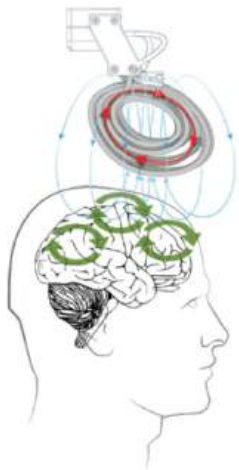
YINGCHI

Psychiatry | Neurology | Rehabilitation

Precision | Normativity | Efficiency | Safety

Transcranial Magnetic Stimulator

The 510k number assigned by the FDA to the application for Brain Ultimate/YINGCHI rTMS is K230735.



Transcranial Magnetic Stimulation (TMS) technology uses a time-varying pulsed magnetic field to penetrate the skull to form an induced electric field in the neuron cells of the brain, and then generate an induced current to act on the nervous system, causing a series of physiological and biochemical reactions, thereby affecting brain metabolism and changes in neuron excitability to improve and treat mental and neurological diseases.

TMS technology is a safe method of physical therapy. It has been clinically used for nearly 40 years. A large number of clinical trials of evidence-based medicine have proved its effectiveness. It is mainly used for the treatment of refractory brain function diseases, covering Psychiatry, Neurology, Rehabilitation, Pediatrics, Pain, etc.

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.

Evidence Based Guidelines

- In 1998, the National Institute of Neurological Disorders and Stroke, Medical Neurology Branch issued "Risk and safety of repetitive transcranial magnetic stimulation".
- In 2010, the Royal Australian and New Zealand College of Psychiatrists released "A practical guide to setting up a repetitive transcranial magnetic stimulation (rTMS) service".
- In 2012, the International Federation of Clinical Neurophysiology (IFCN) released "A practical guide to diagnostic transcranial magnetic stimulation ".
- In 2014, the International Federation of Clinical Neurophysiology (IFCN) released the "Evidence-based guidelines on the therapeutic use of repetitive transcranial magnetic stimulation (rTMS)", which was updated in 2019.
- In 2015, the "China cerebral palsy rehabilitation guidelines" included repetitive transcranial magnetic stimulation as an effective adjuvant treatment for children with cerebral palsy (recommendation level A).

- In 2016, the Canadian Network for Mood and Anxiety Treatments (CANMAT) recommended rTMS as the first-line treatment in the "The Clinical TMS Society Consensus Review and Treatment Recommendations for TMS Therapy for Major Depressive Disorder".
- In 2018, the Royal Australian and New Zealand College of Psychiatrists released "Transcranial magnetic stimulation (TMS) safety: a practical guide for psychiatrists".
- In 2020, the International Federation of Clinical Neurophysiology (IFCN) updated the "Safety and recommendations for TMS use in healthy subjects and patient populations" released in 2009, taking into account the safety of new technologies and equipment, and providing operational guidelines for future TMS usage plans.
- In December 2020, the National Health Commission of China issued the "Guidelines for the Diagnosis and Treatment of Mental Disorders (2020 Edition)", which clearly mentioned physical therapy techniques such as repetitive transcranial magnetic stimulation technology as one of the comprehensive treatment methods for depressive disorders.
- In 2020, the International Federation of Clinical Neurophysiology (IFCN) released the "Evidence-based guidelines on the therapeutic use of repetitive transcranial magnetic stimulation (rTMS): An update ".
- In 2021, the Neurology Branch of Chinese Medical Doctor Association and the Chinese Medical Association Neurology Branch Parkinson's Disease and Movement Disorders Group released the "Guidelines for Repetitive Transcranial Magnetic Stimulation Treatment of Parkinson's Disease in China", which standardize the indications, treatment parameters and targets etc. of rTMS in the treatment of Parkinson's disease in China.

Expert Consensus

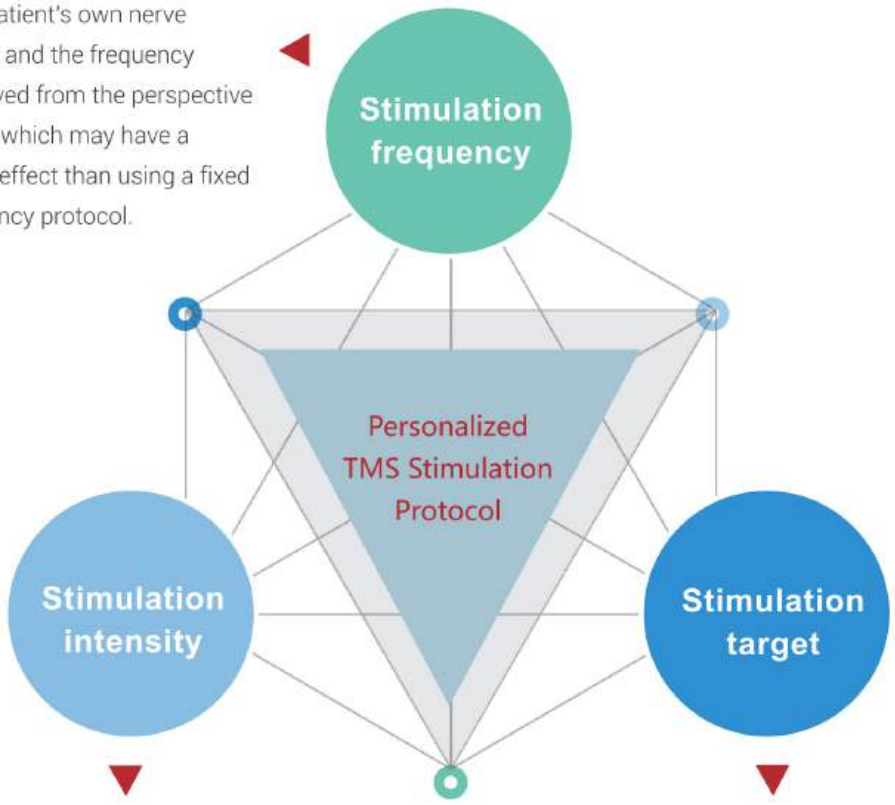
- In 2016, in the "The Clinical TMS Society Consensus Review and Treatment Recommendations for TMS Therapy for Major Depressive Disorder " issued by the Clinical TMS Society, five recommendations were put forward on the process of TMS treatment of refractory depression.
- In 2018, the American Psychiatric Association (APA) released the "Consensus Recommendations for the Clinical Application of Repetitive Transcranial Magnetic Stimulation (rTMS) in the Treatment of Depression".
- In 2018, the expert team of Chinese Society of ECT & Neurostimulation released the "Chinese experts consensus on repetitive transcranial magnetic stimulation", which introduced the safety and effectiveness of rTMS treatment in clinical practice, and standardized the treatment processes and operating techniques.
- In 2020, the International Neuromodulation Society released the "Transcranial Magnetic Stimulation for Pain, Headache, and Comorbid Depression: INS-NANS Expert Consensus Panel Review and Recommendation".
- In 2022, the Subspecialty Group of Rehabilitation ,the Society of Pediatrics , Chinese Medical Association and the Physical Therapy Committee of Chinese Association of Rehabilitation Medicine released the "Expert consensus on transcranial magnetic stimulation treatment in children with cerebral palsy".

TMS Treatment Effect Optimization - Individualized Stimulation Protocol

Although rTMS has been recommended by the FDA, international clinical guidelines, and expert consensus, due to individual differences in cortical excitability levels, nerve oscillation rhythms, and anatomical structures, the effect of traditional TMS treatment varies from person to person, some patients cannot respond to rTMS treatment, and the symptoms cannot be relieved. Therefore, current clinical research and practice are constantly trying to adjust various stimulation parameters to perform personalized interventions for patients.

Among various stimulation parameters, stimulation frequency, stimulation intensity, and stimulation target are the three most concerned parameters in personalized intervention.

Setting the stimulation frequency according to the patient's own nerve oscillation rhythm, and the frequency accuracy is improved from the perspective of time resolution, which may have a better therapeutic effect than using a fixed stimulation frequency protocol.



Setting the stimulation intensity according to the patient's motor threshold can improve patient compliance while ensuring the safety of patient treatment.

Locate the cortical projection area according to the anatomical structure of the patient's brain, improve the accuracy of the stimulation target from the perspective of spatial resolution, and improve the treatment deviation caused by the positioning of craniofacial landmarks.

On the basis of the above research, Shenzhen Yingchi Technology Co., Ltd. has launched a precise brain function detection and regulation system, which integrates pulsed magnetic stimulation device, EEG recorders, MEP, TMS navigation, etc., and can be freely selected and matched according to clinical needs.

Precise Diagnosis and Modulation Systems of Brain Function

TMS 3D Navigation System

MRI Based Precise Positioning

EEG System

Individual Treatment Frequency

Transcranial Magnetic Stimulator (TMS)

Combination of TMS & EEG/EMG/fNIRS

Motor Evoked Potential (MEP)

Precise Motor Threshold

Precision

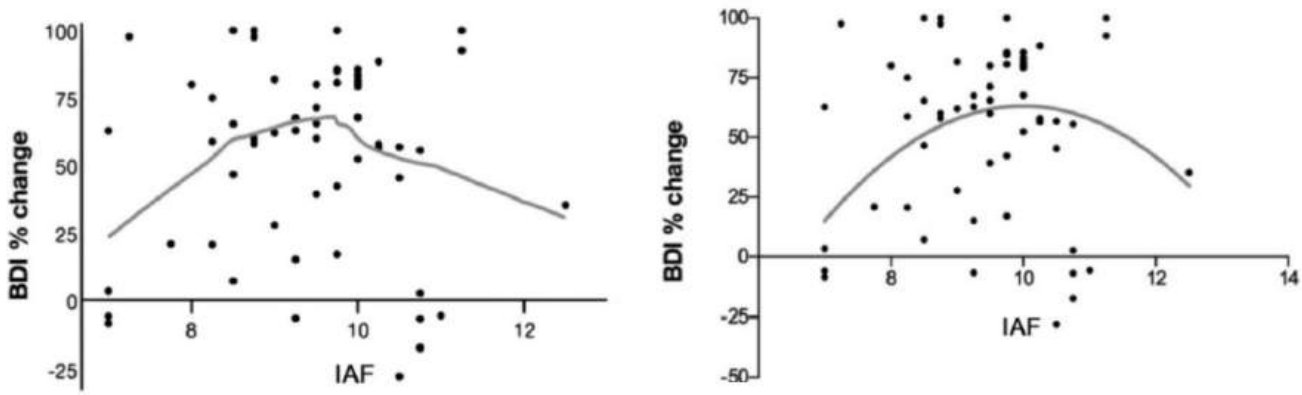
Stimulation Frequency Precision

New trend of rTMS therapy: setting TMS stimulation frequency based on individual alpha oscillation

In 2019, Harvard Hospital in the United States published an article pointing out that in patients with the first episode of mental disorders, their mental disorders are related to abnormal human endogenous neural oscillations. It is suggested that multiple connectivity disorders of the cortico-cortical and cortico-thalamic patterning networks are impaired during the first episode of psychiatric illness (Murphy et al., 2019).

The degree of internal oscillation and resonance is coupled with the rhythm of the external driving force and depends on the amplitude (strength) and frequency of the external driving force. The closer the driving force is to the internal frequency, the more likely this resonance will occur, the stronger the resonance, the stronger the effect of neuroplasticity.

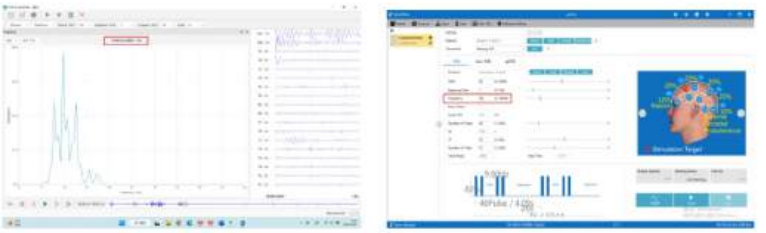
In the same year, a UCLA study showed that when rTMS with a stimulation frequency of 10 Hz was used, the closer the patient's alpha peak frequency (IAF) value was to 10 Hz, the greater the improvement in depressive symptoms, suggesting that rTMS was set based on individual neural oscillations stimulation frequency may improve depressive symptoms better than using a traditional fixed high-frequency paradigm (Roelofs et al., 2021).



Only in the 10Hz rTMS stimulation group, the approach value of IAF and 10Hz was significantly negatively correlated with the symptom improvement rate, and the curve fitting model showed that there was a quadratic function relationship, with the peak at 10Hz IAF (Roelofs et al., 2021).

3-minute resting-state EEG data to determine individual rTMS treatment frequency

YINGCHI provides a wireless dry electrode EEG system, which can automatically calculate the alpha peak frequency (IAF) after 3 minutes of resting-state EEG examination with eyes closed, and guide the frequency of rTMS treatment.

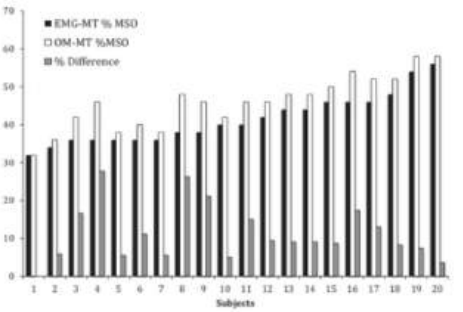


Automatic real-time display of individual alpha peak frequency(IAF) to guide rTMS treatment.

Stimulation Intensity Precision

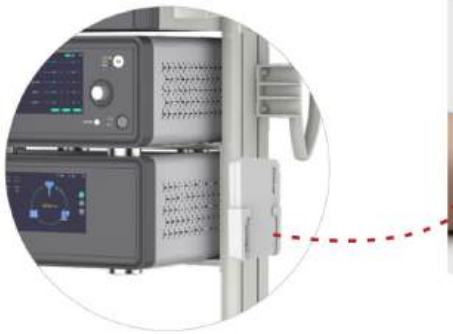
In clinical treatment, the motor threshold of each patient is generally evaluated before starting treatment to understand the excitability of the patient's cerebral cortex, so as to determine the intensity of treatment according to the patient's motor threshold. Common methods for determining motor thresholds include visual observation of muscle spasticity (OM-MT) and electromyographic measurement (EMG-MT).

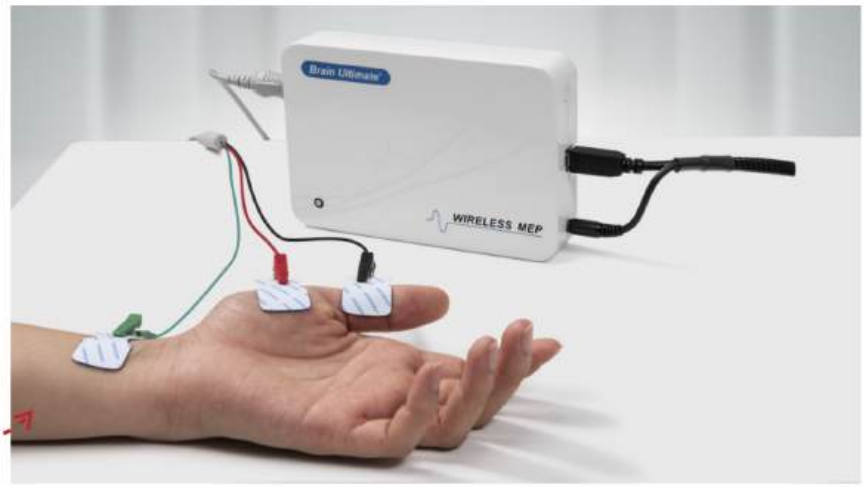
Westin G. G. et al. explored the difference between two methods of OM-MT and EMG-MT for threshold detection, and found that the threshold measured by OM-MT was higher than that of EMG-MT. The measured motor threshold was higher by 11.3%, suggesting that the use of OM-MT may result in a greater stimulation intensity that would be unsafe for TMS treatment. Therefore, it is suggested that electromyography should be used clinically to measure the patient's motor evoked potential with MEP, which can more accurately determine the patient's motor threshold and protect patient safety (Westin G. G., et al., 2014).



EMG-MT and OM-MT(as%MSO: %maximum stimulator output) and the % difference of the OM from the EMG MT for each of the 20 subjects.

Motor Evoked Potential (MEP)





In clinical treatment, using the MEP module to measure the patient's motor threshold can ensure the therapeutic effect and the safety of the patient at the same time, and avoid setting the intensity too high to induce epilepsy. The 1998 International TMS Safety Guidelines and the 2009 International TMS Safety Guidelines proposed that rTMS stimulation should be strictly limited within the safe sequence. At the same time, the maximum stimulation duration of a single pulse train avoiding the induction of seizures is stated at different frequencies and stimulation intensities. As shown in the table below.

rTMS stimulation avoids the maximum stimulation duration of a single pulse train that induces epilepsy (in seconds)

Frequency (Hz)	Intensity (%MT)													
	90%	100%	110%	120%	130%	140%	150%	160%	170%	180%	190%	200%	210%	220%
1	> 1800	> 1800	> 1800	> 360	> 50	> 50	> 50	> 50	27	11	11	8	7	6
5	> 10	> 10	> 10	> 10	> 10	7.6	5.2	3.6	2.6	2.4	1.6	1.4	1.6	1.2
10	> 5	> 5	> 5	4.2	2.9	1.3	0.8	0.9	0.8	0.5	0.6	0.4	0.3	0.3
20	2.05	2.05	1.6	1.0	0.55	0.35	0.25	0.25	0.15	0.2	0.25	0.2	0.1	0.1
25	1.28	1.28	0.84	0.4	0.24	0.2	0.24	0.2	0.12	0.08	0.12	0.12	0.08	0.08

·Note: Safety is defined as the absence of epileptic chest seizure, spread of excitation, or discharge after EMG activity. Numbers starting with ">" are the numbers with the longest test duration.(Data sources are 2009 and 1998 International TMS Safety Guidelines).

·Blue shaded areas are frequency and intensity ranges commonly used in clinical research and practice.

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.

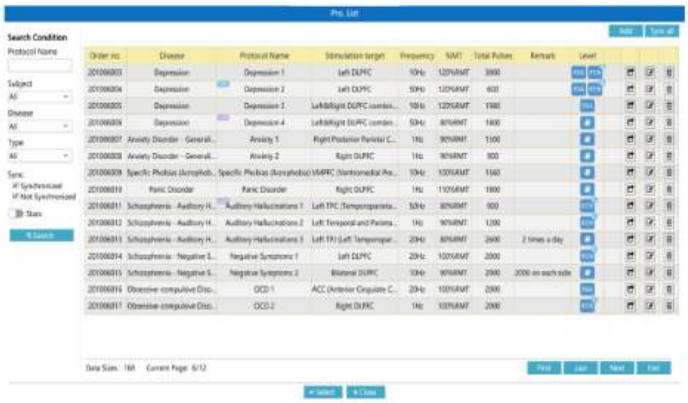
The target is more accurate!

YINGCHI TMS 3D Navigation System

YINGCHI TMS 3D navigation system adopts high-precision infrared optical capture technology, which can track and locate the transcranial magnetic stimulation coil with millimeter-level accuracy, and visualize the stimulation focus magnetic field on the anatomical image of the personalized brain. The positioning of the navigation system is intuitive and easy to use, which will help you quickly and successfully complete the key operations of TMS target positioning, thereby greatly improving the effect and efficiency of magnetic stimulation.

Normativity

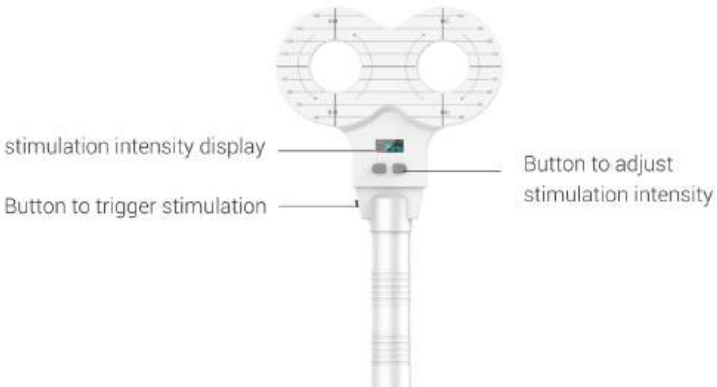
Built-in Evidence-based Treatment Protocol

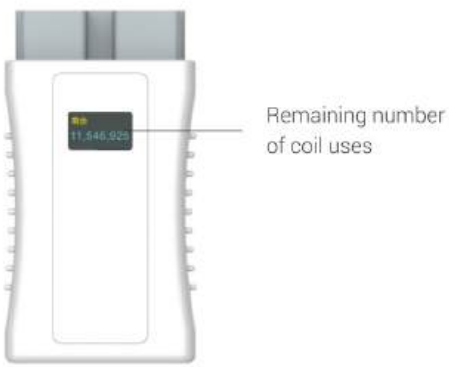


The system has the built-in standard stimulation protocols based on evidence based guidelines or FDA approved protocols, providing a reliable reference for clinical practice. Users can also customize the protocol according to clinical needs.

Efficiency

- A variety of coils are available, such as circular, figure-8, double-cone,single-cone, animal coil and angulated coil, and coil customization is supported to meet different therapy and scientific research needs..
- The stimulation intensity can be quickly adjusted through the coil button which is easy for operator to check MT.
- The stimulation intensity is displayed on the coil, which is convenient for quickly viewing the current stimulation intensity of the patient.
- The coil has a stimulation count display, which is convenient for monitoring the service life of the coil.
- Coil replacement can be completed within 10 seconds.





Data Management

TMS Report

NO：20230419174549667l

Patient information

Name Test	Age	Phone
Active Motor Threshold(AMT):0	Resting Motor Threshold(RMT):50	Peripheral Motor Threshold(PMT):0
Address		
Chief Complaint		
Diagnosis		

Treatment information

Hospitalization No.:	Report time:2023-04-19
Stimulation protocol:Depression 2	Stimulation position:Left DLPFC
Date of 2022-07-04 17:51	Stimulation result:unfinished
Remaining stimulation time(s187	Remaining stimulation 570
Time of the stimulation(s5	Pulses of the 30

Protocol detail

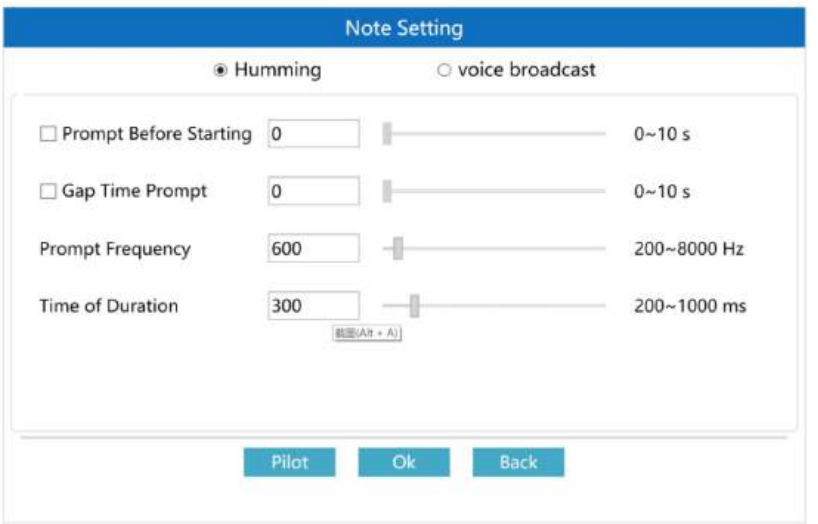
MT:50(RMT)	Intensity:120	Frequency:50
Ntim:3	Duration_time(ms):200	Nsequences:10
ISI(s):2	ITI(s):8	Ntrains:20
Total_time:03:12	Total_pulses:600	Queue 8

Signature: Date:2023-04-19

- Supports creation and storage of patient and protocol information
- Support exporting patient treatment records and MEP detection reports, and the reports can be customized and edited.

Voice Prompts for the Beginning and Ending of the stimulation

At the beginning of the stimulation, there are optional beeps and voice broadcast prompts, and there are beep prompts at the end of the stimulation, which is convenient for medical staff to distinguish the completion of the treatment.



Safety

Certification

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

Including: CE Registered, TGA Registered, NMPA Registered, KFDA Registered, etc.

Over-Heating Protection

The Brain Ultimate 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 Brain Ultimate 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.

Data Security: USB Management

Brain Ultimate 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.

YINGCHI Products for Therapy and Research

Clinical Therapy

YINGCHI TMS includes TMS S series, TMS M series and TMS E series. The three series have been gradually upgraded in product performance, continuously enriched in product functions, and steadily improved in user experience.

TMS S series

TMS M series

TMS E series

Scientific Research

In order to better meet the needs of the continuous development of brain science research, YINGCHI has successively launched TMS sham stimulation systems suitable for randomized double-blind research. The TMS intelligent navigation robot is used for precise positioning and navigation of the target, and can intelligently follow the target. Paired-pulse transcranial magnetic stimulator for neural circuit detection with dual-target stimulation. And the Mini series of multi-modal research transcranial magnetic stimulators that combine TMS with EEG, near-infrared and other equipment for multi-modal research.

Sham TMS System

TMS Robot

Paired-pulse TMS

Mini TMS

Clinical Therapy——YINGCHI TMS E Series

The E series of YINGCHI TMS is a brand-new version with more excellent performance, more abundant product functions and more humane product use which is developed to better meet the needs of brain disease treatment and brain science research. While ensuring that stimulation therapy for patients is safer and more effective, it also allows doctors, researchers and operators to enjoy a more comfortable and convenient experience.

Features

Super strong magnetic field output

With ultra-strong magnetic field output performance, when the intensity is 100% output, the maximum frequency can reach 35Hz. Without any extra option module, the stimulator can reach 35Hz at 100% intensity output.

Compressor cooling—the fourth generation of intelligent liquid cooling technology

- It adopts the fourth-generation intelligent liquid cooling technology, active cooling, and can independently choose a variety of cooling modes (high efficiency, normal, energy saving). Coolant temperature can be reduced below ambient temperature for excellent cooling performance.
- Touch screen displays real-time liquid temperature, real-time flow rate, operating status, etc., multi-parameter real-time monitoring makes the system safer and more reliable.

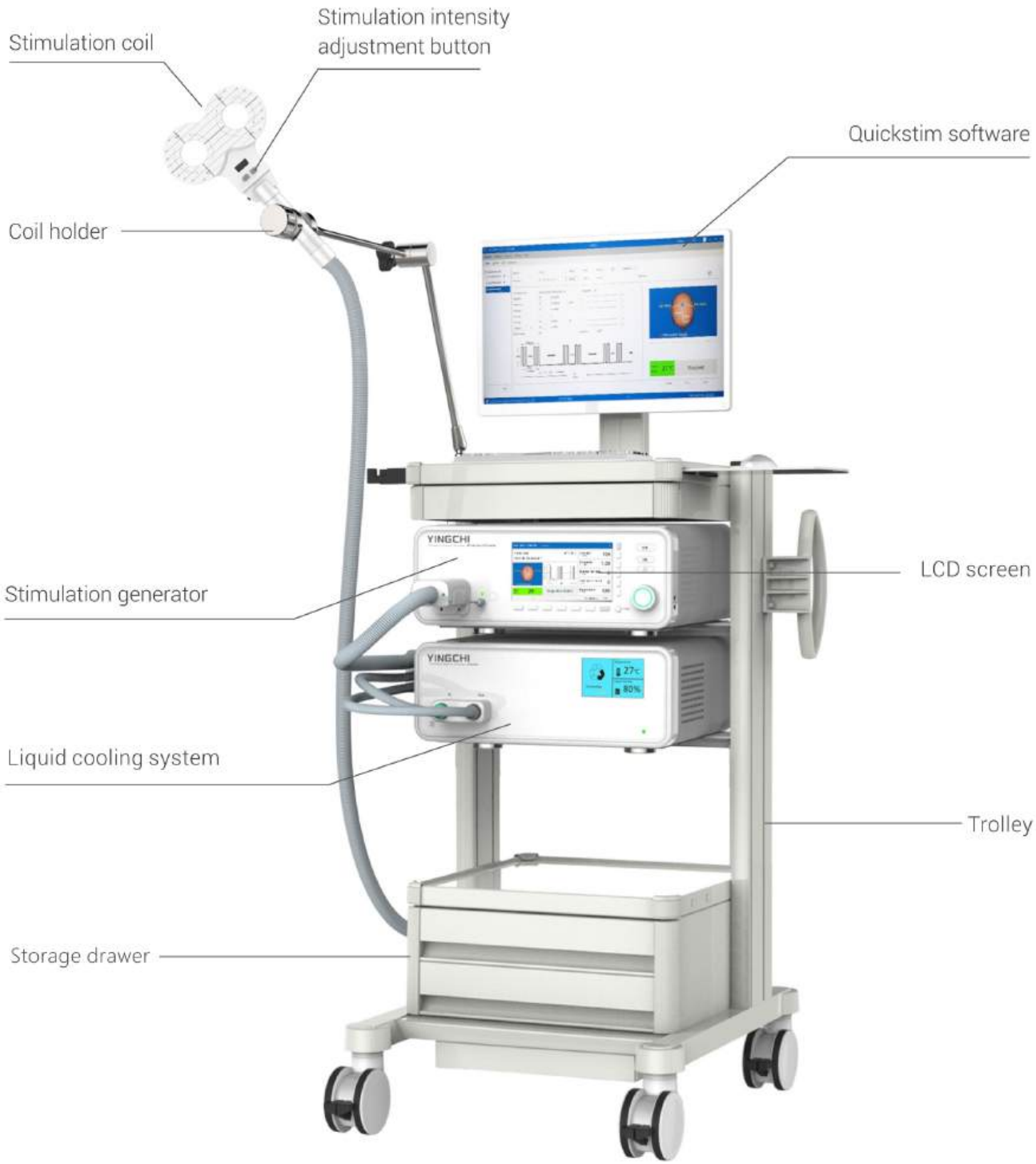
Individual TBS model

Besides the conventional TBS protocols, users can edit the TBS parameters to meet scientific research exploration and clinical needs.

Stimulation ramp-up/down intensity

Ramp-up/down intensity: can set up freely the ramp up/down duration of intensity, which can reduce muscle habituation to the stimulation in rTMS and decrease the discomfort of patients.

Clinical Therapy——YINGCHI TMS M Series



YINGCHI TMS M series is based on scientific research and clinical perspectives. It is a transcranial magnetic stimulator developed by doctors and patients after in-depth research from the technical and market levels. It adopts a modular design and has international quality certification, is the world's leading transcranial magnetic stimulation products.

Features

Certification

- The first transcranial magnetic stimulation system to obtain the registration certificate of China's NMPA Class III medical device.
- Obtained EU CE, Australia TGA, South Korea KFDA and other certifications, international quality, trustworthy.

Modular design

- The stimulation generator and the liquid-cooled system are designed separately, and the separation of liquid and electricity is safer.
- Built-in software, 7"LCD can display stimulator status, patient information and protocol information, stimulation mode setting can be operated independently.

Various cooling system

- Liquid cooling system: 1.Using large-capacity and high-efficiency liquid cooling system, the cooling speed is faster, the cooling performance is better, and it can work continuously for long time. 2.The LCD on the liquid cooling system displays the temperature, content, cooling cycle status, etc. of the cooling liquid, and real-time monitoring of multiple parameters, which is safe and reliable.
- Air cooling system: no refrigerant, no consumables, no leakage, no maintenance, safe and easy to maintain.

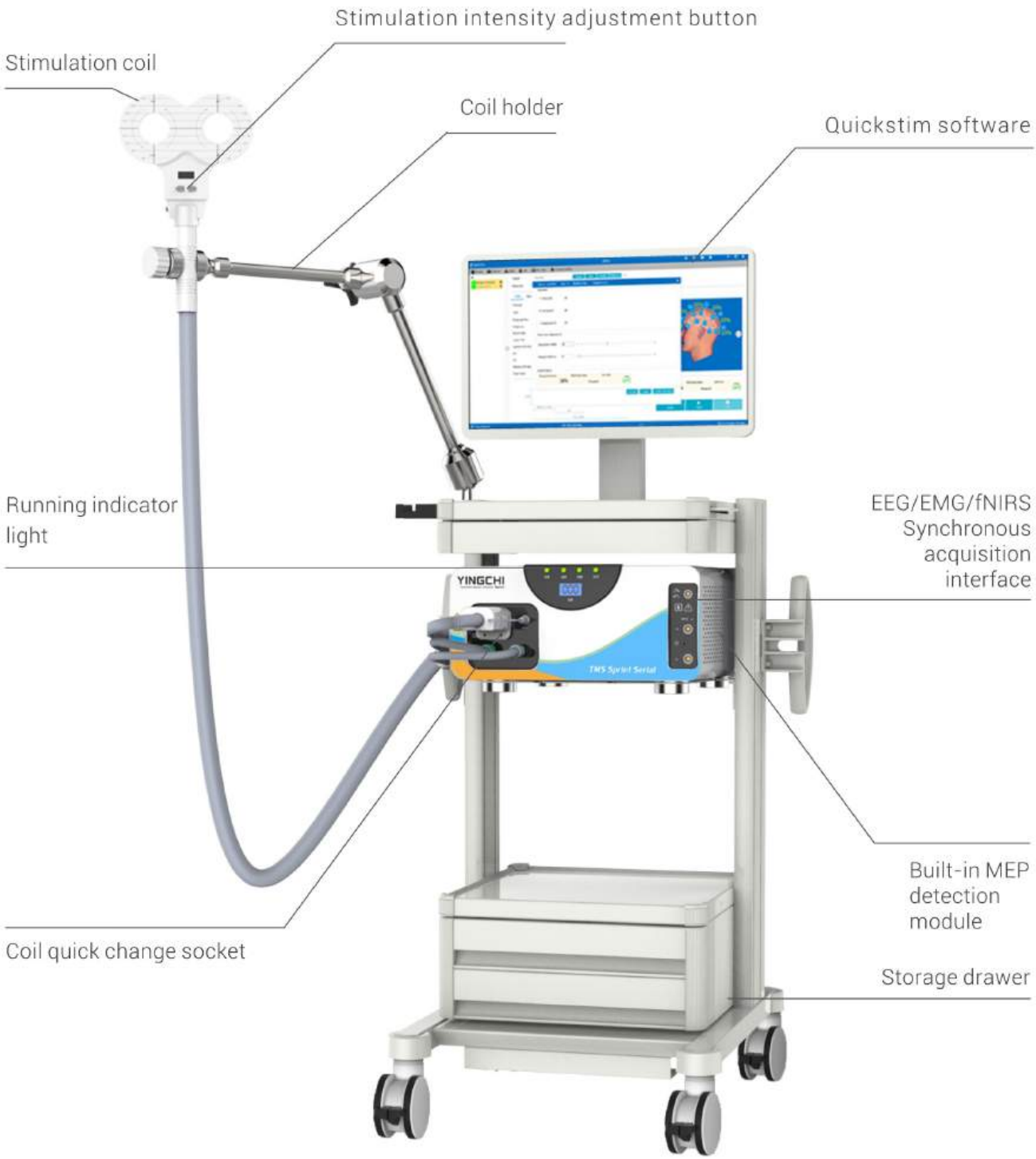
Combination of external machines

It can be used in conjunction with the dual-channel MEP detection module, and has wireless transmission function, which can quickly detect the motor evoked potential of the upper and lower extremities. Equipped with trigger in/out interface, supports to combine with external systems such as EMG/EEG etc.

Equipped with sham stimulation coil system for randomized double-blind experimental research

Equipped with a placebo coil system to achieve true random double-blind stimulation and blind analysis, which can meet the requirements for accuracy, reliability and consistency of results in clinical and scientific research.

Clinical Therapy——YINGCHI TMS S Series



The S series of YINGCHI TMS adopts the all-in-one design, with optional cooling system of liquid cooling and air cooling, intelligent integration of stimulation generator, liquid cooling system and MEP module, exquisite appearance and small size, which can meet the routine transcranial magnetic stimulation treatment and neurological function detection.

Features

CE certification

It has passed the international safety standard test and reached the medical product safety standard stipulated by the EU Directive, which is trustworthy.

All-in-one design

The stimulation generator, liquid cooling system and MEP module adopt all-in-one design, which is intelligently integrated and easy to move.

Optional cooling system

- Liquid cooling system: The cooling effect can meet the basic clinical treatment needs. The system has temperature detection and automatic alarm device, low noise and good cooling performance.
- Air cooling system: no refrigerant, no consumables, no leakage, no maintenance, safe and easy to maintain.

Built-in MEP detection module

The built-in dual-channel MEP detection module can quickly detect the motor evoked potential of the upper and lower limbs.

Safe running instructions

It has operation safety indicators such as power supply, temperature, status, and intensity, making it safer to use.

Clinical Treatment Optional Coils

Figure-8 Coil

Liquid cooling

Liquid cooling with angulated

Air cooling

Non-cooling

Circular Coil

Liquid cooling

Air cooling

Non-cooling

Cone Coil

Liquid cooling double cone

Non-cooling double cone

Liquid cooling single cone

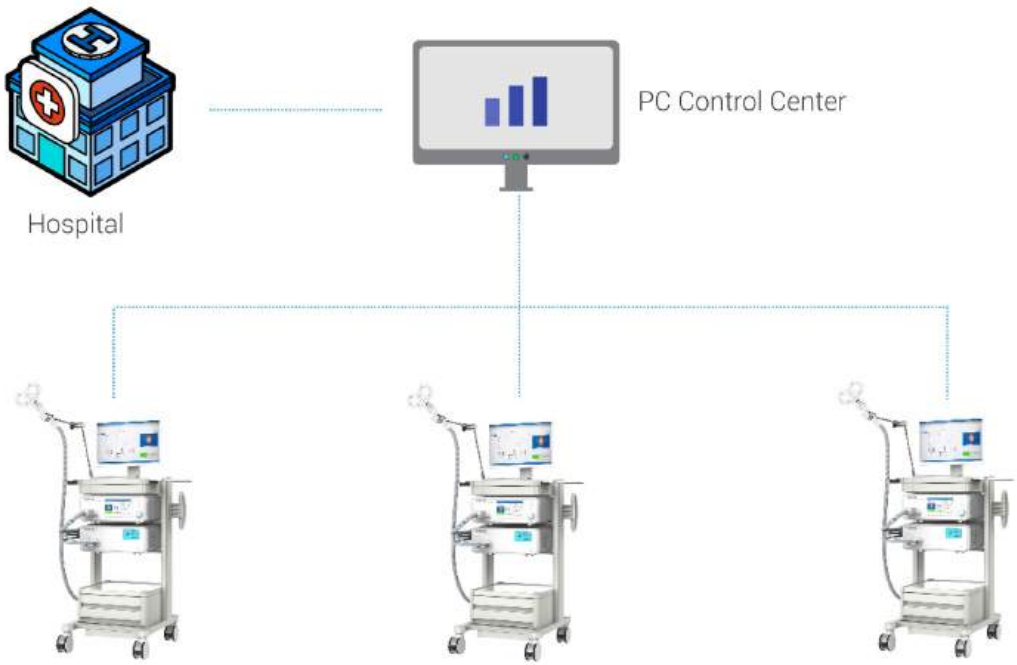
Non-cooling single cone

YINGCHI TMS: 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.

Scientific Research——Sham TMS System

YINGCHI Sham TMS System reduces the interference caused by the traditional "placebo effect" on the accuracy of the results, and realizes a truly randomized, double-blind studies, which can meet the requirements for accuracy, reliability and consistency of results in clinical and scientific research. It can combine with a 3D navigation system to further improve the repeatability of research.

Features

IFM control host and IFM card reader: intelligent switching between active/sham stimulation

The IFM control host can intelligently switch the active and sham stimulation output according to the coded information in the IFM stimulation card recognized by the IFM reader-writer, and it is the stimulation output mode switching terminal.

Sham stimulation coil: one side to achieve active/sham stimulation

There is no need to adjust the position of the coil or replace the coil type, and the sound intensity, rhythm, and vibration sense of the sham stimulation are the same as those of the active stimulation, and the active and sham stimulation can be realized on one side, ensuring that neither the operator nor the subject is aware of the stimulation mode.

IFM stimulation cards: same look, different modes

The cards are divided into two types according to the built-in data information: active stimulation cards and sham stimulation cards. There is no difference in the appearance of the two cards. The experiment designer entrusts the operator to randomly distribute the stimulation cards. Neither the subjects nor the operators know the type of cards. In order to achieve the purpose of random allocation.

IFM data analysis software: intelligent data analysis

The IFM data analysis software is used with the IFM card reader, and the data can be sorted after reading the stimulation card information. It can be used in combination with the YINGCHI TMS stimulation recording system.

Scientific Research——TMS Robot

YINGCHI TMS ROB 9000 intelligent navigation robot system is an intelligent navigation system integrating medical imaging technology, image processing technology, positioning and navigation technology, intelligent robot technology and transcranial magnetic stimulation technology, which can provide advanced precise positioning and navigation services for TMS technology.

Features

1N force feedback

The six-axis force feedback sensor accurate to 1N ensures the safety of intelligent positioning and following movement of collaborative robots.

Smart tracking

Integrating the near-infrared binocular vision positioning technology and the intelligent follow-up system of the collaborative robot, it ensures that each pulse stimulates the same target and realizes accurate repetitive transcranial magnetic stimulation.

Multi-target stimulation

It can automatically locate the target points sequentially according to the preset protocol for stimulation, satisfying the multi site stimulation treatment plan.

Automatic threshold detection

Built-in intelligent array stimulation mode can complete MEP detection with one key, improving the efficiency of diagnosis and treatment.

Scientific Research——Paired-pulse TMS

The DCS 9000 series TMS is an integrated design. A single device is equipped with two coils at the same time, which can output pulse stimulation independently without interfering with each other, satisfying the simultaneous stimulation of two targets. The device can be used with MEP.

Features

Various stimulation modes

In addition to the standard rTMS mode and TBS mode, it supports individual TBS mode, where rTMS supports frequency conversion, and both rTMS and TBS support ramp up/down intensity.

Two-coil paired pulse detetion

Two coils/two sets of high voltage systems can independently choose the output mode, can achieve single site paired pulse stimulation (pTMS), can achieve double site pTMS.

The minimal interval between conditioned stimulus (CS) and trial stimulus (TS) is at least 0.1ms.

Two-subject stimulation

One device can treat two patients simultaneously, without interference.

Two-target stimulation

The left and right coils can independently adjust the parameters of stimulation intensity, stimulation frequency, stimulation time, interval time to stimulate two targets on one subject simultaneously.

The output frequency up to 120Hz

When the machine output intensity is 20%, the stimulation frequency can reach up to 120Hz, and when the machine output intensity is 100%, the stimulation frequency can reach up to 36Hz.

Equipped with three-position foot switch

The three-position foot switch can modify the stimulation intensity and trigger a single stimulation.

Scientific Research——Mini TMS

The Mini TMS has a minimum size of 306*300*145mm. It is compact, portable, and cost-effective. It can meet various application scenarios such as scientific research and bedside detection. It is a leading portable transcranial magnetic stimulator.

Features

Touch screen control, easy to operate

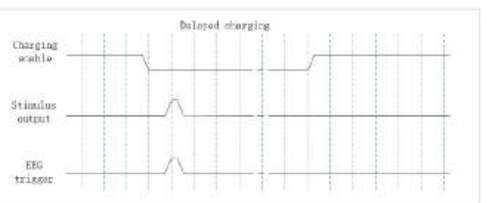
With a 12.5-inch touch screen control, the operator can view the stimulation protocol and equipment-related parameters.

TMS-MEP detection

The combination of TMS-MEP can be used to examine the transmission of motor nerves from cortex to muscle, the overall synchrony and integrity of the conduction pathway.

TMS-EEG study

TMS-EEG combined technology can explore the function of each brain region through the stimulation response characteristics of TMS-EEG, correlate the causal relationship between brain intervals, and diagnose and treat neurological and mental diseases based on abnormal response characteristics.



YINGCHI Mini series TMS can set the charging delay time to ensure that the EEG signal is clean and analyzable within a certain period of time after stimulation.

TMS-fNIRS study

Combined application of TMS and fNIRS allows direct study of cortical activation and connectivity. The strong magnetic fields generated by TMS do not cause artifacts or interference in fNIRS data.

Multimodal Joint Application System

TMS can be used in combination with EEG/ERP, fNIRS, fMRI and other imaging equipment to explore the pathogenesis and treatment mechanism of diseases through brain connection analysis, so as to optimize the rTMS treatment protocol.

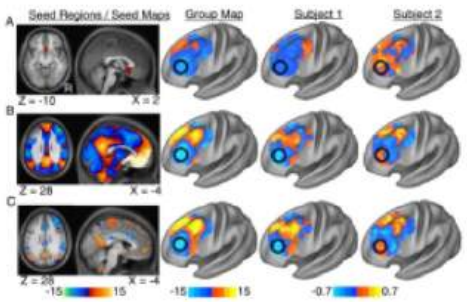
TMS-EEG/ERP

The combined application of TMS and EEG is a development trend, which can measure the TMS stimulation site and stimulation conduction in real time to understand the stimulation effect. The simultaneous recording of TMS-EEG can take advantage of the high temporal resolution of EEG to track the transient changes of neurons induced by TMS.

TMS-fNIRS

Functional near-infrared spectroscopy (fNIRS) estimates hemoglobin (Hb) concentration changes by measuring reflected light based on the difference in absorption spectra between oxygenated hemoglobin (oxy-Hb) and deoxygenated hemoglobin (deoxy-Hb).Based on its high spatial resolution, economical and intuitive and objective imaging advantage, fNIRS has been used to evaluate intime rTMS treatment effects and guide rTMS target besides aid the diagnosis of psychiatric diseases.

TMS-fMRI



TMS-fMRI is a valuable tool for measuring state-dependent effective connectivity in the human brain, which can be used with TMS navigation to achieve personalized precision therapy. Besides, fMRI allows researchers to explore the treatment effect and mechanism of rTMS.

Service And Support

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.

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