

BTS FREEMG 1000

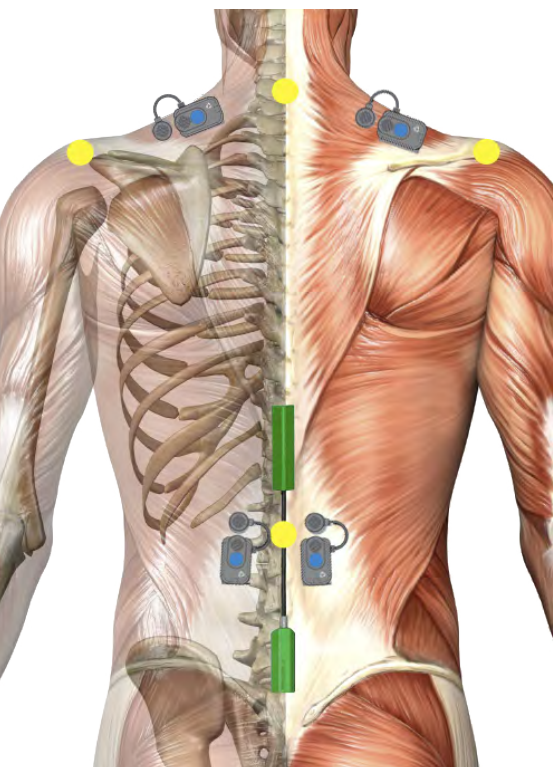
Wireless System for real-time
motion and EMG analysis

High Performances Wireless Real-time - 10gr



BTS Bioengineering

Wireless System for real-time motion and EMG analysis



The most advanced Electromyography Unit in the world.

BTS FREEEMG 1000 represents a generation leap in the diagnostic devices for biological signals analysis.

Based entirely on wireless technologies, BTS FREEEMG 1000 uses up to 10 light miniaturized probes with active electrodes for signal acquisition and transmission for EMG, angles, speed, acceleration and pressure assessment. BTS FREEEMG 1000 satisfies the requirements of those researchers and clinicians who need to daily rely on a highly efficient system that is easy to configure and use.

The probes amplify the signals, digitize them on board and communicate with the USB receiver connected directly to the computer.

The complete absence of wires not only reduces the patient distress during the preparation but also grants him full range of motion during task execution without any restriction.

The probes variable geometry and the substantial reduced size and weight allow using them on any body segment but also during all types of movement (walk, run, jump,..) without affecting in any way the motor pattern.

Thanks to the eco-friendly rechargeable batteries it is possible to record data for several continuous hours.

BTS FREEEMG 1000 is supplied with an advanced EMG software application: BTS EMG-Analyzer.

BTS EMG-Analyzer

BTS EMG-Analyzer is the most complete software solution for EMG signal analysis. It includes predefined templates for evaluations in clinic, sport and research fields: jump, plyometry, gait, fatigue analysis, isokinetics, etc... It also integrates a graphic interface to build analysis protocol templates and customized report.

Applications

BTS FREEEMG 1000 can be used in different fields like: research, sports, occupational medicine, gnathology, neurology and orthopaedics.

BTS FREEEMG 1000 is the most advanced diagnostic tool for:

- Neurological and orthopaedic pathologies evaluation,
- Pharmacological therapies planning,
- Supervision of motor deficit progression,
- Choice of orthosis,
- Rehabilitative follow-ups,
- Sport training optimization

Lightweight probes





Record of miniaturization

BTS FREEMG 1000 uses the best technology available today. Totally wireless, it integrates probes with active and variable geometry electrodes, weighing about 10 grams.

Quicker Analysis and Increased Accuracy

The total absence of wires allows for a quick patient preparation. The lightweight probes are directly attached to the pre-gelled electrodes and do not require any additional fastening such as adhesive tape.

Powerful and Comprehensive

The system manages up to 10 probes simultaneously, selectable among EMG, electrogoniometers and footswitch, covering up to 4 contact areas each.

Biofeedback

The real-time visualization of the acquired signals allows for biofeedback and monitoring applications.

On-board memory

Probes are equipped with a solid-state buffer memory to secure data safety in case of unexpected WiFi signal loss during the acquisition.

More than 8h of non-stop acquisition

The large autonomy and energy-saver battery ensure a whole day of recording. Easy and quick recharging by clipping onto the proprietary battery charger.

16bit Accuracy

The sampling rate of 1KHz and the 16 bit resolution give to the acquired signal the highest quality ever, providing "low noise" and the absence of movement artifacts.

Signal Range

Up to 20 meters for the data transfer between the probes and the workstation.

Integration

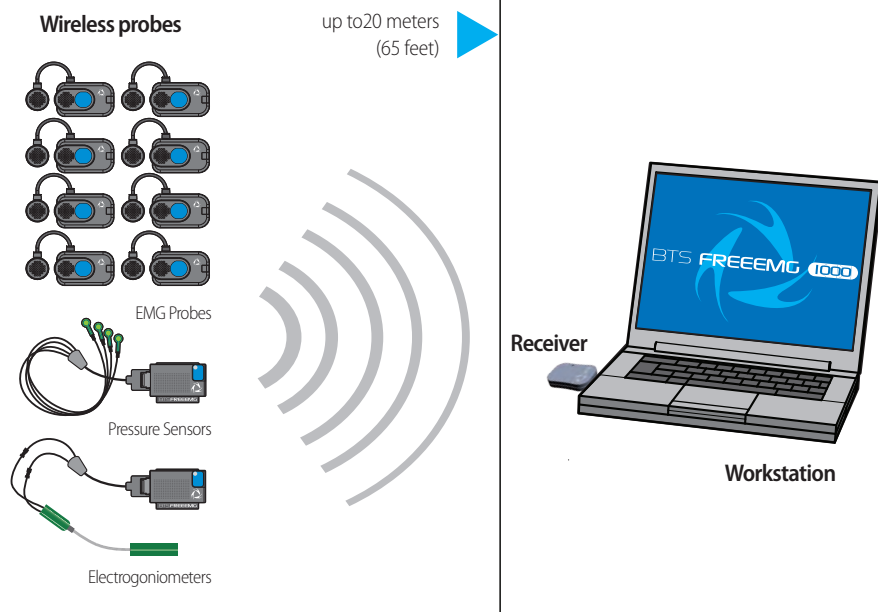
Through the BTS SDK or by means of the analogical output receiver BTS FREEMG 1000 can also work with isokinetic machines (BIODEX, CYBEX and CON-TREX), rehabilitative robots (Reo-go, BTS ANYMOV) and virtual reality therapeutic systems (BTS NIRVANA) for the evaluation of real muscle activity during rehabilitation or sport training activities.

Quick setup



The system can acquire up to 10 sensors simultaneously

Signal range



BTS FREEEMG 1000

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Technical features*

Wireless Probes

Surface electrodes	Variable geometry electrodes with mounting clip 16-bit resolution - acquisition frequency up to 1KHz
Data transmission	Wireless IEEE802.15.4 (probes - receiver) - Real Time
Battery	Rechargeable with proprietary charger (clip connector) - lithium ion
Autonomy	8h battery life with non-stop recording, several days in "Stand-by" mode, several months in "Deep sleep" mode
Acquisition range	Up to 20 meters (65 feet) in open space (without obstacles)
Holter	On probe up to 5h depending on operation mode
Memory	On board solid-state buffer memory system
Status LED	Acquisition/stand-by mode and low battery
Weight	about 10 grams including battery
Size	41,5x 24,8 x 14mm main electrode - Ø 16 x 12mm satellite electrode
Certification	Class "IIa"
Identification Labels	Available in four colors

USB receiving unit

EMG Channels	Up to 10 wireless probes
Weight and dimension	80 grams - 82 x 44 x 22.5mm

Software BTS EMG-Analyzer

- Data acquisition, display and analysis
- Analysis of localized myoelectric muscular fatigue phenomena
- Oscilloscope for the real-time viewing of the signals
- Database for data storage



* Technical features and equipment may be subject to change without notice. Images shown in this brochure are indicative only, color or model may differ from the picture shown.

Options

BTS Docking Station

Multifunctional charger equipped with internal batteries to recharge the EMG probes when the power connection is not available.

BTS Workstation

Preconfigured Desktop or Laptop PC dedicated to the biological signal processing.

Wireless Foot Switch Probes

Independent FSW sensors for the automatic gait phases identification. Up to 4 single on-off sensors for each Foot Switch probe (8 in total).

Wireless Electrogoniometer Probes

Strain gauge technology for the accurate measurement of the angles drawn by the joints in the different planes.

Video Acquisition System

BTS VIXTA, system to video record using up to 4 TV cameras simultaneously, natively synchronized with EMG signals

Analog Output Receiver

This tool allows for a quick integration with other motion analysis systems. It consists of a wireless receiver with analog output feature: raw EMG data available in analog format, simultaneously with the digital wireless data transmission. It is equipped with a USB interface for plug and play.

BTS G-SENSOR

Wireless inertial sensor composed of a triaxial accelerometer, a magnetometer, and a triaxial gyroscope, that allows for the automatic gait phases identification (heel strike, toe contact). It provides all the spatio-temporal gait parameters.

BTS FREEEMG & ISOKINETIC Kit

For integration with isokinetic machines: BIODEX, CYBEX, CON-TREX.



BTS Bioengineering

WWW.BTSBIOENGINEERING.COM
SALES@BTSBIOENGINEERING.COM

HEADQUARTERS

VIALE FORLANINI 40
20024 GARBAGNATE MILANESE MI ITALY
TEL. +39 02.366.490.00
FAX +39 02.366.490.24

R&D CENTER

VIA DELLA CROCE ROSSA 11
35129 PADOVA PD ITALY
TEL. +39 049 981 5500
FAX +39 049 792 9260

BTS USA

147 PRINCE STREET - SUITE 10
BROOKLYN NY USA 11201
INFO: +1 929 261 6665
HELPPDESK: +1 646 575 0426

BTS COMMERCIAL PARTNER NETWORK

