



## Features:

- TissueFect™ sensing technology is a Valleylab control system designed to precisely manage energy delivery, creating a range of options for desired tissue effect
- Enhanced LigaSure™ tissue fusion technology permanently fuses vessels up to and including 7mm, lymphatics, tissue bundles, and pulmonary vasculature
- All-in-one unit is compatible with conventional electrosurgical instruments and all current and new LigaSure™ instruments.

- cart is optional



Typical  
Manufacturer's  
Image



# Valleylab Force Triad ESU

## General:

- **Output Configuration:** Isolation output
- **Cooling:** Natural convection and fan
- **Display:** Three LCD touch screens
- **Connector ports:** LED illuminated Smart connector readers
  - Force Triad energy platform cart (FT900) Universal
  - Mounting cart (UC8009), and/or the UC8010 Overshelf
  - Operating room boom systems
  - Any Stable, flat surface such as a table or cart top

## Dimensions and Weight:

- **Height:** 25.5 cm (10 in.)
- **Width:** 45.8 cm (18 in.)
- **Depth:** 50.8 cm (20 in.)
- **Weight:** 13.6 kg (30 lbs)

## Activation Tone:

The audio levels stated below are for activation tones (cut, Valleylab, coag, bipolar, and LigaSure Modes) and alarm tones (REM and system alarms) at a distance of one meter.

- **Volume (adjustable):** 45 to 65 dBA
- **Frequency Cut:**
  - 660 Hz
  - Valleylab: 800 Hz
  - Coag: 940 Hz
  - Bipolar: 940 Hz
  - LigaSure: 440 Hz

**Duration:** Continuous while the system is activated

## Alarm Tone

- **Volume (adjustable):** >65 dBA
- **Frequency:**
  - REM: 660 Hz
  - Regrassp: Two tones: High= 985 Hz, Low = 780 Hz
  - Seal Complete: 985 Hz
  - Error/System Alert: Beep tone = 1400 Hz



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- **Duration:**
  - REM: Two 1/2 second tones separated by 1/2 second for each REM event
  - Reactivate/Regrasp: Four 175 msec tones-high, low, high-low separated by 1/2 second
  - Check Instrument: Six 175 msec tones – high, low, high low, high, low
  - Seal Complete: Two 175 msec tones separated by 175 msec for each Seal Complete event
  - Error/System Alert: Two 1/2 second tones separated by 1/2 second for each Error/System Alert event

### REM Contact Quality Monitor:

- **Interrogation frequency:** 80 kHz  $\pm$  10 kHz
- **Interrogation current:** < 100 $\mu$ A
- **Interrogation voltage:** < 12V RMS

### Acceptable Resistance Range:

REM resistance measurements are  $\pm$  10% during RF activation and  $\pm$  5% when RF output is not activated.

REM patient return electrode: 5 to 135 ohms or up to a 40% increase in the initial measured contact resistance (which ever is less).

If the measured resistance is outside the acceptable range(s) noted above, a REM fault condition occurs

### REM Alarm Activation:

REM patient return electrode: When the measured resistance exceeds the standard range of safe resistance (below 5 ohms or above 135 ohms) or when the initial measured contact resistance increases by 40% (whichever is less), the REM alarm indicator enlarges and flashes red and yellow, a tone sounds twice, and RF output is disabled. The indicator remains illuminated red and yellow until you correct the condition causing the alarm. Then, the indicator illuminates green and RF output is enabled.

### Autobipolar:

The ForceTriad energy platform is equipped with an autobipolar feature that allows for automatic activation of bipolar energy.

**Note:** The autobipolar electrode function requires the use of the Valleylab E0018 bipolar Instrument cord..



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## The autobipolar specifications are:

- **Interrogation frequency:** 80 kHz  $\pm$  10 kHz
- **Interrogation current:** < 100  $\mu$ A
- **Activation impedance:** 20  $\Omega$  to 500
- **Deactivation impedance:** User selectable: 1,500  $\Omega$  1,800  $\Omega$  or 2,200  $\Omega$
- **Measurement accuracy:**  $\pm$  14% of Full Scale activation impedance while keying active above 10 watts  
+ 50%, -14% of full scale activation impedance while keying active at 10 watts or below  
 $\pm$  5% of Full Scale activation impedance while keying inactive
- **Keying delay:** User selectable in 500 msec increments from 0 sec to 2.5 sec

## Duty Cycle:

Under maximum power settings and rated load conditions, the ForceTriad energy platform is capable of operating a duty cycle of 25% defined as 10 seconds active and 30 seconds inactive, in any mode for a period of 4 hours.

### Caution

Use of duty cycles greater than 25% (10 seconds active followed by 30 seconds inactive) will increase the risk that heat build-up under a return electrode may be high enough to injure the patient. Do not continuously activate for longer than one minute.

## Low Frequency (50/60 Hz) Leakage Current:

- **Enclosure source current, ground open** <300  $\mu$ A
- **Source current, patient leads, all outputs**
  - Normal polarity, intact ground: < 10  $\mu$ A
  - Normal polarity, ground open: < 50  $\mu$ A
  - Reverse polarity, ground open: < 50  $\mu$ A
  - Mains voltage on applied part: < 50  $\mu$ A
- **Sink current at high line, all inputs** <50  $\mu$ A

## Low Frequency (RF) Leakage Current:

	Measured with leads recommended by Valleylab	Measured directly at the energy platform terminals
• <b>Bipolar RF leakage Current:</b>	<59.2 mA rms	<59.2 mA rms
• <b>Monopolar RF leakage Current:</b>	<150 mA rms	<100 mA rms
• <b>LigaSure leakage :</b>	<132 mA rms	<100 mA rms



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## Input Power

<b>100-120 Volt</b>	<b>220-240 Volt</b>
Maximum VA at nominal line voltage: Idle: 52 VA Bipolar: 450VA Cut: 924 VA Coag: 530 VA	Maximum VA at nominal line voltage: Idle: 52 VA Bipolar: 450 VA Cut: 924 VA Coag: 530 VA
Input mains voltage, full registration range: 90-132 Vac	Input mains voltage, full regulation range: 208-264 Vac
Input mains voltage, operating range: 85-132 Vac	Input mains voltage, operating range: 170-264 Vac

  

<b>100-120 Volt</b>	<b>220-240 Volt</b>
Mains current (maximum): Idle: 0.4 A Bipolar: 2.0 A Cut: 7.0 A Coag: 4.0 A LigaSure: 5.0 A	Mains current (maximum) Idle: 0.2 A Bipolar: 1.0 A Cut: 3.5 A Coag: 2.0 A LigaSure: 2.5 A
Mains line frequency range (nominal): 50 Hz to 60 Hz	Mains line frequency range (nominal): 50 Hz to 60 Hz
Fuses (2): 5mm x 20 mm 8A, 250 V: Fast blow	Fuses (2): 5mm x 20 mm 8A, 250 V: Fast blow
Power cord: 3-prong hospital grade: Connector	Power cord: 3-prong hospital grade: Connector



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### Output Characteristics

#### Maximum Output for Bipolar, Monopolar, and LigaSure Modes

Power readouts agree with actual power into related load to within 15% or 5 watts, whichever is greater.

Mode	Open Circuit Peak Voltage (max)	Open Circuit P-P Voltage (max)	Rated Load (max)	Power (max)	Crest Factor*	Duty Cycle
<b>Bipolar</b>						
Low	250 V	500 V	100 $\Omega$	95 W	1.42	N/A
Standard	175 V	500 V	100 $\Omega$	95 W	1.42	N/A
Macro	250 V	500 V	100 $\Omega$	95 W	1.42	N/A
<b>Monopolar Cut</b>						
Cut	920 V	1840 V	300 $\Omega$	300 W	1.42	N/A
Blend	1485 V	2970 V	300 $\Omega$	200 W	2.7	50%
<b>Valleylab (HWD)</b>	2365 V	4730 V	300 $\Omega$	200 W	4.3	25%
<b>Monopolar Coag</b>						
Fulgurate	3050 V	6100 V	500 $\Omega$	120 W	5.55	6.5%
Spray	3625 V	7250 V	500 $\Omega$	120 W	6.6	4.6%
<b>LigaSure</b>	287.5 V	575 V	20 $\Omega$	350 W	1.42	N/A

\*An indication of a waveform's ability to coagulate bleeders without a cutting effort.



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