Beam: 150W • Endo Spray: 100W • Duo Prep: 150W • Duo Spray: 150W 	<ul style="list-style-type: none"> • Hydro: 120 W 					
APC(Argon plasma coagulation)	---	<ul style="list-style-type: none"> • Forced APC: 120W • Pulsed APC: 120W 	SPRAY+ ARGON GAS: 140W Max. flow and gas pressure:15lt/min. At the entrance: 2.5atm; during the functioning: 1atm	<ul style="list-style-type: none"> • Argon open:80W • Argon flexible:40W • Argon flex pulse: 20W 	<ul style="list-style-type: none"> • Argon Beam: 150W • Endo Argon: 100W • Pulsed Argon I,II:100W 	Optional argon beam coagulation	<ul style="list-style-type: none"> • ARGON GAS COAGULATION: 130W 	Continuous Argon 100W Pulsed Argon 50W			
Bipolar Output Characteristics	<ul style="list-style-type: none"> • Low : 95W • Standard: 95W • Macro: 95W • Auto Bipolar 	<ul style="list-style-type: none"> • Bipolar Cut:100W • Bipolar Soft Coag: 120W • Bipolar Forced Coag: 90W • Auto Bipolar 	<ul style="list-style-type: none"> • Pure:160W • Blend:130W • Micro CV, Micro HC:130W • Macro:130W 	<ul style="list-style-type: none"> • Standard(Bip cut):100W • Standard forceps (Bip Coag):40W 	<ul style="list-style-type: none"> • Bipolar Pure Cut: 120W • Bipolar Blend Cut: 120W • Foreflex: 120W • Uro Bip Pure Cut: 350W • Uro Bip Blend Cut: 350W • Micro Coag:50W • Macro Coag: 120W • Neptun: 250W • Bipol TUR Coag: 200W 	Bipolar Coag <ul style="list-style-type: none"> • Micro: 120 W • Standard: 120 W • Force: 120 W • Bip Cut: 120 W • Macro Cut: 120 W 	(Bipolar cutting) <ul style="list-style-type: none"> • PURE:160W • SALINE:160W (Bipolar coagulation) <ul style="list-style-type: none"> • MICRO:120W • AUTO:120W • FORCED MICRO:120W 	Bipolar Cut 100W Bipolar Coag. 80W Auto Start Bipolar Coag 50W			
LigaSure Output Characteristics	350 W	BiClamp (optional)	Seal HC:130W	Tissue Seal PLUS (optional):200W	<ul style="list-style-type: none"> • SealSafe:320W • SealSafe® IQ: 320W 	<ul style="list-style-type: none"> • Fine seal: Low Pulse output, 5 levels, 150 W at 100 Ω, CF 1.5 • Rapid seal: High Pulse output, 5 levels, 150 W at 100Ω, CF 1.5 	SEALING: 120W	<table border="1"> <tr> <td>Seal1</td> <td rowspan="2">4~5 Second</td> </tr> <tr> <td>Seal2</td> </tr> </table> Max: 160	Seal1	4~5 Second	Seal2
Seal1	4~5 Second										
Seal2											

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Input mains voltage 110V	full regulation range 90-132 VAC	100-120 V AC	115V ± 10%	90 V to 130 V	100 ± 10 %		115 V AC	100-130 V AC(optional)
Input mains voltage 220V	full regulation range 208-264 VAC	220-240 V AC	230± 10%	198 V to 264 V	240 V ± 10 %	180-265 V AC	230 V AC	220-240 V AC
Power input during max RF output	924 VA	920 VA	828 VA	1150 VA	600 VA	Max. Power input: 1000 VA	820VA	800 VA
Mains frequency (nominal)	50 Hz to 60 Hz	50 Hz to 60 Hz	50 Hz to 60 Hz	50 Hz to 60 Hz	50 Hz to 60 Hz	50 Hz to 60 Hz	50 Hz to 60 Hz	50Hz to 60 Hz
Fuses	8 A- 250 V fast blow	T 8 A / T 4 A	T 5 A	2 x 5 A slow-blow 2 x 10 A slow-blow	6.3 A	Fuse: 4 A	2, situated on the rear side (T5A)	5 A - 250 V Standard
Classification acc. to 93/42 EWG	I Ib	I Ib	I Ib	I Ib	I Ib	I Ib	I Ib	I Ib
Protection category acc. to EN 60 601-1	I	I	I	I	I	I	I	I
Type acc. to EN 60 601-1	CF	CF	CF	CF	CF defibrillator-proof	CF	CF	CF
Intermittent operation	ON time 25% (e.g. activated for 10 sec. / deactivated for 30	ON time 25% (e.g. activated for 10 sec. / deactivated for 30	Neutral electrode safety circuit with acoustic signal (loud and intermittent)	10 s / 30 s (on/off)	Intermittent INT 10 s / 30 s corr. to 25 % duty factor			ON time 25% (e.g. activated for 10 sec. / deactivated for 30
Return electrode monitor	✓	✓	✓	✓	✓	✓	✓	✓
Contact quality monitor	✓	✓	✓	✓	✓	✓	✓	✓
Dual foot pedals	✓	✓	✓	✓	✓	✓	✓	1
single foot pedals	✓	✓	✓	✓	✓	✓	✓	1
Intelligent power control	✓	✓	✓	✓	✓	✓	✓	✓
Monopolar instrument Receptacles	2	1	2	2	2	2	2	2pcs, compatible with the Bowa, Fiab, Martin, Tecno and Valleylab
Bipolar instrument Receptacles	1	1	2	2	2 Connection of 4 bipolar instruments using bipolar port expanders	1	2	1pcs, compatible with the Bowa, Fiab, Martin, Tecno and Valleylab
LigaSure instrument Receptacles	2	1	Same as Bipolar	---	Same as Bipolar	2	Same as Bipolar	1pcs, compatible with instruments made by valleylab, Martin, Bowa
MF Receptacles	---	1	---	---	---	---	---	---
programmable	✓	✓	✓	✓	✓	✓	✓	✓

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Leakage current detection	✓	✓	✓	✓	✓	Not specified	✓	✓
Auto start/ Auto stop	✓	Auto bipolar	✓	Bipolar auto start	✓	Bipolar auto start/stop	✓	✓
Self check	✓	✓	✓	✓	✓	✓	✓	✓

Comparison Table			
ESU Model	ForceTriad™	VIO 300D	Iconic IS410S
Company	Covidien (Valleylab)	ERBE	Kavandish System
Output configuration	Isolated output	Isolated output	Isolated output
Cooling	Natural and forced convection, and fan		Natural convection
Fundamental Frequency	472KHZ	350 KHZ	410 KHZ
Display	3 LCD, touch screens, 14.5 cm (5.7 in) diagonal	TFT-Display and Focus View	LCD display has 4 lines of 20 characters for setting modes and memories and displaying alarms and messages / 9x seven-Segment, for displaying output powers
Dimensions and Weight (Width x Depth x Height / Weight)	457 x508 x254 mm / 13.6 kg	410 x 380 x 165 mm / 9.5 kg	400 x 440 x 170mm/ 8kg
Monopolar Cut Output Characteristics	Pure 300W Blend 200W	Auto cut 300W HIGH Cut 300W Dry cut 200W	Pure 360W Blend1 330W Blend2 300W Blend3 270W
Monopolar Coag Output Characteristics	Fulgurate 120W Spray 120W	Swift coag 200W Forced coag 120W Soft coag 200W Spray coag 120W	Swift 200W Forced 140W Spray 120W Soft 100W
APC(Argon plasma coagulation)	---	Forced APC 120W Pulsed APC 120W	Continuous Argon100W Pulsed Argon 50W
Bipolar Output Characteristics	Low 95W Standard 95W Macro 95W Auto Bipolar	Bipolar Cut 100W Bipolar Soft Coag. 120W Bipolar Forced Coag. 90W Auto Bipolar	Bipolar Cut 100W Bipolar Coag. 80W Auto Start Bipolar Coag50W
LigaSure Output Characteristics (average seal cycle)	LigaSure™ 2~4 Seconds with	BiClamp(optional)	Seal1 Seal2 4~5 Second
Input mains voltage 110V	full regulation range 90-132 VAC	100-120 V AC	100-130 V AC(optional)
Input mains voltage 220V	full regulation range 208-264 VAC	220-240 V AC	220-240 V AC

ESU Model	ForceTriad™	VIO 300D	Iconic IS410S
Power input during max RF output	2080 VA	920 VA	800 VA
Mains frequency (nominal)	50 Hz to 60 Hz	50 Hz to 60 Hz	50Hz to 60 Hz
Fuses	8 A- 250 V fast blow	8 A- 250 V	5 A - 250 V Standard
Classification acc. to 93/42 EWG	I Ib	I Ib	I Ib
Protection category acc. to EN 60 601-1	I	I	I
Type acc. to EN 60 601-1	CF	CF	CF
Intermittent operation	ON time 25% (e.g. activated for 10 sec. / deactivated for 30)	ON time 25% (e.g. activated for 10 sec. / deactivated for 30)	ON time 25% (e.g. activated for 10 sec. / deactivated for 30)
Return electrode monitor	✓	✓	✓
Contact quality monitor	✓	✓	✓
Dual foot pedals	4	2	1
single foot pedals	--	--	1
Intelligent power control	✓	✓	✓
Monopolar instrument Receptacles			2pcs, compatible with the Bowa, Fiab, Martin, Tecno and Valleylab
Bipolar instrument Receptacles			1pcs, compatible with the Bowa, Fiab, Martin, Tecno and Valleylab
Patient plate instrument Receptacles			1pcs, compatible with the Bowa, Erbe, Fiab, Martin and Valleylab
LigaSure instrument Receptacles			1pcs, compatible with instruments made by valleylab, Martin, Bowa
Standard	IEC 60601-1, IEC 60601-1-2 and IEC 60601-2-2, IEC 60601-1-8	IEC 60601-1, IEC 60601-1-2 and IEC 60601-2-2, IEC 60601-1-8	IEC 60601-1, IEC 60601-1-2 and IEC 60601-2-2 , IEC 60601-1-8
programmable	✓	✓	✓
Other features not listed	✓	✓	✓
Warranty	One year from date of shipment	ERBE warrants the material and workmanship of the VIO ESU for a period of 2 years from the delivery date with the accessories [e.g., cables/cords, footswitch(es), etc.] having a 90 day warranty from the delivery date	This product is warranted for 24 months from the date of device delivery to the user. During this period any failure in the device due to defective parts or system error caused by manufacture will be fixed free of charge in the company+12month golden warranty*

ESU Model	ForceTriad™	VIO 300D	Iconic IS410S
Maximum Services Time			>2.5 Days(with backup devices**)
Training	Through website	Through website	Support through Website, Face training, social networks and ...

Surgical applications	ForceTriad™	VIO 300D	Iconic IS410S
Cardiac	✓	✓	✓
Chiropody	✓	✓	✓
Colposcopy	✓	✓	✓
Dental & oral	✓	✓	✓
Dermatology	✓	✓	✓
ENT	✓	✓	✓
Endoscopy	✓	✓	✓
Gastroenterology	✓	✓	✓
General surgery	✓	✓	✓
Genitourinary	✓	✓	✓
Gynaecology	✓	✓	✓
Laprosopic	✓	✓	✓
Maxillofacial	✓	✓	✓
Microsurgery	✓	✓	✓
Minor surgery	✓	✓	✓
Ophthalmology	✓	✓	✓
Orthopaedics	✓	✓	✓
Neurosurgery	✓	✓	✓
Paediatric	✓	✓	✓

Plastic & reconstructive	✓	✓	✓
Thoracic	✓	✓	✓
Urology (general)	✓	✓	✓
Vascular	✓	✓	✓
Vasectomy	✓	✓	✓

تهیه کننده: عبدالرضا سهیل نقشی تیر ۱۳۹۵