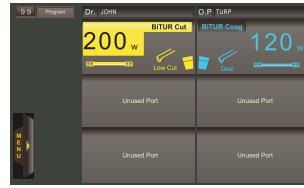


“Electrosurgery Re-defined”



CE
Certified

Special Modes for Special Procedures



Sealing vessels is now simpler than ever

Alan's Vessel Sealing System is equipped with real-time tissue feedback technology with auto-power control to Seal 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 Cycling for Non-Sealed Vessels) etc.

All these conditions are precisely detected and displayed in real-time condition to OT members through warning/error messages with an audible alarm.

Features

- Works with all sealing instruments, 5mm, 10mm etc.
- Can Seal up to 7mm Vessels.
- 5 Different ligation levels for different Vessel Thickness.
- 2 Different Fast Ligation Levels for Faster Sealing Cycle.
- Faster Sealing Cycle with Less Thermal spread results in 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 overheat.
- Easily interpretable warning and error message helps the OT members to handle the conditions quickly.
- Different tones for error/warning, sealing completed and HF activation etc.

Functioning of Bipolar TUR

Alan's Bi-TUR is an efficient system which instantly generates Plasma around the loop and the tissue comes in contact are vaporized 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 outcome is good, Haemostatic 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 localized in the loop itself which makes it safer to use on cardiac patients.
- Thermal damage due to current passing through urethra is prevented, thus minimizing the urethral strictures.
- Safer because lower voltage (300 V) is used, compared to Monopolar TUR voltage (4000 V)
- No Patient plate is required, thus eliminates the chances of alternate site burns.
- Bipolar Saline TUV, TURP, TCRE, TUEB etc.

Applications

TUVP: Transurethral Vaporization of Prostate.

TURP: Transurethral Resection of prostate.

TCRE: Trans Cervical Resection of the Endometrium

TUEB: Transurethral Enucleation with Bipolar.

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 and 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. It includes all user preferences like Footswitch, Power mode, Surgery names, type of Surgery etc...
- Simultaneous coagulation facility for 2 surgeons in Monopolar.
- Independent different settings for 2 Monopolar outputs.
- Monopolar Blend has 10% to 90% (17 steps) user adjustable setting to achieve varying cutting effects Haemostasis.
- Auto-Stop coagulation in Monopolar.
- Auto-Start & Auto-Stop coagulation in Bipolar.
- Randomized Spray ON/OFF control in Monopolar Coagulation.
- Isolated Monopolar & Bipolar outputs.
- Suitable for all Underwater, Laparoscopic & Open Surgeries.
- Digital Volume control with Audio & Visual Alarm.
- User settable Brightness & Contrast control for LCD to improve visibility.
- Graphical Patient Plate Contact Quality Indication.
- Works on Generator, Invertor & UPS.
- The Unit has 3 Pedal Footswitch which is Explosion & Water Proof.
- Provision to connect Footswitch for each Monopolar Port.
- Single Touch switchover from one mode to another mode.

Combination of

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

Applications

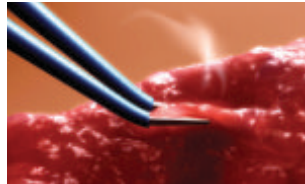
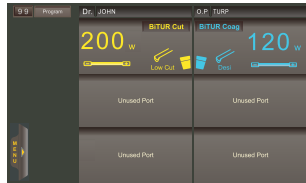
- | | |
|------------------------------|-------------------------------------|
| • Thoracic Surgery. | • Cardiac Surgery. |
| • Gynaecology. | • Plastic & Reconstructive Surgery. |
| • Liver Surgery. | • Casualty & General Surgeries. |
| • Laparoscopy & Pelviscopy. | • Underwater Surgery |
| • TURP, TUV, TUEB, TCRC etc. | • Other Open Surgeries. |
| • Gastroenterology. | |



Safety Features

- Patient Plate Contact Quality Monitoring System.
- Adaptive Patient Plate Monitoring feature (can be Enable /Disabled).
- High Frequency leakage monitoring & controlling system.
- Multiple Microcontroller Supervision for RF power accuracy.
- Touchscreen Auto-Lock facility to prevent accidental change of settings.
- Real-time tissue Impedance monitor for Power control.
- Power up Self-Test to ensure the unit healthiness.
- Handswitch and Footswitch short detection during Self-Test.
- Real-time Instrument open and Instrument short detection in Ligate mode.
- Modes, Power and all other settings are accessible through touchscreen as well as unit keypad.
- User settable maximum RF activation Timeout Limit with Disable Function.
- Port ON/OFF control to prevent accidental RF activation.
- Warnings and Errors are stored with date, Timestamp and Error description. They are stored for viewing later if necessary
- Footswitch can be assigned to different ports as per user's preference.
- Two Gas Cylinders can be connected with auto Switchover.
- Real-time Argon Gas level indication for 2 cylinders.

Safety Redefined



Multi Processors for Better Accuracy

Multiple Microcontrollers' Supervision enables the Combimax Surgical Generators to deliver, control and maintain the power levels dynamically in varying tissue impedances.

Tissue Monitoring Technology

Alan's Combimax Surgical Generator are equipped with Tissue Monitoring Technology. This technology monitors the tissue impedance and dynamically varies the HF current & voltage in microseconds to achieve the desired effect on tissue 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 measure 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

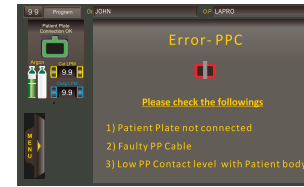
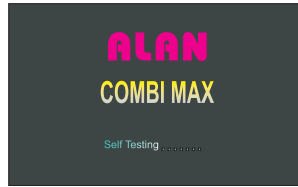
Active HF Leakage Monitor constantly supervises Leakage Current. If any current leakage is detected, Microcontroller controls it efficiently. If these current exceeds specified limit, Microcontroller stops the HF delivery and gives Error Message with an Audible Alarm

Handswitch and Footswitch Short Detection

Handswitch and Footswitch conditions are scanned during power up Self-Test. If Handswitch / Footswitch is detected in Short / Activated conditions during self-Test, it gives an error message with an audible alarm. This prevents the accidental HF power activation during power interruption and also alerts 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 setting of each displayed Mode, Timeout limit, Footswitch settings, Key tone setting, Activation Tone and Volume setting by just selecting program number; by doing this, the total profile is restored. Additionally last activated setting can be restored thus practically 200 profiles are stored.



Touchscreen Auto-Lock for Maximum Safety

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

Port ON/OFF Control

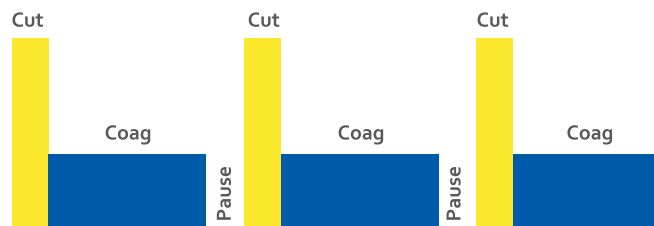
RF output of individual ports can be enabled or disabled, depending upon the procedure requirements. This prevents accidental activation of unused RF output and ensures maximum safety of patient and OT members.

Endocut

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 Haemostasis and (Bloodless) Dry PRECUT during Gastroenterology. It is also useful for myomectomies & Cervical Conization.

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

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

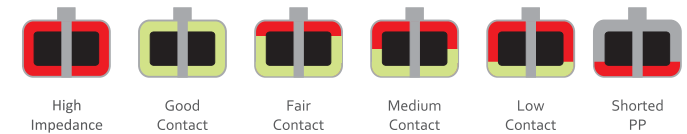


Patient Plate Contact Quality Monitoring System

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

User can also select adaptive PPCM to enhance safety.

PPCM with Split-Type (Dual Pad) Patient Plate

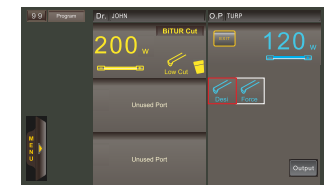


PPCM with Conventional (Non-Split) Patient Plate: With this Patient Plate, wire disconnection is monitored and on disconnection of any one wire, the unit stops the HF delivery, and gives Error message with as audible alarm.



Alan strongly recommends use of Split-Type Patient Plate with adaptive mode for maximum safety.

Several Surgical Modes



Monopolar Coagulation Modes



Lo Spray



Hi Spray



Fulgurate



Lo Desi



Hi Desi



Soft



Auto Desi



Auto Soft



Pure



LapCut



Blend



EndoCut



i-Cut



V-Cut

Monopolar Cut Modes



Cut / Standard



Macro / Force



Micro / Precise



Auto Macro



Auto Micro



V-Mode

Bipolar Modes



Ligate



F-Ligate



Low Cut



HiCut1



HiCut2



HiCut3



Effect1



Effect2



Desiccate



Force

Ligate Modes

Bipolar Saline Modes (Bi-TUR)

- Random Spray ON/OFF Selection
- Argon ON/OFF Selection

- Argon ON/OFF Selection
- * Optional Features

- Bipolar Output on Ligate Port Selection

Models Comparison

Description	MBXXX	MBAXX	MBXVX	MBAVX	MBXXP	MBAXP	MBXVP	MBAVP
Monopolar	Present	Present	Present	Present	Present	Present	Present	Present
Bipolar	Present	Present	Present	Present	Present	Present	Present	Present
APC		Present		Present		Present		Present
Vessel Sealer			Present	Present			Present	Present
Bi-TUR					Present	Present	Present	Present

Technical Specifications

RF Output Characteristics

Monopolar Cut Modes

Pure	400 W @ 350 Ohms	CF 1.5
LapCut	300 W @ 350 Ohms	CF 1.5
Blend	250 W @ 350 Ohms	CF Variable
EndoCut	10 Levels, CF - Variable	
	Max. Power 200W @ 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 Level

Bipolar (Saline TUR) Cut

Low Cut	250 W @ 200 Ohms	CF 1.5
Hi Cut1	300 W @ 200 Ohms	CF 1.5
Hi Cut2	300 W @ 200 Ohms	CF 1.5
Hi Cut3	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 ± 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

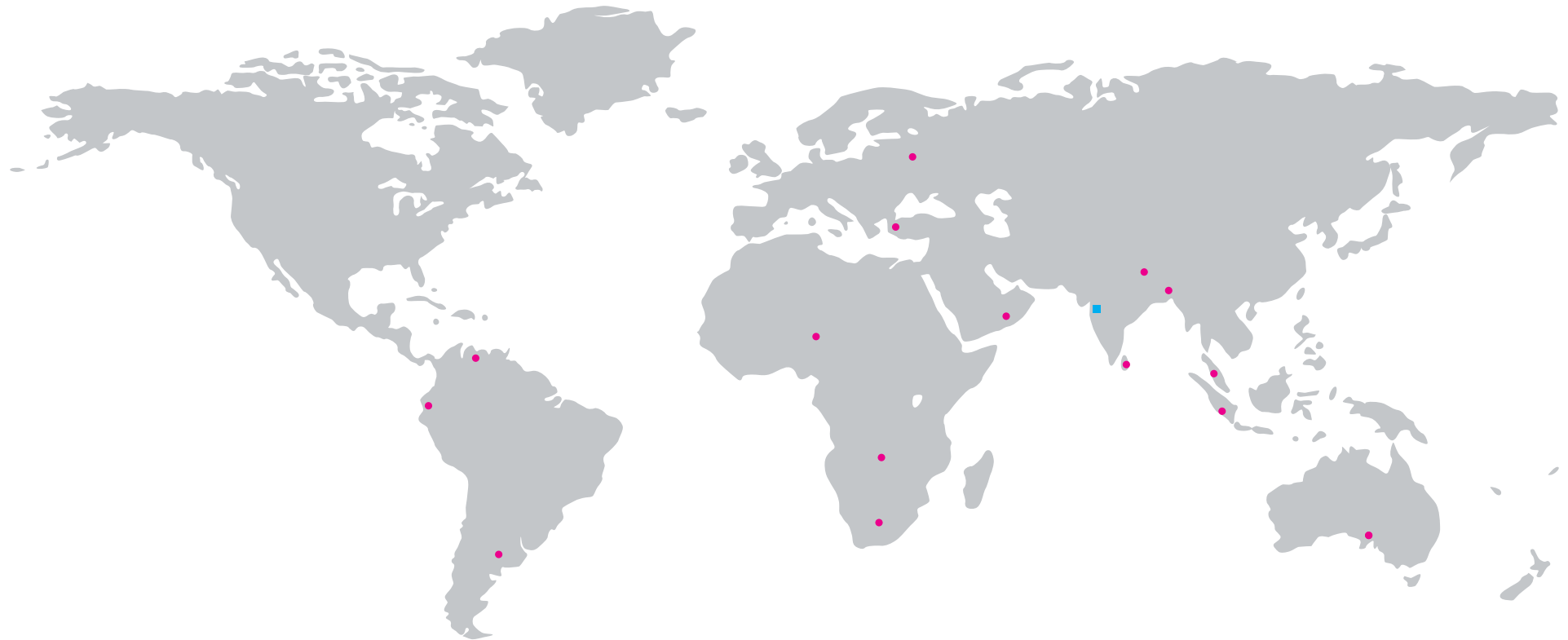
Max Weight - 8 Kg

* Optional Features

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



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