The Streamlined Somatics Thymatron® System Saves Time and Effort

Assure Stimulus with Patented EctoBrain™ Analyzer

Apply Thymapad™ Stimulus Electrodes

Insert Ventil-A™ Mouth Protector

Set Dose with Single %Energy Dial

Select *Automatic Optimal Stimulus Program*

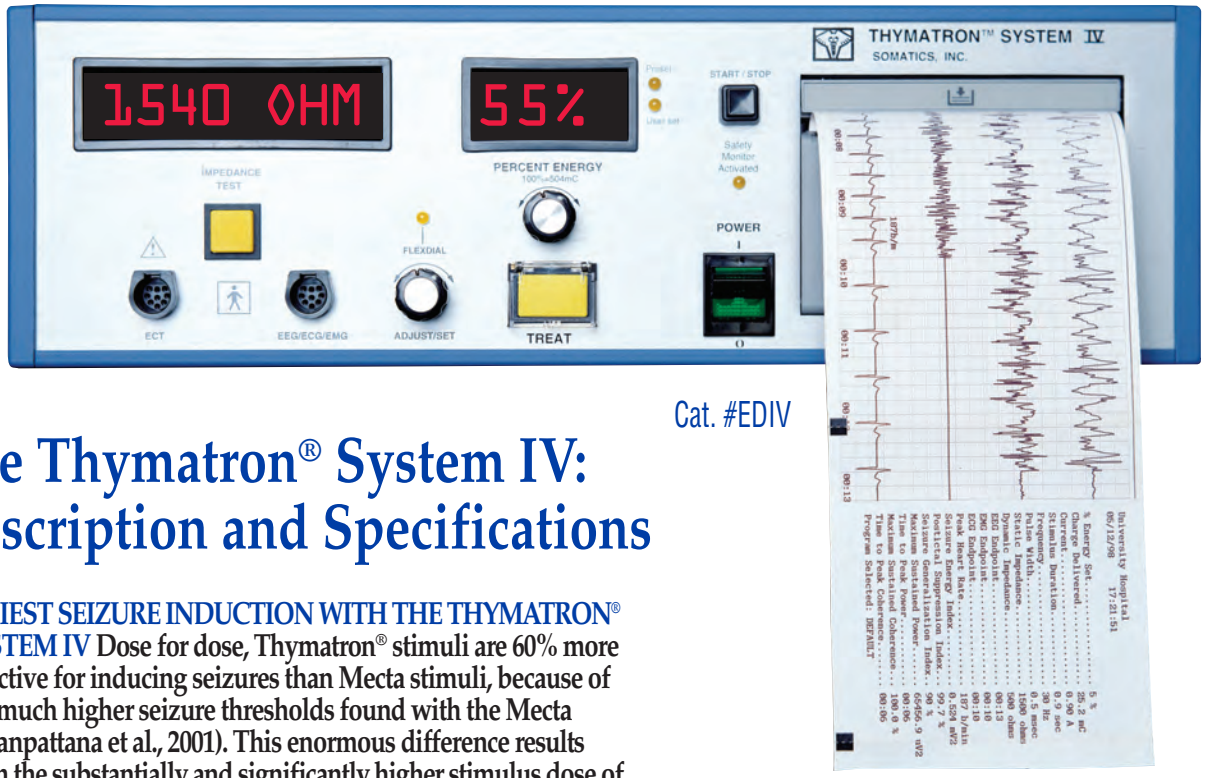
Read *Automatic Seizure Durations*

Read *Automatic Seizure Quality Measures*

IT'S TIME TO SWITCH TO A THYMATRON®!

SOMATICS, LLC
720 Commerce Drive, Suite 101
Venice, FL 34292

USA toll-free 1-800-642-6761
(847) 234-6761
FAX (847) 234-6763
sales@thymatron.com



Cat. #EDIV

The Thymatron® System IV: Description and Specifications

- **EASIEST SEIZURE INDUCTION WITH THE THYMATRON® SYSTEM IV** Dose for dose, Thymatron® stimuli are 60% more effective for inducing seizures than Mecta stimuli, because of the much higher seizure thresholds found with the Mecta (Chanpattana et al., 2001). This enormous difference results from the substantially and significantly higher stimulus dose of the Thymatron's® 900 mA current relative to the 800 mA maximum current of Mecta machines, a higher stimulus dose that yields a larger volume of seizure foci in the brain (Swartz, 2006). This advantage alone is a compelling reason to choose the Thymatron® System IV over the Mecta Spectrum; it provides a critically important edge for the clinician in treating geriatric patients, who are especially resistant to seizure induction.
- **SPECIAL EEG SIGNAL PROCESSING MEASURES** provide continuous monitoring of level of consciousness and cortical activity: *95% Spectral Edge Frequency, Relative Delta Power, and Median Frequency* (Billard V et al, 1997: A comparison of spectral edge, delta power, and bispectral index as EEG measure of alfentanil, propofol, and midazolam drug effect; Hans P et al, 2001: Effect of nitrous oxide on the bispectral index and the 95% spectral edge frequency during propofol-fentanyl anaesthesia; Sakai T et al, 1999: Hypnotic endpoints vs. the bispectral index, 95% spectral edge frequency and median frequency during propofol infusion with or without fentanyl).
- **ULTRABRIEF 0.3 MS STIMULUS** The Thymatron® System IV was the first modern ECT instrument to introduce ultrabrief ECT and remains the only instrument in the world that can deliver a 0.3 msec ultrabrief stimulus across the entire dosage range, up to and including the maximum allowed dose of 100 joules at 220 ohm impedance, which is 25% more than Mecta's maximum dose of 80 joules at 0.3 msec.
- **STATE-OF-THE-ART 4-CHANNEL PRINTER** allows you to monitor two channels of EEG, plus ECG and EMG (or, choose 4 channels of EEG), while providing *hard-copy* documentation for later reference.
- **SINGLE FRONT-PANEL DIAL** lets you select the traditional Thymatron® functions plus important new ones, including *Optimal Stimulus* programs that automatically set the most efficient combination of stimulus parameters at every stimulus dose setting.
- **ELECTRONIC MEDICAL RECORD-KEEPING** is simple with the included Genie™ IV EMR software. Patient treatment records created and stored with the Genie™ IV are easily incorporated into hospital database systems.
- **EXTENDED LOWER STIMULUS RANGE** with pulsewidth and frequency to 0.25 or 0.3 msec and 10 Hz allows you to deliver *stimuli up to 8 seconds long*, to optimize treatment in accordance with research showing greater efficacy of short-pulsewidth, extended-duration stimuli (Isenberg et al, 1996).
- **EEG COHERENCE MEASURES** of *maximum sustained coherence*, and *time to peak coherence*, interhemispheric cross-correlation measures reported to reflect seizure quality and clinical impact (Krystal & Weiner, 1994; Krystal et al, 1995; Krystal, 1998).
- **EEG AMPLITUDE** measures of *maximum sustained EEG power*, and *average seizure energy*, with separate values for *early, mid–* and *postictal seizure phases*, found by the Duke University group to be important correlates of seizure quality and efficacy (Krystal & Weiner, 1994; Krystal et al, 1995; Krystal, 1998).
- **HEART RATE MEASURES,** including *peak heart rate*, a key measure of cerebral seizure duration and quality (Larson, Swartz & Abrams, 1984; Swartz, 1993; 1996; Swartz and Manly, 2000) that reflects the autonomic (brainstem) response to ECT. This is supplemented by *continuous digital heart rate* monitoring for safety and seizure generalization, with the result printed each second.

  All of the above measures are automatically printed.
- **A POWERFUL 32-BIT INTERNAL COMPUTER** employs *Power Spectral Analysis* to process and store up to 10 minutes of digitized EEG for the special features described here. You can send this data to your IBM PC-compatible computer via a rear-panel serial port for further comprehensive EEG analysis, using Somatics' proprietary Genie™ IV software.

- Because each ECT treatment session is STORED IN MEMORY, you can retrieve it if you run out of paper during a treatment--just slip in another pad after the treatment and *press a button for a complete printout.*
- PATENTED INDEPENDENT SAFETY MONITOR CIRCUIT prevents the patient from receiving an excessive electrical dose regardless of the operation of the regular circuits.
- TRUE EMG RECORDING OF THE MOTOR SEIZURE. Unlike simple movement detectors, the Thymatron®System IV's EMG can measure seizure muscle activity that is not visible to the naked eye, and which typically continues substantially longer than optically-detectable movements (Couture et al, 1988).
- Because the special computer-automated programs of the Thymatron® System IV are stored on REPLACEABLE MICROCHIPS, updates are easily accomplished on-site via chip replacement. Somatics has already provided 4 advanced microchip upgrades for the System IV including: the ultrabrief 0.25 msec pulsewidth program, Genie™ IV computer software, real-time digital EEG monitoring. In comparison, any upgrades to the Mecta spectrum (there have been none) would have required return to the factory.
- The POSTICTAL SUPPRESSION INDEX reports the degree of EEG flattening immediately following the seizure, which correlates with clinical efficacy (Nobler et al, 1993; Krystal & Weiner, 1994; Krystal et al, 1995; Krystal, 1998; Nobler et al, 2000). A recent study of the Thymatron®'s *Postictal Suppression Index* found that it significantly differentiated ECT remitters from non-remitters (Petrides et al, 2000). The authors concluded: "*higher PSI values (more abrupt ending of ictal EEG) are correlated with better clinical outcome of ECT in depression*".
- COMPUTER DETERMINATION AND PRINTOUT OF EEG AND MOTOR SEIZURE DURATIONS. The integral computer EEG analyzer continually measures the EEG and EMG and automatically prints the EEG and motor seizure durations with precision and reliability (Swartz et al, 1994; Krystal et al, 1995).
- JUST SET ACCORDING TO AGE AND TREAT. Setting the Thymatron® System IV according to the patient's age facilitates easy selection of the stimulus charge.
- Alternatively, RAPID STIMULUS TITRATION is facilitated with the Thymatron® System IV using a simple method-of-limits procedure (McCall et al, 1993; Rasmussen et al, 1994) that employs research based dose increments: 5, 10, 15, 25, 40, 80, and 100% Energy at your choice of pulsewidth.

(see next page for references)

THYMATRON® SYSTEM IV FEATURES CHECKLIST[1]

	Thymatron® System IV	Mecta Spectrum
Choose 0.25 or 0.3 msec Ultrabrief Pulsewidth	☑	☐
Genie™ IV Software	☑	☐
Four-Channel Monitor/Printer	☑	☐
Optimal Stimulus Programs	☑	☐
Maximum Sustained EEG Amplitude	☑	☐
Continuous Digital Heart Rate Monitor	☑	☐
Peak Heart Rate Printout	☑	☐
EEG Coherence Analysis	☑	☐
Seizure Energy Index	☑	☐
Postictal Suppression Index	☑	☐
Maximum Dose Available at all Pulsewidths	☑	☐
Interictal Frontal Delta Analysis	☑	☐
Computer EEG Seizure Duration	☑	☐
Computer Motor Seizure Duration	☑	☐
True EMG Monitor	☑	☐
EEG Ictal Line Seizure Indicator	☑	☐
Light-Emitting Elapsed Time Display	☑	☐
Up to 8 Seconds of Stimulation	☑	☐
Change Waveform without Altering Dose	☑	☐
Audible EEG™ monitor	☑	☐
Instant Impedance Test	☑	☐
Extended Seizure Alert	☑	☐
Patented Safety Monitor Circuit	☑	☐

Isn't it Time to Upgrade to a Thymatron®?

[1]U.S. patents 5269302, 5470347, 5871517, 6039046, 6200331

SPECIFICATIONS

STIMULUS OUTPUT: Current: 0.9 amp constant, limited to 450 volts, isolated from line current.

Frequency: 10 to 70 Hz in 10 Hz increments (to 140 Hz for 0.25 msec pulse).

Pulsewidth: 0.25 or 0.3 msec (choose one) and 0.5 - 1.5 msec in 0.25 msec increments.

Duration: 0.14 to 8.0 sec in increments of equal charge.

Maximum output: Standard maximum output across 220 ohms impedance: 504 milliCoulombs, 99.4 joules. Output with double-dose option (where available) across 220 ohms impedance: 1008 mC, 198.8 joules

RECORDING: 8 user-selectable gain positions: 10, 20, 50, 100, 200, 500, and 2000 μV/cm.

REQUIREMENTS: 100-130 volts (120 volts) A.C., 60 Hz, single phase. 100 VA. /220-240 volt, 50/60 Hz switchable.

APPROVALS: CSA, CE, ISO 13485:2003, IEC 60601

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#EEDS

SOMATICS' OWN DISPOSABLE SELF-STICK EEG/ECG/EMG ELECTRODES

Easy and quick to use, "the pregelled electrodes provided in the Thymatron DG starter kit. . . reduce preparation time" (Convulsive Therapy 2:53, 1986), compared to metal electrodes and ordinary disposable paper ECG electrodes. Their small size facilitates bifrontal or fronto-mastoid application without interfering with treatment electrode placement. Ideal for recording EEG, ECG, and EMG, they are conveniently packaged 5 per strip. Instantly adherent, they will remain in place throughout the seizure.

MICROSTIM™ PERIPHERAL NERVE STIMULATOR

This hand-held, solid state, peripheral nerve stimulator weighs only 7 oz. It applies a pulsed 0.2 msec square-wave stimulus through surface electrodes to precisely determine the point at which a safe degree of succinylcholine-induced muscle relaxation has been achieved. The operator has the option of selecting continuous (tetanus) or intermittent (twitch) stimulus modes. Battery powered (9 volt alkaline), it comes in a soft carrying case that clips to pocket or belt.
2.4" x 1.0" x 3.8"
#ENSI

NEW REMOTE TREAT HANDLE FOR THYMATRON®

You asked for a remote treat handle and here it is. You can press the TREAT button on this handle instead of reaching over to the Thymatron® itself: a simple thumb press safely triggers the stimulus for any electrode placement, including unilateral.

A ONE-PAGE COURSE IN ADVANCED ELECTROCONVULSIVE THERAPY

% Energy set	45%
% Energy delivered	45%
Charge delivered	308 mC
Current	0.90 A
Stimulus Duration	7.2 sec
Frequency	70 Hz
Pulse Width	0.3 msec
Static Impedance	1440 ohms
Dynamic Impedance	260 ohms
EEG Seizure Endpoint	48 sec
EMG Endpoint	45 sec

Peak Heart Rate	128/min
Average Seizure Energy Index	72 V^2
Postictal Suppression Index	96%
Maximum Sustained Power	77841 μV^2
Time to Peak Amplitude	33 sec
Maximum Sustained Coherence	95%
Time to Peak Coherence	33 sec
Early Ictal Amplitude	133 μV
Midictal amplitude	264 μV
Post-ictal amplitude	10 μV

This sample ECT report of the Thymatron® System IV shows that the doctor set the % Energy dial to his patient's age of 45 years, yielding a 308 mC stimulus charge. The *Optimal Stimulus Program* selected a 0.3 msec pulsewidth, 70 Hz frequency stimulus delivered over 7.2 sec. Prior to stimulus administration the impedance measured a safe 1440 ohms, which dropped to 260 ohms during stimulus delivery.

The EEG seizure lasted 48 seconds. Peak seizure amplitude was reached at 31 sec, with a mid-ictal amplitude of 264 μV, a *Maximum Sustained Power* of 77841 μV^2, and an *Average Seizure Energy Index* of 72 V^2 reflecting strong seizure intensity.

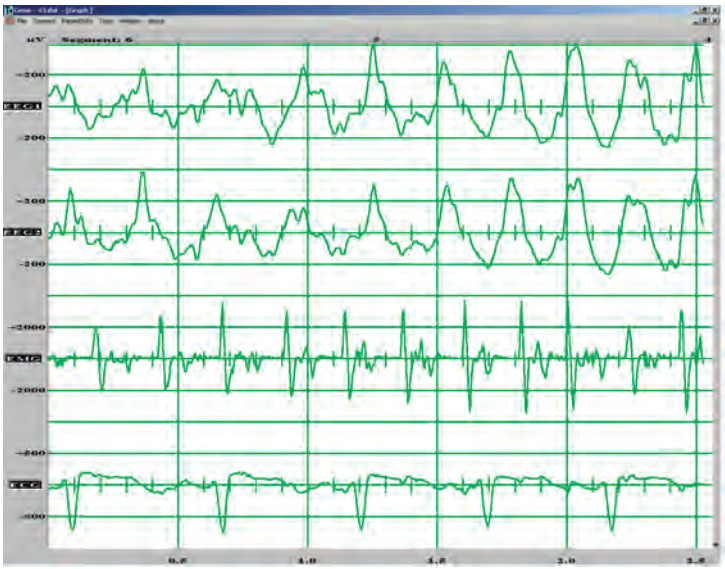
Peak Interhemispheric Coherence reached at 33 sec was consistent with the seizure amplitude peak at 31 sec. The *Maximum Sustained Coherence* value of 95% reflected synchronous participation of both hemispheres in the seizure. The rapid drop of EEG seizure amplitude to 10 μV postictally yielded a high *Postictal Suppression Index* of 96%. Power Spectral Analysis was not enabled.

In summary, the record shows a synchronous, high-intensity, well-developed, and well-generalized EEG seizure pattern with a strong midictal phase, pronounced postictal suppression, and a substantial tachycardia response–which is to say, an ECT-induced seizure of high expected clinical efficacy (Abrams, 2002)

GENIE™ IV ELECTRONIC PATIENT DATABASE AND EEG MONITORING SYSTEM

Designed to meet your clinical and research needs, the Genie™ IV enables you to enter complete patient information at each treatment for storing, printing or incorporating into a hospital-based electronic patient database system.

Equally important is the Genie™ IV's comprehensive real-time display of up to 4 channels of EEG, ECG, and EMG on a PC screen (not included), allowing you to monitor and then store each treatment session.



(GENIE™ IV Patient Information Data File/Printout)

Date: 12-16-05 Name: Laurenz Smarba Age: 58 Sex: M
Somewhat improved but still has insomnia & poor appetite
Oriented, alert, coherent and cooperative
ECT #3 (R-UNI x 1) Anesthesia: Dr. Jones ECT: Dr. Smith
Atropine 0.2 mg - Brevital 50 mg - Succinylcholine 40 mg
Thymatron IV 85% Energy (LOW 0.5 program)
Moderately strong seizure-symmetrical, well developed
Good heart rate response with rapid return to baseline
No complications, quick recovery
Recommendation for ECT #4: same as above

DOES YOUR ECT DEVICE DELIVER THE DOSE YOU SPECIFY?
DO YOU TRAIN DOCTORS OR NURSES IN ECT QUALITY?

U.S. PAT. #6,200,331

Device malfunction can cause ineffective ECT treatments or excessive side-effects. Now you can check your ECT device yourself with Somatics' easy-to-use, patented ECTOBRAIN™II, which performs the same current output check professional engineers use. A single button press instantly tells you if your ECT device is operating safely— providing reassurance and peace of mind. *ECTOBRAIN™II works with any Thymatron.®*

ECTOBRAIN™II also features a *Patient Simulator* mode that generates EEG, ECG, and EMG signals derived from real patients for testing up to 4 channels of your monitor/printer tracing display and for training and demonstration purposes. Both good- and poor-quality seizures can be selected.

The good-quality seizure shows a high amplitude EEG followed by electrical silence at termination, with a pronounced tachycardia response and a high-amplitude EMG that terminates shortly before EEG termination. The poor-quality recording exhibits a low-amplitude abortive-type EEG seizure lasting only 10 sec, followed by continued but lower-amplitude EEG fluctuations after termination; there is no tachycardia response, and an initial low-amplitude EMG response lasts only a few seconds.

A device checkup can cost $600 to $800 but real costs are more. How often does the question arise in treating a difficult patient whether the ECT device is stimulating properly or the EEG tracing recording correctly? *Most ECT units sent to us for presumed malfunction have nothing wrong with them!* ECTOBRAIN™II can quickly determine whether or not the device is working. It can reveal problems in technique (e.g., recording electrode application) that are correctable on site or with user-replaceable parts (e.g., lead wires). Just connect the stimulus and recording cables and press the TREAT button as for a patient.

The chart recorder of your ECT device will display samples of EEG, ECG, and EMG tracings as described above. The printed report will show the values of the stimulus parameters and other printed variables of your ECT device, including the *measured stimulus charge output* in mC.

Satisfaction guaranteed by Somatics' 30-day unconditional full-satisfaction trial period. 5-year warranty on parts *and* labor.

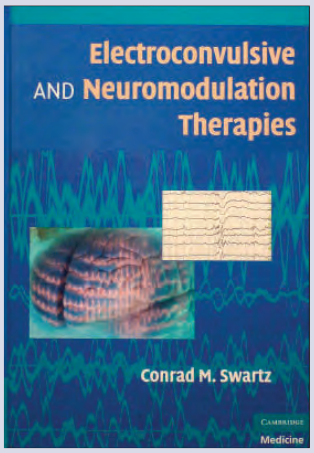
Special price when ordered together with a Thymatron® System IV.

Trouble-Shooting with the ECTOBRAIN™II

Problem	*How to test using Ectobrain™II **
No Stimulus output	Section I
Impedance test error	Section II
ECT stimulus cable failure	Section III
No EEG, EMG endpoint	Section IV
ECG channel doesn't print	Section IV
No Ictal Line	Section IV
Special feature doesn't print	Section IV
EEG amplifiers require calibration	Section VI
ECT stimulus requires calibration	Section VI

* See specified sections of Ectobrain™ II manual on *www.thymatron.com* downloads page

JUST OUT!



This ground-breaking new text edited by internationally-recognized ECT expert Dr. Conrad M. Swartz comprehensively covers the scientific basis and clinical practice of ECT as well as the latest nonconvulsive electrical and magnetic brain stimulation therapies. The many expert contributors from around the world illustrate compellingly that ECT is now a mainstream psychiatric treatment. The wealth of new and surprising information it contains is certain to provide ECT practitioners with much enjoyable "brain stimulation".

Call David Mirkovich at 1(800)642-6761 for our very attractive price.

SPECIAL LIMITED-TIME TRADE-IN OFFER

Somatics is pleased to offer a substantial trade-in amount towards a new Thymatron® System IV for any model or age MECTA ECT machine or Thymatron® ECT instrument, without exception. Call us at (800) 642-6761 for the details--offer expires April 30, 2012.

SOMATICS SUPPORTS & SERVICES EVERY THYMATRON® IT HAS SOLD

Unlike our competitors, Somatics has always provided support and service for every Thymatron® it has ever sold, including several that are now a quarter-century old. Just e-mail or call us as indicated below to obtain a fair and reasonable quote for servicing your old faithful Thymatron®.

SOMATICS THYMATRON® INSTRUMENTS IMPORTANT RESEARCH TOOLS

Since the Thymatron® was first introduced in 1983 hundreds of research studies have appeared in the medical literature using a Thymatron® instrument. Prominent among these is the series of publications by the multi-hospital CORE research group, a consortium of academic psychiatric centers.

In a series of important articles over the last decade the CORE group used Thymatron® ECT instruments to demonstrate the striking efficacy of ECT in the treatment of psychotic depression (Petrides et al, 2001), determine that age had a strong positive association with the response to bilateral ECT (O'Connor et al, 2001), show that DSM III melancholic features are unreliable predictors of ECT response (Fink et al, 2007), find that unipolar and bipolar depressives respond equally well to ECT (Bailine et al, 2010), and report that, although fewer black than white depressed patients received ECT, there was no overall racial difference in treatment response (Williams et al, 2008).

Hundreds of other studies used a Thymatron® instrument to demonstrate, among other things, that:

ECT given twice a week was equally effective as three times a week, but with fewer cognitive side-effects (Lerer et al, 1995).

Antidepressant potency of high-dose right unilateral ECT was equal to bilateral ECT (Abrams et al, 1991).

Caffeine lengthened seizure duration but did not change the convulsive threshold (McCall et al, 1993).

Bilateral ECT did not yield any evidence for brain damage as measured by levels of neuron-specific enolase and S-100 protein (Agelink et al, 2001).

ECT was nearly four times more effective than transcranial magnetic stimulation (TMS) for major depression (Eranti et al, 2007).

None of 7 patients with intracranial masses were neurologically adversely affected by ECT (Rasmussen et al, 2007).

In 28 severely depressed patients given a course of unilateral ECT, only responders showed elevations of N-acetylaspartate, suggesting that ECT exhibits positive neurotrophic effects (Michael et al, 2003).

In 32 consecutive patients seizure durations automatically reported by the Thymatron instrument correlated highly with determinations made by trained physicians (Rosenquist et al, 1998).

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The Choice is Easy (*and Smart!*)

Isn't it Time to Upgrade to a Thymatron®?

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www.thymatron.com

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(847) 234-6761
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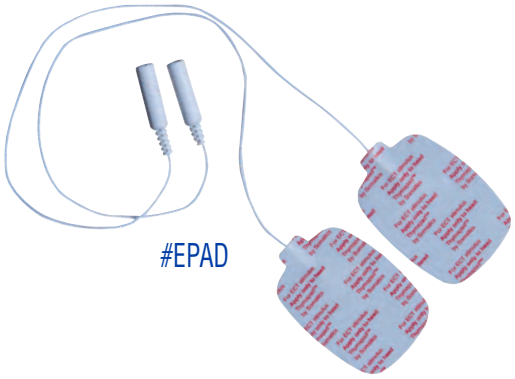
Advanced ECT Is Now Easy...
Thymatron System IV

SAFE, TIME-SAVING DISPOSABLES FOR ECT



THYMAPAD™ Adherent Stimulus Electrodes

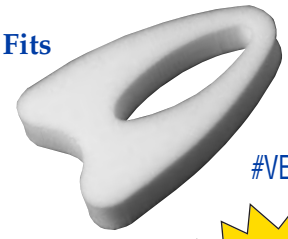
Thymapads™ are much faster and easier to use than the old-fashioned disk, headstrap, and jelly method.

They remain exactly where applied and have no exposed metal surfaces to cause accidental shocks. There's no mess to clean up afterwards, nothing to wash, dry, or sterilize, no sticky hands - just remove them and discard.

Thymapads™ flexibly conform to the surface of the head and fit all Mecta machines too.

VENTIL-A™ Mouth Protector

The *Ventil-A*™*'s* thick 100% closed-cell foam construction protects all the teeth. Fits easily under any anesthesia mask and features a non-collapsible air channel for free flow oxygen. One-piece design for dimensional stability and looped end for fast and easy insertion/removal. One size fits >98% of adults.



OVER 1,000,000 SOLD

Both of these single-use ECT aids (US Patent 6039046) save the time and expense of washing and sterilization and eliminate the risk of cross-infection that occurs with re-usable products.