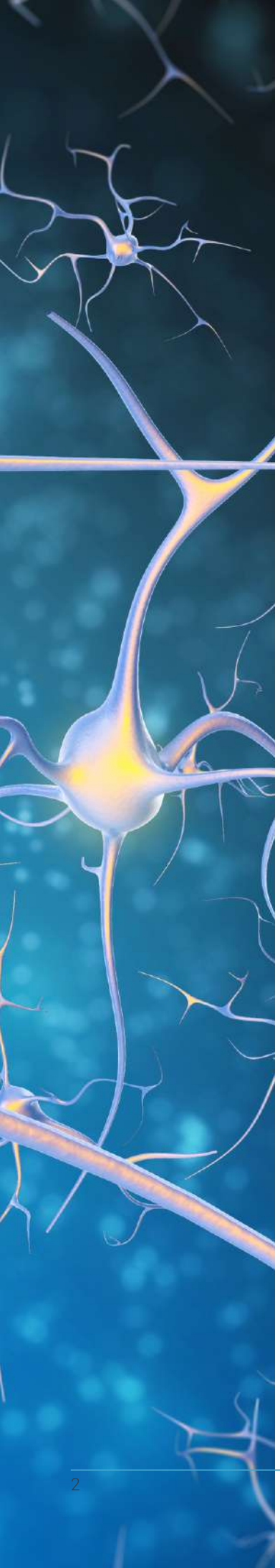
YINGCHI

YINGCHI TMS

Transcranial Magnetic Stimulator

M Ultimate Series

CE/FDA Cleared



About TMS

TMS - A New Technique in Neuromodulation

Transcranial Magnetic Stimulation (TMS) is a focal, painless and non-invasive form of brain stimulation that can depolarize or hyperpolarize the cortical neurons in the human brain.

It directs a magnetic field pulse through the intact skull and the magnetic energy is converted back into electrical energy in the underlying brain tissue. TMS may also modulate cortical and subcortical structures that are synaptically connected to the region being stimulated.

These staccato magnetic fields have the capacity to induce neurophysiological changes that persist after the stimulation paradigm ends.[1]

rTMS - A New Hope for Depression Patients

Major Depressive Disorder (MDD) is a complex neuropsychiatric syndrome consisting of abnormalities related to mood, interest, sleep, appetite, energy, psychomotor activity, and cognition which is caused by multiple reasons.

MDD may be associated with varying degrees of decreased 5-HT and local cerebral blood flow, as well as an imbalance of excitatory/inhibitory amino acid, and abnormal activity (typically reduced) in the dorsolateral prefrontal cortex (DLPFC).

30% of patients with MDD have an inadequate response to standard medication and psychological therapies, referred to as treatment resistant depression (TRD) and many suffer side effects and repeated relapse.[2]

Repetitive Transcranial Magnetic Stimulation (rTMS) is a non-invasive technique that offers hope for MDD patients.

rTMS Mechanisms in Treating MDD

- It is generally believed the DLPFC is involved in the generation and regulation of emotions. High-frequency rTMS can increase cortical excitability of the left DLPFC, whereas low-frequency rTMS can decrease cortical excitability of the right DLPFC.
- rTMS can modulate the activity of specific neuronal pathways.
- rTMS can affect the activity of monoamine neurotransmitter pathways.
- High-frequency stimulation can increase the local cerebral blood flow.

[1] George and Aston-Jones, 2010; George et al., 2010
[2] Fava, M., Diagnosis and definition of treatment-resistant depression. Biol Psychiatry, 2003. 53(8): p. 649-59.

Applications

FDA Approved TMS Applications

- In 2008, FDA approved marketing of TMS for major depressive disorder(MDD).
- In 2013, FDA approved marketing of TMS for migraine.
- In 2018, FDA approved the iTBS model for MDD.
- In 2020, FDA approved double cone coil for the treatment of obsessive-compulsive disorder.
- In 2020, FDA approved DTMS being used as an aid in short-term smoking cessation for adults.
- In 2021, FDA approved DTMS for the treatment of comorbid anxiety symptoms of MDD patients.
- In 2022, the FDA approved Stanford Accelerated Intelligent Neuromodulation Therapy (SAINT) for the treatment of treatment-resistant depression.

International Guidelines of TMS

1. Clinical Practice Guideline for the Treatment of Depression Across Three Age Cohorts
   American Psychological Association
   Guideline Development Panel for the Treatment of Depressive Disorders
2. Consensus Recommendations for the Clinical Application of Repetitive Transcranial Magnetic Stimulation (rTMS) in the Treatment of Depression
3. Evidence-based Guidelines on the Therapeutic Use of Repetitive Transcranial Magnetic Stimulation (rTMS): An update (2014–2018)

Numerous evidence-based clinical trial data have shown that repetitive transcranial magnetic stimulation (rTMS) produced significant clinical effects in patients with various neuropsychiatric indications.

Psychiatry

Major Depressive Disorder (MDD)
Anxiety (Generalized anxiety/Others)
Bipolar Disorder (Depression phase /Mania phase)
Schizophrenia (Auditory hallucination/Negative symptoms)
Obsessive Compulsive Disorder (OCD)
Post-Traumatic Stress Disorder (PTSD)
Addiction (Smoking, Alcohol, Cocaine, Other Drugs)
Child Autism

Neurology

Stroke (acute state)
Neuropathic Pain (migraine, prosopalgia, fibromyalgia)
Parkinson's disease (improve motor function/ dyskinesia/essential tremor)
Alzheimer (mild cognitive disorder)
Epilepsy
Multiple Sclerosis (Lower limb spasm)
Consciousness Disorder

Rehabilitation

Sequelae of stroke (improve motor function/ hemispatial neglect/Non-fluent aphasia)
Peripheral nerve injury
Spinal cord injury
Focal dystonia
Dysphagia
Chronic tinnitus
Motor aphasia

Research

Cognitive science
Brain function research
.....

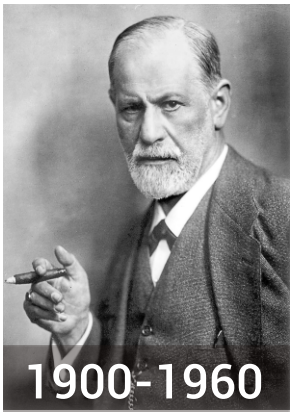
TMS- A Promising Technique

Non-invasive, No Anaesthesia, Outpatient Procedure, Proven Efficacy

Safety of TMS Treatment

TMS is a neuromodulation technique based on the principle of electromagnetic induction of an electric field in the brain.

Age of Psychotherapy



Age of Drug Therapy

Age of Neuromodulation

Determined by the evidence-based efficacy of rTMS, countries including USA, Australia, Canada, China, Israel, as well as some European countries have approved the use of rTMS for the treatment of MDD.

The uptake in patient treatment of neuropsychiatric disorders has been increasing rapidly. Laboratories and Clinics use TMS in neuroscientific research and the investigation of new or improved therapeutic interventions.

Evidence-based guidelines from diagnosis to treatment have been established to ensure rTMS treatments are safe and effective.

Guidelines Support

1. Diagnosis: The clinical diagnostic utility of transcranial magnetic stimulation: Report of an IFCN committee.
2. Operation: Safety, ethical considerations, and application guidelines for theuse of transcranial magnetic stimulation in clinical practice and research.
3. Treatment: Evidence-based guidelines on the therapeutic use of repetitive transcranial magnetic stimulation (rTMS): An update (2014–2018).

Safety Features of YINGCHI TMS

Certification

YINGCHI TMS systems meet internationally recognized safety requirements, have passed strict inspection standards and are Certified.

YINGCHI M Ultimate TMS is CFDA, CE, USFDA cleared, and registered in multiple countries such as Korea, Australia, Malaysia and so on.

Over-Heating Protection

The YINGCHI TMS system (Generator, Cooling-Unit, Coil) is equipped with multiple temperature sensors that actively monitor temperature in real-time. A key safety feature is the "automatic system shutdown" which activates when temperatures exceed 41℃.

The "automatic system shutdown" safety feature prevents dangers caused by high temperatures.

Operating Status LED Indicator

The YINGCHI TMS liquid cooling-unit guarantees efficient coil cooling at all times. The liquid cooling-unit ensures optimum coil performance and operational safety by monitoring liquid temperature, liquid volume and circulation functionality.

The liquid cooling-unit operational status LED indicator shows liquid temperature, liquid volume and circulation functionality data in real-time.

Pulse Counter

To ensure optimal dose delivery and coil safety, YINGCHI TMS Coils are validated for 20,000,000 pulses – defined as, Manufacturer recommended "Life Span".

All Coils are fitted with a smart pulse counter. Indicating exactly how many pulses are available for delivery on each coil.

Patient Data Security and Secure Operational Access

YINGCHI TMS systems require the doctor's authorized dongle to function.

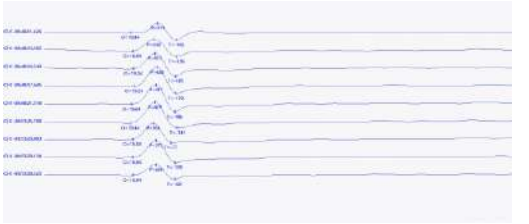
This ensures patient data security, maintains patient privacy, protects programmed information and restricts unauthorized operational access.

TMS Applications in Diagnosis & Assessment

TMS Combined with MEP

What is MEP?

Motor evoked potentials (MEP) are electrical signals recorded from neural tissue or muscle following activation of central motor pathways.



MEP and TMS

MEP elicited in peripheral muscles by TMS over the human motor cortex is one of the hallmark measures for non-invasive quantification of cortical and spinal excitability in cognitive and clinical neuroscience. This test evaluates the functional state of motor pathway by determining the waveform, conduction velocity, latency, amplitude and central motor conduction time (CMCT) of the central and peripheral motor pathway as a diagnostic method.

Table. Variables of transcranial magnetic stimulation in neurological disorders

Neurological disorder	MEP amplitude	CMCT	Mth	SP
Multiple sclerosis	Reduced	Increased	Increased	Prolonged
Stroke	Reduced	Increased	Increased or reduced	Shortened
Cervical myelopathy	Reduced	Increased	Increased	Shortened
Amyotropic lateral sclerosis	Reduced	Increased	Reduced(early) Increased(late)	Normal or Shortened
Parkinson's desease	Facilitated at rest	Normal	Normal	Shortened
Dystonia	Normal	Normal	Normal	Shortened
Cerebellar ataxias	Normal or reduced	Increased	Increased	Prolonged
Eplilepsies	Normal or reduced	Normal	Normal reduced or increased	Prolonged

Migle Alisaukiane,et al 2005

MEP-motor evoked potential, CMCT-central motor conduction time, MT-motor threshold, SP-silent period.

Advantages of YINGCHI MEP

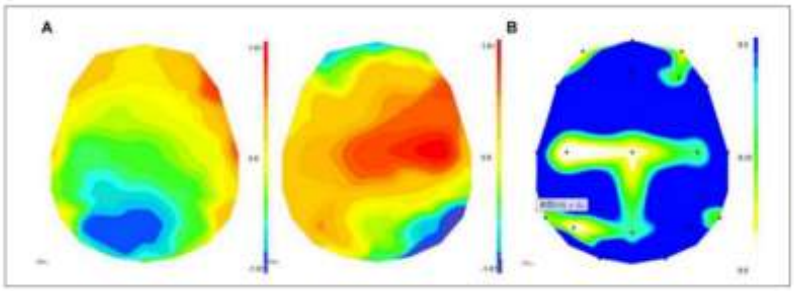
- Wireless transmission, easy operation, high SNR (signal-to-noise ration).
- Dual-channel design suits most clinical determinants.
- The high sampling rate captures precise recording in EMG wave changes.
- Unique waveform processing algorithm ensures a precise diagnosis.
- The cone coil makes the MEP determination of lower limbs easier.

TMS Combined with EEG/ERP

Currently, assessment scales are the most common used tools for the diagnosis of psychiatric diseases. The integration of Neurophysiologic techniques such as EEG/ERP make diagnosis/assessment objective.

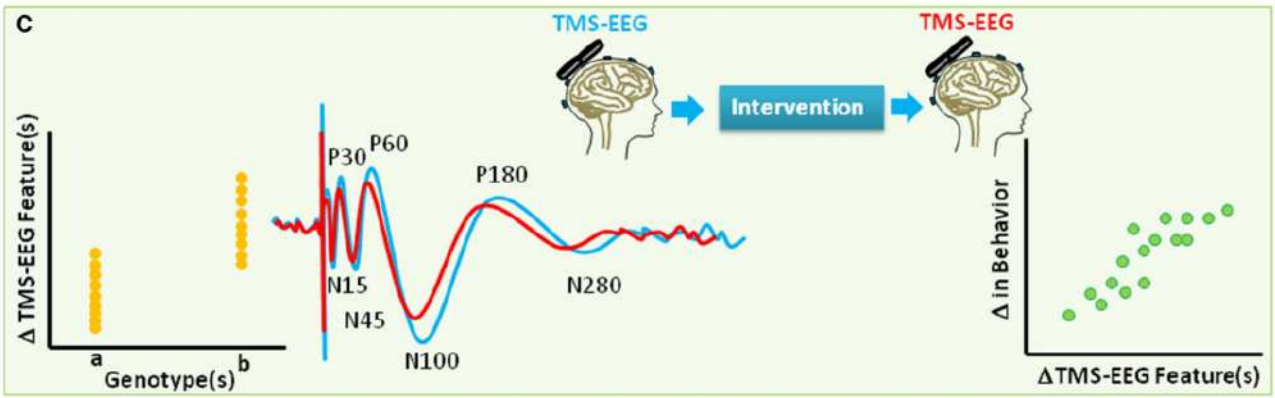
Diagnosis and Assessment of EEG/ERP

Clinicians can diagnose epilepsy, sleep disorder and other psychiatric disorders based on EEG waveforms and rhythmic changes. TMS stimulation targets and treatment protocols can be correlated with QEEG/EEG analysis.



The application of rTMS in the depressed patient showed the increase of Cordance in the central region of the brain at the end of the first week.
(Hunter el at. 2017)

The classical components of ERP, such as P300, MMN, CNV and P50, can reflect the cognitive function of the brain. The introduction of ERP technology before and after the TMS treatment can objectively assess the therapeutic effect of TMS.



The waveforms highlight change in TEPs for two hypothetical brain states (e.g., before and after an intervention).

Farzan et al. 2016

Research: Synchronized TMS+EEG

- Assess neural excitation, inhibition, connectivity, and plasticity across central nervous system and brain states.
- Identify neurophysiological impairments that are common across brain disorders.
- Measure effects of TMS treatment.

TMS Treatment Process

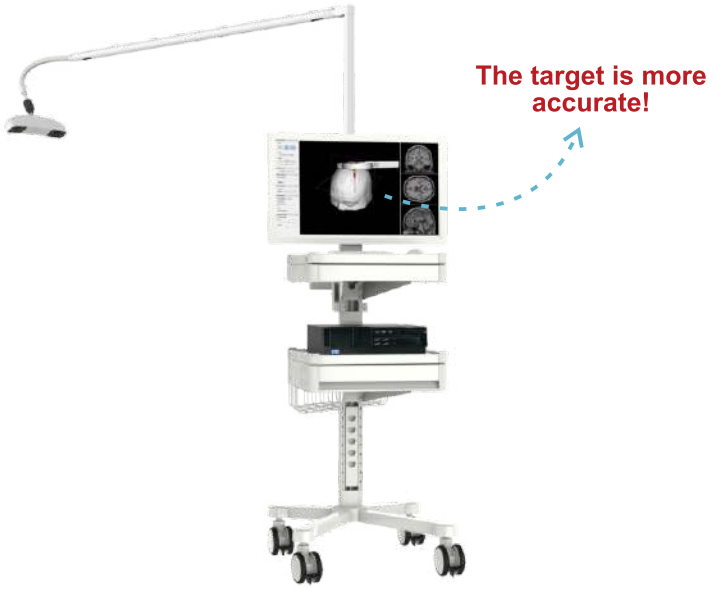
Precision of Target Positioning

There are three commonly used methods for locating therapeutic target.

5cm rule: After finding the RMT hotspot, move forward 5cm to find the DLPFC treatment target.

Positioning Cap: Using YINGCHI positioning cap which is designed based on the EEG 10-20 electrode placement system to select the closest electrode position. For example, the left DLPFC can choose F3 electrode position as the target. Positioning caps are available in different sizes, suitable for patients of different ages.

TMS 3D Navigation System: MRI based neuronavigator provides a professional solution for the precise positioning of MRI based neuronavigator realized rTMS target personalization (based on individual brain structure, function or functional connection between brain areas), reproducibility and visualization.



Patient Motor Threshold (MT)

What is MT?

MT is the minimum amount of electrical energy a patient needs for TMS to elicit motor movement. MT measure is conducted with the patient in a "resting state" and is sometimes called resting motor threshold (RMT). MT or RMT can be understood as "TMS dose".

Why determining MT is required before TMS treatment?

MT is recognized as the "gold standard" for determining TMS dose.
Delivering TMS treatment at the correct dose guards patient safety against the possibility of inadvertent seizure, its relationship to efficacy and reproducibility in cortex stimulation.

Resting Motor Threshold (RMT or MT) is determined by using visual observation of muscle twitch (OM-MT) or electromyography muscle twitch (EMG-MT).

TMS Treatment Start to End

Step 1 *Measure MT*

1. In QUICKSTIM Software, create new patient entry or select existing patient from patient list.

2. Fit TMS positioning cap on the patient, keep the patient's palms facing up and confirm the patient is relaxed.

3. Use OM-MT or EMG-MT method to measure the patient's correct MT value.

Step 2 *Protocol Selection or Setting*

Select doctor's prescribed protocol from saved protocol list.

Or, create doctor's prescribed new protocol by entering set parameter values (Frequency, Intensity, ISI, ITI, No. of Pulses, No. of Trains) and save.

Step 3 *TMS Treatment Preparation*

1. Identify marked stimulation target.

2. Position TMS treatment coil at marked stimulation target.

3. Confirm patient is relaxed and inform the patient stimulation treatment is about to begin.

Step 4 *Start TMS treatment*

1. Monitor Patient through treatment

2. Ask patient how they feel (patient feedback)

3. Confirm patient next scheduled treatment.

4. Print or Export treatment report, if required.

YINGCHI TMS
THE BEST CHOICE

HIGH-QUALITY, AFFORDABLE, RESPONSIVE MENTAL HEALTHCARE.

1. QUICKSTIM Software
2. Stimulation Generator
3. Liquid Cooling System
4. Stimulation Coil
5. Stable Trolley
6. Adjustable Treatment Chair

TMS Coils

Recommended Clinical TMS Coils

Two TMS liquid-cooled coils recommended by Doctors.

Double Cone Coil

- Angulated Coil configuration to match skull shape ergonomically.
- Stimulates deep focused targets, capable of evoking potential responses in lower limbs.
- Suited for the treatment of MDD, OCD and Stroke, etc.

Flat Figure-8 Coil

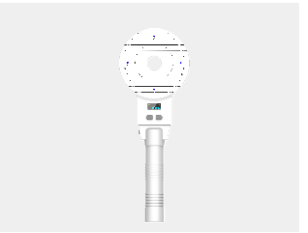
- Conventional figure-8 coil used for MDD treatment.

Unique Coil Advantages

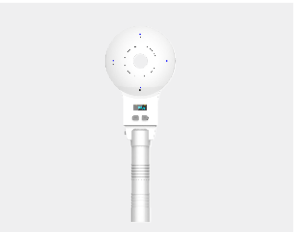
- Highly effective and efficient cooling capability prevents over-heating issues.
- Light weight with great power delivery.
- Adjustable Intensity controls and LED display unit fitted at the coil handle, makes it easier to adjust intensity setting when measuring MT.
- Coil calculator: 20,000,000 pulse counter LED display fitted to the coil handle.
- Customizable coils available.

More Coil Options

Flat Air-cooled Figure-8 Coil



Flat Circular Coil



Single Cone Coil

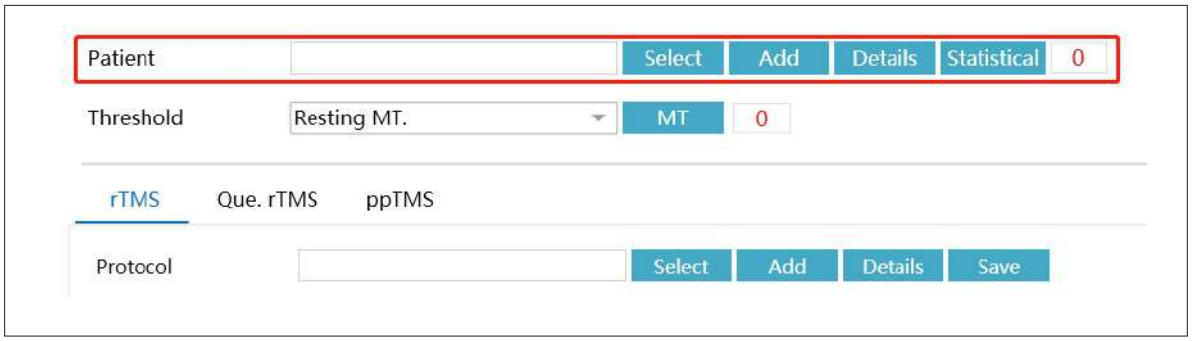
Sham Coil

User-Friendly TMS QUICKSTIM Software

YINGCHI TMS QUICKSTIM software is internationally recognized and complimented by industry users for its user-friendly design and utility.

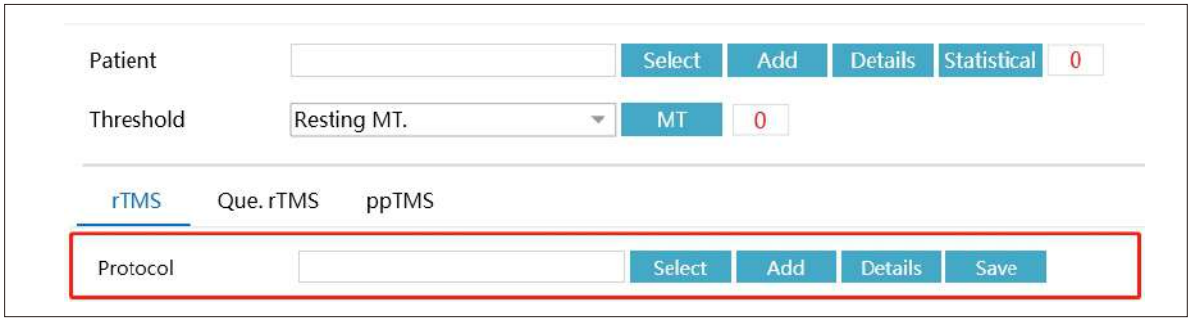
Patient's File Creation and Save Function

To create a new patient file, click "ADD", enter patient details and save.
To locate existing patient file, click "SELECT" to access patient list.



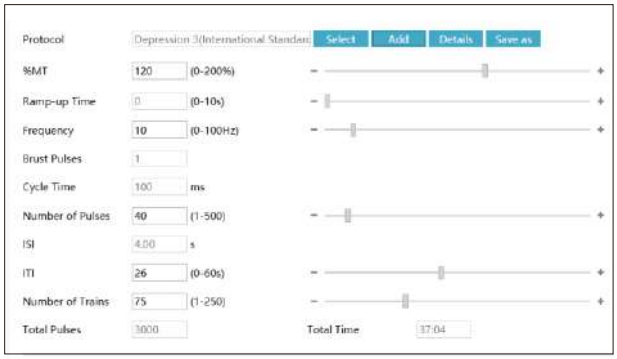
New Protocol creation and accessing saved Protocols

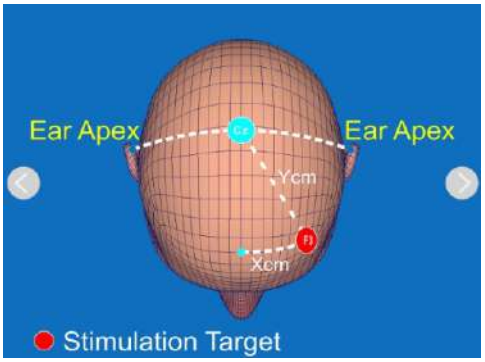
Click "ADD"to create a customized or new Protocol.
Click "SELECT"to access existing Protocol list.



Example of an FDA Approved TMS Protocol for Depression (MDD) Treatment

MDD TMS treatment session lasted approximately 37.5 min for a total of 3000 pulses, at a repetition rate (Frequency) of 10 pulses/sec (10Hz), with a stimulus train duration (ISI Time) of 4 sec and an inter-train-interval (ITI Time) of 26 sec., on the Left Dorsolateral prefrontal cortex (L-DLPFC).

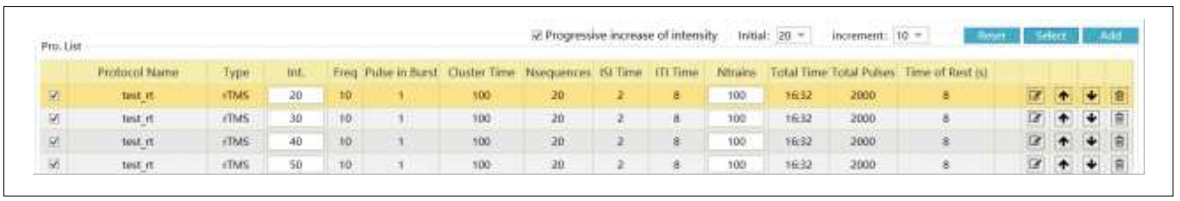




Create Custom Sequence Protocols

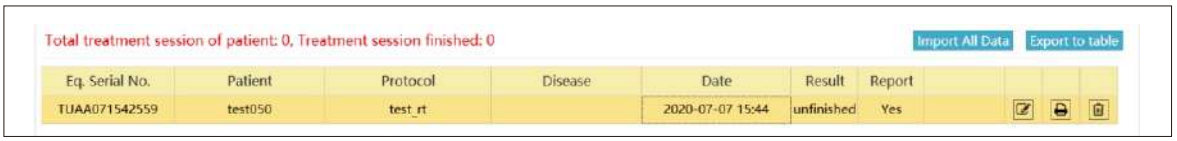
Easily create custom sequence protocols that incrementally increases Intensity.

Easily create a multi-protocol sequence by selecting different protocols that are combined and actioned as a single listing.



Generate, Print or Export Reports at a Click

Completed or interrupted treatment sessions are recorded and saved automatically.
Treatment reports include patient details, treatment information, protocol details, patient feed-back, clinician notes.
Generated reports can be printed or exported in word or PDF format.



RECORDS: Patient TMS Treatment History

Patient TMS treatment record can be exported in "table" format.

A referring doctor can remotely track their Patient's treatment history and file records. Treatment history record includes information on all treatment sessions, treatment dates and times, stimulation results, Protocol details, Time and length of each session, Patient session feed-back, Clinician notes and feedback.

Stimulation Generator with Embedded Software

The embedded software enables the stimulation generator to operate independently.

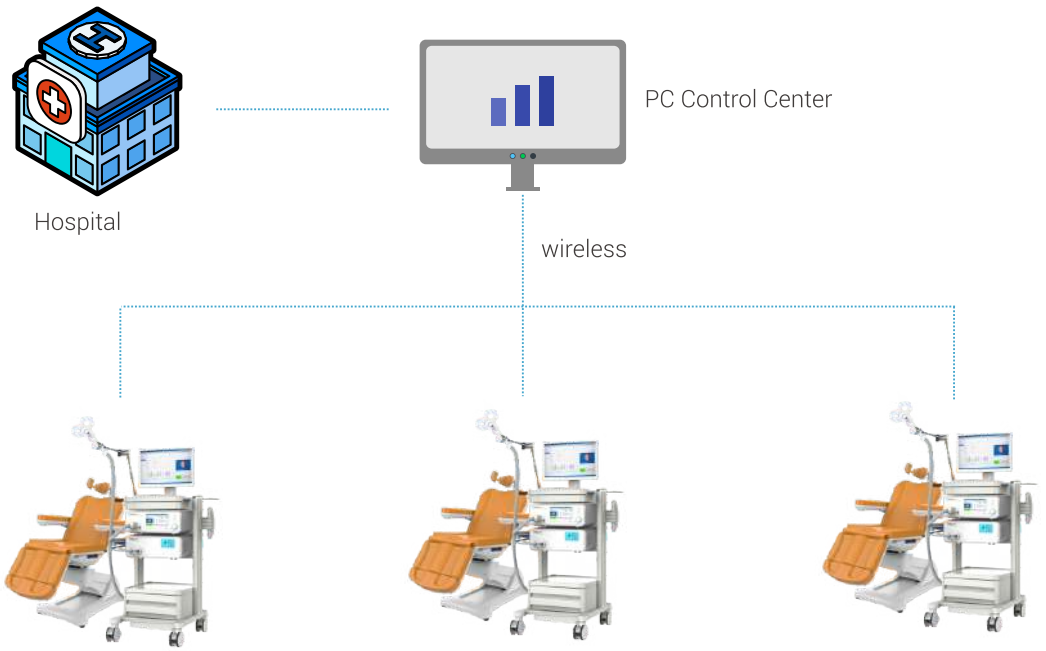
The stimulation generator provides 5 shortcut keys on the front panel to set frequently-used protocols.

Dash Board Control Workstation

QUICKSTIM software is capable of dashboard control from a central workstation or control room.

Dashboard control offers Hospitals or Clinical sites with multiple TMS systems, treating large patient numbers who attend within narrow time windows to be scheduled, managed and treated seamlessly.

Dashboard saves time and is an excellent management tool.



The Dashboard Control System Comprises Three Modules

- Control system: The Dashboard controls can manage multiple TMS systems (up to 200). From the Dashboard control desk, the Doctor can (1) select the Patient file, (2) select a pre-set Protocol or customize a treatment protocol, (3) make session notes, and (4) control the TMS system.
- Appointment system: From the Dashboard control desk, the Doctor can schedule and book Patient appointments for future treatments.
- Waiting room system: Prioritizes and prompts Patients at the waiting room.

DASHBOARD Control Applications

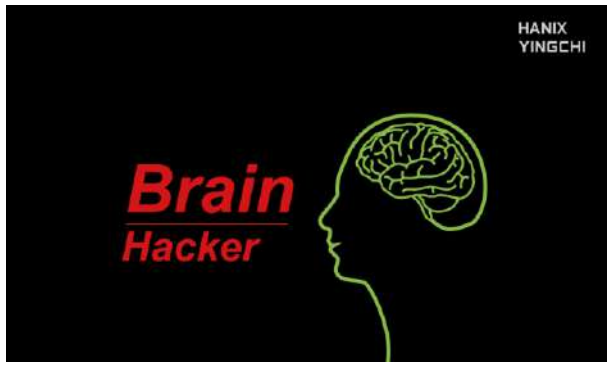
- Can simultaneously manage several TMS devices at Hospitals or Clinics efficiently.
- Can simultaneously manage large numbers of patients receiving treatment and significantly reduce patient waiting times.
- Can easily share information within LAN and integrated management systems.
- Can collect and collate large volume data for scientific research purposes.

  Within data acquisition, can anonymize private Patient information to meet Patient Privacy regulations.

Service/Support-We Care for You

We conduct international Webinars broadcast via "Brain Hacker". Brain Hacker is an audio-visual live-streaming platform allowing us to share forefront knowledge, new technologies and clinical developments in neuromodulation.

Our webinars are presentations from invited global brain science experts to educate, promote, acknowledge and inform on current trends, break-throughs, achievements, research and clinical applications of TMS.



We seek to foster and encourage cooperation in Scientific research. We support scientific collaborations and promote multi-centre scientific research cooperation.

TMS Device

Presentations on TMS device technology, TMS device operation, TMS device applications.

TMS Clinical

Presentations on practical clinical TMS applications, Hospital benchmarks for TMS operations, Common TMS clinical problems and solutions, Creating personalized TMS protocols.

More Services

- Quick response times to pre and after-sales service;
- On-site support;
- On-line training;
- Free QUICKSTIM software upgrades;
- More service centers support.

Partial Service Customers

Medical University of South Carolina, USA
Hospital internacional Vithas Medimar (Neuroklinik), Spain
Hospital Vithas valencia Consuelo (Medicina del dolor), Spain
Ace alzheimer center, Spain
Neurocentro Recuperacion Funciona, Spain
Psychiatric Service Center/ACS, Sweden
Konkuk University Chungju Hospital, Korea
Hanyang University Seoul Hospital, Korea
Nottingham University, Malaysia
American Brain & Spine/ABS, India
Peking University Sixth Hospital, China
Shanghai Mental Health Center, China
The Second Xiangya Hospital of Central South University, China
West China Hospital of Sichuan University, China

M Ultimate Stimulator		M-100 Ultimate	M-50 Ultimate	M-30 Ultimate	M-10 Ultimate
Maximum Repetition Rate	100pps	+			
	50pps		+		
	30pps			+	
	10pps				+
Pulse mode	Theta Burst	+	+		
	rTMS	+	+	+	+
	Single pulse	+	+	+	+
Waveform	Biphasic	+	+	+	+

TMS

TMS Navigation System

TMS Robotic Arm

Social Media

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yingchi7890

@yingchi__tms

Official Website

SHENZHEN YINGCHI TECHNOLOGY CO.,LTD.

Block B, 2/F, Phoenix City Building, 15 Sci-tech North 1st Road, Xili,
Shenzhen 518057, China
Tel: 0086-755-2647 5399
Email: sales@yingchitech.com

www.yingchitech.com

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