Johnson&Johnson
MedTech

Energy

DUALTO™ Energy System Technical Information

Intelligent Energy Delivery for Optimal Device Performance

Desired tissue effects start with a highly capable generator designed to handle a variety of tissue conditions. The algorithms adjust so surgeons don't have to.

Heritage of Smart Technology

The DUALTO™ Energy System provides intelligent energy delivery built on 60 years of combined experience in basic and advanced energy.

Its smart algorithms adjust every millisecond to changes in tissue and device conditions so surgeons don't need to compensate or use multiple generators to complete surgical tasks.

Optimized Energy Delivery

DUALTO offers the industry standard monopolar and bipolar modes that can be used for cutting tissue and controlling bleeding.

For monopolar applications, its Geometric Electron Modulation (GEM) mode requires no power adjustments by the user to maintain a scalpel-like cut through varying tissue types with minimal thermal damage.

Powering Advanced Devices

In addition, DUALTO runs proprietary advanced algorithms for advanced bipolar and ultrasonic applications.

DUALTO uses Adaptive Tissue Technology algorithms to power HARMONIC™ and ENSEAL™ X1 devices. Adaptive Tissue Technology responds to changing tissue conditions, enabling more precise energy delivery and improved temperature management.[1A]

Standard Bipolar

Standard Monopolar

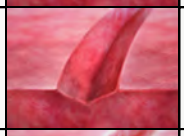
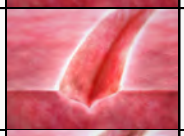
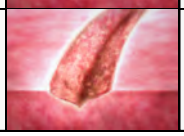
Advanced Energy Port powers HARMONIC™ and ENSEAL™ devices

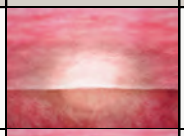
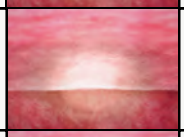
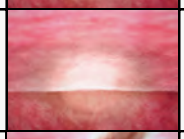
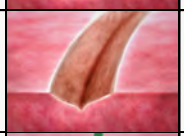
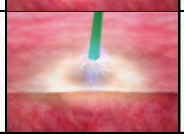
1. vs. HARMONIC ACE™ without Adaptive Tissue Technology.

Monopolar Modes

The Cut and Coag modes surgeons expect with special cut modes for precise energy delivery.

Monopolar Modes

Mode	Tissue Effect	Tissue Effect Description	Dessication	Foot Pedal	Power Levels
GEM High		Least hemostasis and most precision with a scalpel-like cutting effect		Cut	N/A
GEM Low		Similar cutting effect as GEM High with more tactile feedback		Cut	N/A
Pure Cut *Cut Default*		Standard cutting effect		Cut	0 – 300
Blend Cut		Mixture of Cut and Coag, cutting effect with higher level of hemostasis than Pure		Cut	0 – 200

Mode	Tissue Effect	Tissue Effect Description	Dessication	Foot Pedal	Power Levels
Soft		Coagulation and desiccation occurs at a slower rate with deeper thermal penetration		Coag	0 – 120
Soft Low		└ Slower and deeper Soft tissue effect		Coag	0 – 120
Soft Medium		└ Balance between low and high Soft tissue effects		Coag	0 – 120
Soft High		└ Faster and shallower Soft tissue effect		Coag	0 – 120
Coag 1 *Coag Default*		Coagulation effect while allowing electrode to move through the tissue for dissection		Coag	0 – 120
Coag 2		More mild delivery of coagulation than Coag 1 during dissection		Coag	0 – 120
Spray		Most hemostasis and least precision, provides hemostasis in a broad area with less depth-of-tissue damage		Coag	0 – 120

Shared Coag: Available in the single DUALTO configuration, this mode enables two surgeons to deliver coagulation at the same time, dynamically sharing the output power.

Depending on the mode selected, the User Screen will light up yellow for Cut mode and blue for Coag mode.

When set up in a Double DUALTO configuration with two Energy Modules and a monopolar device plugged into a port on each module, DUALTO can power simultaneous monopolar energy delivery.

Touchscreen number pad enables user to change power levels.

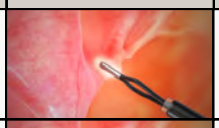
Bipolar Modes

Micro and Macro support standard bipolar applications.

DUALTO can accommodate standard bipolar devices. The User Screen will light up blue for bipolar mode. When setup in a Double DUALTO configuration with two Energy Modules and a bipolar device plugged into a port on each module, DUALTO can power simultaneous bipolar energy delivery.

Touchscreen number pad enables user to change power levels.

Bipolar Modes

Mode	Tissue Effect	Dessication	Tissue Effect Description	Foot Pedal	Power Levels
Micro *Bipolar Default*			Least thermal spread and more precision, designed for all standard bipolar applications	Double Footswitch: Coag Single Footswitch: Bipolar	0–80
Macro			Less precise energy delivery, more rapid onset of power	Double Footswitch: Coag Single Footswitch: Bipolar	0–80

Bipolar Advanced Settings

By selecting the 'Advanced Settings' icon for bipolar, the Current Meter and Current Meter Tone can be toggled on and off.

The Current Meter provides a visual graph of the amount of current flow between the tips of the bipolar instrument.

Advanced Energy Delivery

Adaptive Tissue Technology

Using the science of device-tissue interaction, Adaptive Tissue Technology optimizes energy delivery to achieve balanced tissue effects. In HARMONIC™ and ENSEAL™ X1 devices, these algorithms:

- Sense changes in tissue and device conditions
- Respond with the optimal amount of energy
- Deliver greater surgical precision and performance[1B]

As Johnson & Johnson MedTech releases device innovation, DUALTO is built to power even more advanced algorithms. For example, HARMONIC™ 1100 and 700 utilize an improved Adaptive Tissue Technology that lowers the device's maximum blade temperature.

Sensing and Adapting

Sealing

Strong and secure sealing of vessels up to 7mm*

Thermal Management

Minimal lateral spread
Reduced thermal damage

Ultrasonic and Advanced Bipolar Modes

Mode	Foot Pedal	Power Levels
HARMONIC™	Double Footswitch: MIN - Coag MAX - Cut	• All Harmonic instruments have Power levels 1-5 • Advanced Hemostasis Algorithm available on HARMONIC™ 1100, 700 and ACE+7
ENSEAL™ X1	Double Footswitch: Coag Single Footswitch: Bipolar	N/A

1. As compared to HARMONIC™ devices without Adaptive Tissue Technology
*Does not apply to all HARMONIC™ devices

Ordering & Additional Information

Generator Elements

Product Code	Description	Product Image	Quantity	Compatible With
ETHCM	DUALTO™ Communications Module		1	The DUALTO™ Energy System with up to 2 Energy Modules
ETHUSC	DUALTO™ User Screen		1	
ETHEM	DUALTO™ Energy Module		1	All HARMONIC™, ENSEAL™ and MEGADYNE™ instruments

Packages

Product Code	Description	Product Image	Quantity	Compatible With
ESTES	DUALTO™ Single		1	All HARMONIC™, ENSEAL™ and MEGADYNE™ instruments
ESTESP	DUALTO™ Single Package*		1	
EDTES	DUALTO™ Double		1	
EDTESP	DUALTO™ Double Package**		1	

Accessories

Product Code	Description	Product Image	Quantity	Compatible With
ETHCRT	DUALTO™ Energy Cart		1	The DUALTO™ Energy System with up to 2 Energy Modules
ETHEF2	Energy Double Footswitch		1	The DUALTO™ Energy System
ETHEF1	Energy Single Footswitch		1	
ETHERF	Energy Round Footswitch		1	
ETHOVK	Energy Output Verification Key		1	
2255JTES	MEGADYNE™ Energy Signal Cable		1	Connects to MEGADYNE™ Smoke Evacuator, MESE1

For more information, contact your local Johnson & Johnson MedTech representative or visit **jnjmedtech.com/en-AU** or **jnjmedtech.com/en-NZ**

*DUALTO Single Package includes ESTES, ETHCRT and ETHEF2 . **DUALTO Double Package includes EDTES, ETHCRT and ETHEF2

References: **A.** Data on File. Ethicon, HAR36 DV- ROIN 6175- Blade Heat. 10/30/2013. Windchill Document #PRC053965. Ethicon, HARMONIC ACE™ 5mm Diameter Shears + Adaptive Tissue Technology Instructions For Use . **B.** Data on File. Ethicon, Memorandum: HAR & ACE Size and Adaptive Tissue Technology Comparison Intra-operative and Histopathology. 06/29/2017. Windchill Document #PSP005693

For complete indications, contraindications, warnings, precautions, and adverse reactions, please reference full package insert.

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