

Magnetic Stimulators and Coils



magstim[®]

Pioneers in nerve stimulation

The Magstim® range of non-invasive magnetic stimulation systems provide a variety of high quality solutions to researchers and clinicians working within Neurology, Neuroscience, Psychiatry and Rehabilitation.

Magstim has developed substantial expertise and experience of magnetic stimulation, becoming a world market leader in the field. We offer our customers a variety of magnetic stimulators, standard stimulating coils, custom coils and output waveforms, to suit a variety of clinical and research applications.

Our range of standard stimulators consists of the Magstim 200², Magstim BiStim² and the Magstim Rapid².

Neuromodulation and brain stimulation

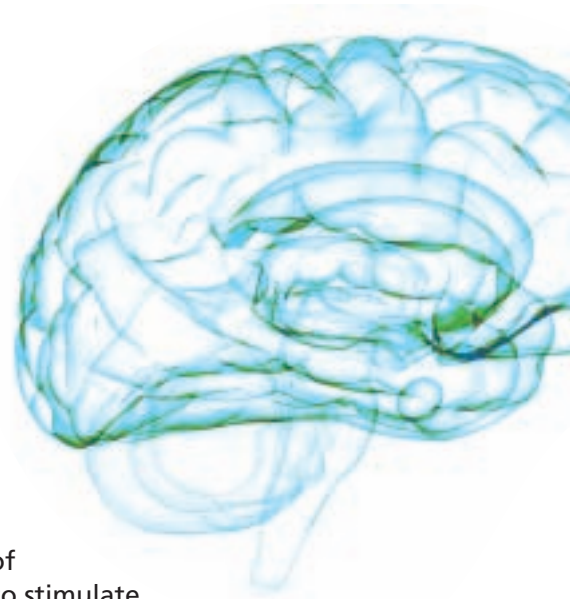
Magnetic stimulation is a non-invasive and painless method of exciting neurons using strong, time varying magnetic fields generated by a stimulating coil and held close to the intended site of stimulation.

Used for research, diagnosis, prognosis and therapy in a range of nervous and psychiatric disorders, magnetic stimulation is able to stimulate the human cortex, spinal roots and peripheral nerves.

Depending on the application a variety of output waveforms may be used to excite or inhibit nerve response. In addition a pulse can be either monophasic or biphasic.

Monophasic single pulse systems are favoured for neurology applications due to the accuracy of the waveform and low heat output. For rapid rate stimulation, biphasic systems are used due to their ability to produce short and efficient pulses.

Our magnetic stimulators are widely compatible and can be used in conjunction with equipment such as MRI, fMRI, EMG, EEG, and TMS Navigation in order to elicit, record and monitor brain activity.



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Driving magnetic stimulation forward

The Magstim range of magnetic stimulators draws upon extensive knowledge and expertise gathered both in the clinical and research environments. This results in an innovative design philosophy that has established Magstim as a world leader in magnetic stimulation systems.

- **Exceptional functionality** - provided through a full range of waveform capabilities including the advantage of high frequency delivery
- **Easy-to-use** - single-handed operation is achieved through comfortable inbuilt coil controls and the modular design complements any operating environment, making upgrades simple
- **Intelligent hardware** - ensuring Magstim stimulators are compatible with existing Magstim coils

	Magstim 200 ²	Magstim BiStim ²	Magstim Rapid ²	
Output Type	Monophasic	Monophasic Twin Pulse	Biphasic	
Maximum Power as % of Magstim 200 ²	100%	113%	85%	
Maximum Frequency at Maximum Power 230V	0.25Hz	0.2Hz	Single PSU - 15Hz	Dual PSU - 25Hz
Maximum Frequency at Maximum Power 110V	0.25Hz	0.2Hz	Single PSU - 11Hz	Dual PSU - 22Hz
Upper Frequency 240V	0.5Hz	0.2Hz	Single PSU - 50Hz	Dual PSU - 100Hz
Upper Frequency 110V	0.5Hz	0.2Hz	Single PSU - 36Hz	Dual PSU - 60Hz
Maximum Frequency Burst	0.5Hz	1000Hz	100Hz	
Minimum Pulse Interval	2 sec	1 msec	Single PSU - 20ms	Dual PSU - 10ms

Go one step further with Magstim Innovations

As well as our current models, Magstim provides a unique custom design service through the expertise of our "Magstim Innovations" team. Inspired by forward thinking researchers, the Magstim Innovations team is able to develop to order the products required to meet the exact needs of the research community. Magstim Innovations can help you push the boundaries of neuromodulation and brain stimulation to new levels.

magstim[®]
innovations

Monophasic systems

Magstim produce two monophasic systems; the Magstim 200² and BiStim². These are used extensively within the fields of Neurology and Neurophysiology, as an accepted diagnostic tool, to test nerve conduction and velocity as part of the diagnosis of many degenerative nerve conditions, assisting in early diagnosis and prognosis of disorders including:

- Multiple Sclerosis
- Central Motor Disorders
- Motor Neurone Disease
- Spinal Injury

For accurate single pulse functionality, monophasic waveform systems are favoured for:

- Neurological research
- Cortical mapping and brain research
- Functional assessment of central motor pathways
- Early diagnosis, assessment and monitoring of nervous diseases



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Single pulse and controlled trains



Magstim 200²

The Magstim 200² Transcranial Magnetic Stimulator (TMS) provides users with the ability to elicit cortical evoked potentials, quickly and easily, as a routine component of clinical and research assessments, including:

- Triple Stimulation Technique
- Resting Motor Threshold
- Active Motor Threshold
- Central Conduction Time
- Motor Evoked Potential
- Input-Output Curve
- Cortical Silent Period

The Magstim 200² system is very flexible and can be interfaced with a wide variety of commercially available EMG systems. Efficient and effective monophasic stimulating waveforms provide a high degree of hemispheric accuracy, low noise and less coil heating than other pulse waveforms.

The Magstim 200² is compatible with the complete range of Magstim stimulating coils when used with the Magstim Coil Adaptor and this allows the system to be used with all existing standard and custom coils.



Magstim BiStim²

Magstim BiStim² offers the potential to combine two Magstim 200² units to provide fully programmable paired pulse stimulation through a single stimulating coil. The ability to change pulse intervals and to control independently the power level of each Magstim 200² allows for precise sub- and supra-threshold conditioning and test pulses. This is invaluable for the investigation of Inter-Cortical Inhibition and Intra-Cortical Facilitation.

Two inter-pulse spacing options offer maximum controllability:

- 1ms - 999ms in 1ms increments
- 1.0ms - 99.9ms in 0.1ms increments

The inter-pulse spacing of the two pulses is adjustable using either the integral stimulator controls, remote control coil or externally via triggering software offering complete user flexibility. BiStim² has the added advantage of being able to summate the two single pulses provided by the Magstim stimulators to produce a single high power pulse equal to 113% of a single Magstim 200².

Biphasic systems

Where repetitive magnetic stimulation is required, Magstim has the answers.

Magstim Rapid² repetitive Transcranial Magnetic Stimulator (rTMS) devices are highly effective non-invasive biphasic magnetic stimulators designed to meet the exacting needs of those involved at all levels of clinical and academic research by delivering highly efficient short duration biphasic pulses making it very well suited to bilateral cortical stimulation.

Magstim Rapid² is used in many different areas of research, some of which include:

- **Cognitive Neuroscience** - in the investigation of learning, memory, speech, hearing, visual, perception and functional connection
- **Psychiatry** - to influence specific brain function within the dorsolateral prefrontal cortex
- **Neurophysiology** - used in the stimulation of the peripheral and central nerve pathways
- **Rehabilitation** - used in the promotion of muscle recovery and the relief of nerve spasticity



Rapid rate

Magstim Rapid²

The Magstim Rapid² range of repetitive stimulators has been developed as a result of extensive experience and is able to maintain a consistent pulse amplitude/frequency during the delivery of stimulation trains through Single Pulse, Repetitive, Burst and Session modes of operation.

The dedicated touch screen user interface with internal and external memory makes storage and retrieval of results effortless whilst the incorporated thermal printer enables printing when required. The Rapid² can be used with MRI, fMRI, EMG, EEG and TMS Navigation over a broad range of protocols and is fully compatible with existing Magstim coils through customised hardware.

Rapid² stimulators combine stimulation frequencies from 1Hz to 100Hz, with a 0.1Hz frequency resolution and are complete with an integrated two channel EMG amplifier with integral system acquisition software including latency and amplitude cursors.



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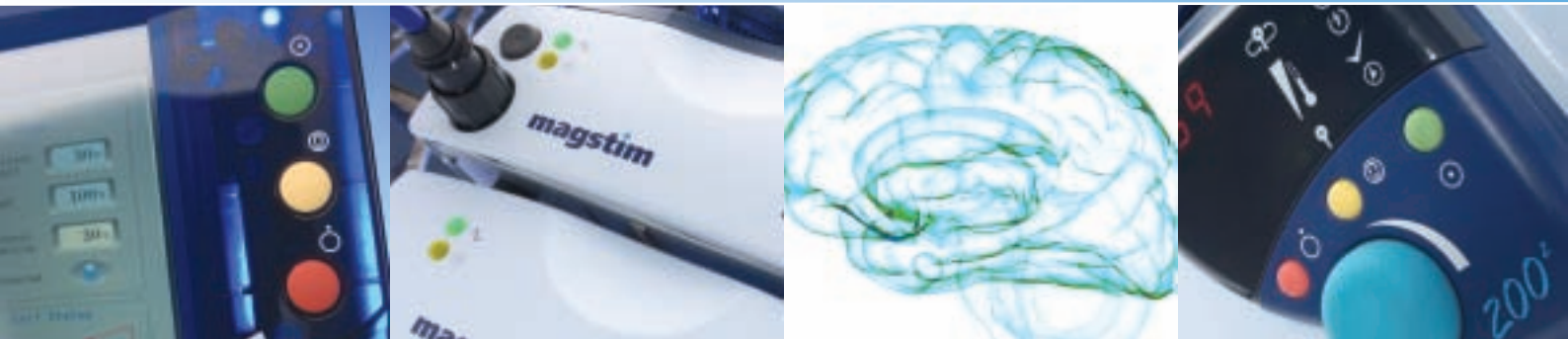
Stimulating coils



There is a wide range of stimulating coils available for use with Magstim systems, offering a great level of flexibility to both clinical and research users:

- Circular, Double and Placebo coils are available in a variety of sizes for specific, targeted stimulation and research protocols
- It is now possible to achieve prolonged periods of stimulation with the innovative Air Film™ Coil, created to work in combination with Magstim Rapid² stimulators. The Air Film Coil uses innovative, ambient air flow and temperature regulated fan technology to enable the cooled coil to run indefinitely under certain protocols
- Non-standard, custom coils are available to the customer's design and specification, allowing variation in configuration and geometry





For further information on clinical applications or product specifications, please contact Magstim or your local distributor.

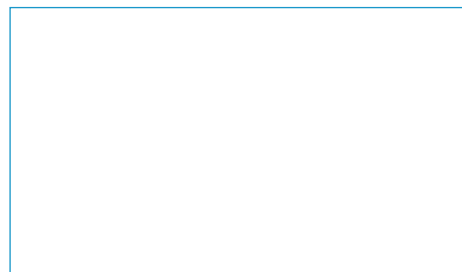
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magstim
Pioneers in nerve stimulation and monitoring



Cortical magnetic stimulation is currently considered investigational in the USA.
All standard products carry the CE mark, comply with the Medical Device Directive 93/42/EEC, and are manufactured under a Quality System certified to ISO 13485.
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