

ALAN[®]

Since 1997....

"Electrosurgery Re-defined"



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AN ISO 13485:2003 COMPANY

Special Modes for Special Procedures



Sealing vessels is now simpler than ever

Alan's Vessel Sealing System is equipped with real time tissue feedback with auto power control to seal the vessels effectively. Multiple Controllers supervision for tissue impedance and power delivery, enables our vessel sealing system to maintain the consistency and reliability.

" Ligated " (Sealing completed) , " Instrument open" , "Instrument short"
" Regrasp " (repeat sealing cycle for non sealed vessels) , all these conditions are precisely detected and displayed in real time conditionsto OT members through warning / error messages with an audible alarm.

Features

- Works with all sealing instruments, 5mm, 10mm etc...
- 5 Different Ligation levels for different vessel thickness.
- 2 Different Fast Ligation Modes for Faster Sealing Cycle.
- Faster sealing cycle with Less thermal spread results faster post recovery.
- Separate single pedal for ligation help surgeons to use monopolar, bipolar and vessel sealing in a procedure without any mode switchover.
- Instrument Open & short detection.
- Automatic Timeout to prevent the instruments from over heat.
- Easily interpretable warning and error messages, helps the OT members to handle the conditions quickly.
- Different tones for error / warning, sealing completed and HF activation.
- Can Seal up to 7mm vessels.

Functioning of Bipolar TUR

Alan's Bi-TUR is a very efficient system which instantly generates Plasma around the loop, and the tissue comes in contact are vapourised creating the cutting effect. When the resection is done at moderate speed, the thermal energy generated coagulates the capillary bleeders, reducing the need for separate coagulation. The out come is good, hemostatic resection but shallow enough to prevent irritative symptoms observed with laser technologies.

Advantages

- Saline irrigation eliminates TUR syndrome.
- Large glands can be resected without the fear of TUR syndrome.
- The current flow is localised in the loop itself makes it safe to use on cardiac patients.
- Thermal damage due to current passing along urethra is prevented, thus minimizing the uretral strictures.
- Safer because lower voltage (300 V) is used, compared to monopolar TUR voltage (4000 V).
- No patient plate is required, thus eliminate the chances of alternate site burns.
- Bipolar Saline TUVF, TUEB, TURP, TCRE

Applications

TUVF : Transurethral Vaporization of Prostate
TUEB : Transurethral Enucleation with Bipolar
TURP : Transurethral Resection of Prostate
TCRE : Transcervical Resection of Endometrium

Argon Plasma Coagulator

Argon enhancement in electrosurgical application adds precision and control in surgical procedures. It offers quick and efficient coagulation, a thinner, more flexible eschar, less charring, less tissue damage and faster Post recovery.

Features

- Energy Work station with integrated Argon plasma Coagulator.
- Argon enhancement in Monopolar Cut and Coag.
- Cut and Coag modes have independent Argon control
- Works with Handswitch and Footswitch
- Smart & Efficient gas management system saves Argon gas from wastage
- Simple Argon ON / OFF control
- Superior Coagulation
- Effective on high impedance tissues
- Enhanced healing of the target tissues

COMBI MAX ... The Energy Work Station

General Features

- Wide angle color LCD touch screen display
- User programmable 199+1 memory locations, which saves complete user profile which includes all user preferences like footswitch, power mode surgeries name, type of Surgery etc....
- Auto stop coagulation in monopolar
- Auto start, Auto Stop coagulation in bipolar
- User settable maximum RF activation Timeout limit with disable feature
- Simultaneous coagulation facility in Monopolar.
- Independent different settings for 2 monopolar outputs
- Advanced Microcontroller Electro Surgical Unit with under water cutting facility
- Isolated Monopolar & Bipolar outputs
- Works on Generator, Inverter & UPS
- Digital volume control and Audiable & Visual alarm
- Graphical Patient Plate contact quality Indication
- Single Touch switch over from one mode to another mode
- Randomized spray ON / OFF control in Monopolar coagulation
- User settable brightness & contrast control for LCD to improve visibility.
- Monopolar blend has 30% to 90% (13 step) user adjustable setting to achieve varying cutting effect with Haemostasis.
- Provision to connect footswitch for Each monopolar port
- Suitable for all under water, laproscopic & open Surgeries
- The unit should have 3pedal foot switch , explosion proof / water proof Foot Switch

Combination of

- | | |
|-------------------------|---------------------------|
| • Vessel Sealing System | • Bipolar Saline TUR |
| • Monopolar TUR | • Argon Plasma Coagulator |
| • Monopolar | • Bipolar |

Applications

- | | |
|-----------------------------------|------------------------------------|
| • Thoracic Surgery | • Gastroenterology |
| • Gynecology | • Cardiac Surgery |
| • Liver Surgery | • Plastic & Reconstructive Surgery |
| • Laparoscopy & Pelviscopy | • Casualty & General Surgeries |
| • TURP, TUVP, TUEB, TCRE etc | • Under Water Surgeries |
| • Other Open Surgeries | |



Safety Features

- Patient Plate Contact Quality Monitoring System
- HF leakage monitoring & controlling system
- Multiple Microcontroller supervision for RF power accuracy
- Touchscreen AutoLock facility to prevent accidental change of settings
- Realtime tissue Impedence monitor for Power control
- Power up Selftest to ensure the unit healthiness
- Handswitch and Footswitch short detection during Selftest
- Real time Instrument open and Instrument short detection in Ligate mode
- Modes, Power and all other settings are accessible through touch screen, as well as unit keypad
- Timeout Function with Disable Function
- Port ON/OFF control to prevent accidental RF activation.
- Two Gas Cylinders can be connoted with auto switchover.
- Real time Argon gas level indication for 2 cylinders.
- Optional independant Footswitch for Bipolar & Monopolar cutting and coagulation.
- Warnings and Errors are stored with Date, Time stamp, Error description and stored for viewing later if nessesary
- Footswitch can be Assigned to different ports as per user preference .
- Adaptive P. P. Monitoring feature (can be Enabled /Disabled)

Safety Redefined



Multi Processors for Better Accuracy

Multiple Microcontroller's supervision enables the Combimax Surgical Generators to deliver, control and maintain the power levels dynamically in varying tissue impedences.

Tissue Monitoring Technology

Alan's Combimax Surgical Generators are equipped with Tissue Monitoring Technology. This technology monitors the tissue impedance and dynamically varies the HF current and voltage in micro seconds to achieve the desired effect on tissues as per selected mode of operation. This prevents unintended power delivery, Which helps in faster post recovery of patients, as well as protects the instrument from accidental damage due to excessive power / HF voltage.

Smart Auto Start Coagulation

Auto start :- In this mode the unit delivers power when tissue is held between forceps or similar instrument by automatically sensing the tissue presence

Smart Auto Stop Coagulation

Microcontroller measures the tissue impedance and automatically stops the HF delivery after obtaining " Optimum Coagulation" without charring the tissue. Sticking effect & heat produced on instrument is reduced which increases life of the instrument. Thermal spread is also minimized in this mode because the machine senses increase in tissue impedance and stops the delivery at appropriate time.

HF Leakage Monitor & Controller

Active HF Leakage monitor constantly monitors the HF Leakage current. If HF Leakage current is detected, microcontroller controls the HF Leakage. If this current exceeds specified limit, microcontroller stops the HF delivery and gives error message with an audible alarm.

Handswitch and Footswitch Short Detection

Handswitch and Footswitch conditions are scanned during power up SELF-TEST. If any hand switch / foot switch is detected in short / activated condition during self test, it gives an error message with an audible alarm. This prevents the accidental HF power activation during power interruption as well as alert the OT members, to check the instrument prior to surgery, if a faulty instrument is in use.

199+1 User Programmable profiles

Surgeon can store & recall the complete preferences which includes Power settings of each displayed Mode, Timeout limit, Foot switch settings, Key tone setting and activation tone Volume setting. By just selecting the program number, the total profile is restored. Additionally last activated settings can be restored thus practically 100 Profiles are Stored.



Touchscreen Auto lock for Maximum safety

Controllers will disable the touch sensing after a predefined time, if the touch screen is not in use. This protects the power and other settings intact, if anyone touches the touch screen accidentally. Once touch screen locked, user can unlock and use the same safely.

Port ON/OFF Control

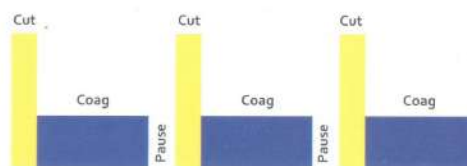
Individual output port, RF output can be enabled/disabled depends on the procedure requirements. This prevents accidental activation, of unused RF output, and ensures maximum safety of patient and OT members.

Endo Cut

The fractionated cutting mode ENDO CUT is characterized by alternating cutting and coagulation cycles. This makes it possible to carry out controlled cutting with sufficient hemostasis and (Bloodless) Dry PRECUT during Gastroenterology. Also useful for myomectomies & for cervical conization.

The unit continues Coagulation till the bleeding stops and resumes Cut again

10 Levels are given to achieve varying speed, depth and sharpness of CUT.



Patient Plate Contact Quality Monitoring System

PPCM with Split Type (Dual Pad) Patient Plate : With Split Patient Plate, contact quality is monitored in real time. If the contact area with the patient is reduced, it stops the HF delivery and gives error message with an audible alarm.

also user can select adaptive PPCM to enhance safety.

PPCM with Split Type (Dual Pad) Patient Plate



PPCM with Conventional Patient Plate : With this Patient Plate, wire disconnection is monitored and on disconnection of any one wire, the unit stops the HF delivery, and gives Error message with an audible alarm.



Alan strongly recommends use of split type patient plate with adaptive mode for maximum safety.

Several Surgical Modes



Monopolar Coagulation Modes



- Random spary ON/OFF selection
- Argon ON/OFF Selection

Monopolar Cut Modes



- Argon ON/OFF Selection
- Optional Features

Bipolar



- Bipolar Output on Ligate Port Selection

Ligate Modes



Bipolar Saline Modes (Bi-TUR)



Models Comparison

Description	M B X X X	M B A X X	M B X V X	M B A V X	M B X X P	M B A X P	M B X V P	M B A V P
Monopolar	Present	Present	Present	Present	Present	Present	Present	Present
Bipolar	Present	Present	Present	Present	Present	Present	Present	Present
Vessel Sealer			Present	Present			Present	Present
Bi-TUR					Present	Present	Present	Present
APC		Present		Present		Present		Present

Technical Specifications

RF Output Characteristics

Monopolar Cut Modes

Pure	400 W @ 350 Ohms	CF 1.5
Lap Cut	300 W @ 350 Ohms	CF 1.5
Blend	250 W @ 350 Ohms	CF variable
Endo Cut	10 Levels, CF - Variable	
	Max. Power 200 W @ 300 Ohms	
i-Cut	10 Levels, CF - Variable	
	Max. Power 200 W @ 300 Ohms	
V-Cut*	10 Effects CF - 1.5	
	Max. Power 300 W@350 Ohms	

Monopolar Coagulation Modes

Lo Spray*	120 W @ 500 Ohms	CF 9.0
Hi Spray*	70 W @ 1000 Ohms	CF 12.5
Fulgurate	150 W @ 500 Ohms	CF variable
Lo Desiccate	120 W @ 500 Ohms	CF variable
Hi Desiccate	180 W @ 500 Ohms	CF variable
Soft	120 W @ 150 Ohms	CF 1.5
Auto Desiccate	40 W	
Auto Soft	40 W	

- Randomized Spray Selections Available

Bipolar Modes

Cut / Standard	120 W @ 100 Ohms	CF 1.5
Macro / Force	120 W @ 100 Ohms	CF 1.5
Micro / Precise	100 W @ 100 Ohms	CF 1.5
Auto Macro*	120 W @ 100 Ohms	CF 1.5
Auto Micro*	100 W @ 100 Ohms	CF 1.5
V-Mode*	10 Effects CF - 1.5	
	Max. Power 120 W@75 Ohms	

- Auto Start/Stop

Ligate

Ligate	5 Levels
F-Ligate	2 Levels

Bipolar (Saline TUR) Cut

Low Cut	250 W @ 200 Ohms	CF 1.5
Hi- Cut 1	300 W @ 200 Ohms	CF 1.5
Hi- Cut 2	300 W @ 200 Ohms	CF 1.5
Hi- Cut 3	300 W @ 200 Ohms	CF 1.5
Effect 1	300 W @ 200 Ohms	CF variable
Effect 2	300 W @ 200 Ohms	CF variable

Bipolar (Saline TUR) Coagulation

Desiccate	250 W @ 25 Ohms	CF 1.5
Force	200 W @ 25 Ohms	CF 3.0

Technical Data

Input Supply

Input	220/230 VAC $\pm$ 20% , 50Hz
Power Consumption	750VA Max.
Protection Class	I
Mdd.	II B
Input Fuse	5A T
Output Control	7" Colour TFT Display with Touch Screen and Push buttons in all Modes
Nominal Freq.	360 KHz

Argon

Max. inlet pressure	4.5 bar (65.25 psi)
Min. inlet pressure	2.5 bar (36.25 psi)
Max. No. Of Cylinders	2
Argon Gas purity	99.998 %

Max. Output

Maximum Power Output: 400 watts

Safety Standards

Basic Construction	In accordance with IEC 60601-1 , IEC 60601-1-2 & IEC 60601-2-2
Unit Type	CF
Electrical Potential Balancing	Connecting Pin and Indicated by Symbol
PER	98

Environmental Factors

Operating

Ambient temperature	+10° C to +40° C
Relative humidity	30% to 75% non-condensing
Atmospheric pressure	700 millibars to 1060 millibars

Transport and Storage

Ambient temperature	-30° C to +65° C
Relative humidity	0% to 90% non-condensing
Atmospheric pressure	500 millibars to 1060 millibars

Dimensions

420mm (W) x 170mm(H) x 380mm (D)

Weight

Max Weight - 8 Kg

* Optional Features

* Specifications are subject to change due to continual development and upgradation.

ALAN[®]

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