



COVIDIEN

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# ForceTriad™ Energy Platform

## Specification Guide

CONFIDENCE



EVIDENCE-BASED



VERSATILITY



CONSISTENCY



TECHNOLOGY



IN THE MOST  
TRUSTED HANDS  
ON EARTH



## Output Waveforms

### Bipolar

<b>Low:</b>	472 kHz sinusoid
<b>Standard:</b>	472 kHz sinusoid
<b>Macro:</b>	472 kHz sinusoid

### Monopolar Cut

<b>Pure:</b>	472 kHz sinusoid
<b>Blend:</b>	472 kHz bursts of sinusoid, recurring at 26.21 kHz intervals. 50% duty cycle

### Valleylab™ Mode

<b>Valleylab™:</b>	472 kHz sinusoid, recurring at 28.3 kHz intervals. 25% duty cycle
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### Monopolar Coagulation

<b>Fulgurate:</b>	472 kHz damped sinusoid, recurring at 30.66 kHz intervals. 6.5% duty cycle
<b>Spray:</b>	472 kHz sinusoid, recurring at 21.7 kHz intervals. 4.6% duty cycle

## LigaSure™ Tissue Fusion Technology

### Seal:

472 kHz sinusoid, continuous output power changes by less than 15% or 5 watts, whichever is greater, as the line voltage varies from 90 - 132 volts and 208 - 264 volts (at rated load)

### Duty Cycle

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



Meets UL and cUL specifications.

The ForceTriad™ energy platform meets all pertinent clauses of the IEC 60601-1 second edition and IEC 60601-2-2 third edition.

## Low Frequency Leakage (50-60 Hz)

Source current, patient leads, all outputs tied together

Normal polarity, intact ground	< 10 µA
Normal polarity, ground open	< 50 µA
Reverse polarity, ground open	< 50 µA
Sink current, at high line, all inputs	< 50 µA
Enclosure source current, ground open	< 300 µA

## High Frequency Radiofrequency

Measured directly at the energy platform terminals

<b>Bipolar:</b>	< 59.2 mA <sub>rms</sub>
<b>Monopolar:</b>	< 100 mA <sub>rms</sub>
<b>LigaSure™:</b>	< 100 mA <sub>rms</sub>

## Weight and Dimensions

<b>Height:</b>	25.5 cm (10 in)
<b>Width:</b>	45.8 cm (18 in)
<b>Length:</b>	50.8 cm (20 in)
<b>Weight:</b>	13.6 kg (30 lbs)

## Input Power Requirements

Operating range is 90 to 264 AC volts 48 – 62 Hz. Maximum current is 7 amperes in Cut, 4 amperes in Coag and 5 amperes in LigaSure™ mode.

## REM™ Contact Quality Monitoring System

<b>Interrogation frequency:</b>	80 kHz ± 10 kHz
<b>Interrogation current:</b>	< 100 µA

Acceptance resistance range is 5 – 135 ohms or up to a 40% increase in the initial measured contact resistance (whichever is less).

## Adaptive REM™

REM™ trip is baseline impedance plus 40%. For example, if the baseline impedance is 30 ohms, the upper level trip is approximately 42 ohms. If the pad-patient impedance falls below the baseline impedance, a new baseline is established.

## Autobipolar

<b>Measurement frequency:</b>	80 kHz + 10 kHz
<b>Measurement current:</b>	< 100 µA
<b>Activation impedance:</b>	20 – 500 Ω
<b>Deactivation impedance:</b>	1.5 kΩ, 1.8 kΩ, 2 kΩ, 2.2 kΩ

<b>Keying delay:</b>	0.0 s, 0.5 s, 1.0 s, 1.5 s, 2.0 s, 2.5 s
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## General

### Output configuration

Isolated output

### Cooling

Natural convection and fan

### Display

3 LCD touch screens 14.5 cm (5.7 in) diagonal

### Mounting

Universal cart (UC8009); overshelf (UC8010), a stable flat surface; ForceTriad™ cart (FT900); or boom systems

## Operating Parameters

### Ambient temperature range

10° to 40° C (50° to 104° F)

### Relative humidity

30% to 75% noncondensing

### Atmospheric pressure

700 to 1060 millibars

### Warm-up time

If transported or stored at temperatures outside the operating temperature range, allow one hour for the energy platform to reach room temperature before use.

## Transport and Storage

### Ambient temperature range

-30° C to +65° C

### Relative humidity

0% to 90% (noncondensing) relative humidity

### Atmospheric pressure

500 millibars to 1060 millibars

### Duration of storage

The ForceTriad™ energy platform may be stored indefinitely. If the energy platform is stored over one year, the memory battery must be replaced

## Audio Volume

The stated audio level is for the activation tone and alarm tone at a distance of one meter. Alarm tones meet the requirements of IEC 60601-2-2.

### Activation Tone

**Volume** (adjustable) 45 to 65 dBA

### Frequency

 (nominal)

LigaSure™ mode 440 Hz

Bipolar mode 940 Hz

Cut 660 Hz

Coag 940 Hz

Valleylab™ mode 800 Hz

### Duration

Continuous while the energy platform is activated

### Alarm Tone

**Volume** (not adjustable) > 65 dBA

### Frequency

 (nominal)

REM™ 660 Hz

### Regrasp

Two tones:

High = 985 Hz, Low = 780 Hz

### Check Instrument

Two tones:

High = 985 Hz, Low = 780 Hz

**Seal Complete** 985 Hz

**Error/System Alert** 1400 Hz

### Duration

#### REM™

Two 0.5 s tones separated by a 0.5 s for each REM™ event

#### Reactivate/Regrasp

Four 175 ms tones – high, low, high, low separated by 0.5 s

#### Check Instrument

Six 175 ms tones – high, low, high, low, high, low

#### Seal Complete

Two 175 ms tones separated by 175 ms for each seal complete event – high, high

#### Error/System Alert

Three 0.5 s tones separated by a 0.5 s



## Monopolar and Bipolar Output Characteristics

	Mode	PER*	P-P Voltage	Rated Load (Ohms)	Maximum Power (Watts)	Duty Cycle
<b>Bipolar</b>	Low	98	500	100	95	N/A
	Standard		350	100	95	N/A
	Macro		500	100	95	N/A
<b>Monopolar Cut</b>	Pure	98	1840	300	300	N/A
	Blend		2970	300	200	50%
<b>Valleylab™ Mode</b>	Valleylab™	97	4730	300	200	25%
<b>Monopolar Coag</b>	Fulgurate	95	6100	500	120	6.5%
	Spray		7250	500	120	4.6%

\* PER (Power Efficiency Rating): A measure of an electrosurgical generator's ability to deliver the selected power into a wide range of impedance.

## LigaSure™ Output Characteristics

	Mode	P-P Voltage	Rated Load (Ohms)	Maximum Power (Watts)	Duty Cycle
<b>LigaSure™</b>	LigaSure™	575 @ 1kΩ	20	350	N/A

All specifications are nominal unless otherwise stated, and subject to change without notice.



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## Covidien

1000761 F  
Controlling Document - Mounting Cart FT900

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### 1.0 PURPOSE:

The Mounting Cart is designed to accommodate current and future Valleylab electrosurgical equipment. The basic cart consists of a cart with 3 shelves and a single drawer. The system can be enhanced by adding an additional drawer and/or a protective shield.

### 2.0 PRODUCTS:

The base cart and accessories are in the following series:

Catalog No.	Valleylab P/N	* Rev.	Description
FT900	1000761	*	Mounting Cart

### 3.0 ENGINEERING SPECIFICATION:

#### 3.1 Physical Specifications

##### 3.1.1 FT900 Mounting Cart

- Number: Catalog part number FT900 is the basic cart with one drawer and no accessories.
- Body:
  - Size: Approximate volume of space required for base cart at 30.818 (D) x 18.13 (W) x 36.682(H) inches. 43.102 inches high with casters.
  - Construction: Welded sheet metal (cold rolled steel thickness 20 to 12 GA.)
  - Color: Cardinal Blue T013-BL469,
  - Finish: Hammer texture powder finish
  - Logo Silkscreen: Cool Gray 1C
- Drawer:
  - Size: Drawer dimensions are approximately 19" (D) x 12" (W) x 3.2" (H). Inner drawer dimensions are approximately 18" (D) x 11" (W) x 3" (D).
  - Manufacturer: Plastic Design and Manufacturing (PD&M)
  - Material: PETG co-polyester sheet - 0.10" thick
  - Color: Clear
  - Finish: Matte finish on non-tooled surfaces
- Handle:
  - Construction: 1.50 inch diameter, 1/8" wall tube.
  - Color: Cardinal Cool Grey C081-GR1070
  - Finish: Powder coat
- Cord Management: 1 piece to accommodate 4 cords per basic cart FT900
- Base Casters:
  - Size: 5 inch diameter.
  - Manufacturer: Primary – MedCaster "A" NA-05RPP125SW-TS20 (non-locking); "B" NA-05RPP125SW-TW20 (locking)