# *Luna* **EMG**

EGZOTech

**NEUROREHABILITATION ROBOTS** FOR YOUR CLINIC

# AUTOMATED
# **NEUROREHABILITATION**

## Active training, even for very weak patients.

Luna EMG uses **reactive electromyography to train the sensorimotor cortex.** The patient's movement is active - based on bioelectricalsignals (EMG) acquired from the patient's muscles. It is especially effective with clinically weak patients, allowing more motor unit recruitment during muscle activation than manual treatment.

## Less manual labour. Documentation on the go.

Thanks to Luna's personalized and automatic training programs, **your patients are engaged, and you do less physical labour. With training reports and objective measures created on the go you can focus on your patient's recovery** instead of working manually.

## Up to 4x more revenue. Expand your market.

Luna automates the therapy at your clinic. **Bundle up to 4 units and allow a single therapist to work with 2 or even 4 patients at the same time!** Luna also expands your market allowing the treatment and diagnosis of severe neurological patients.

# REVOLUTION
# IN NEUROREHABILITATION AND ORTHOPAEDIC THERAPY

Her main indications are:

- Increase of muscle strength
- Increase of range of motion
- Increase of coordination

That means that she is especially useful with the following patients:

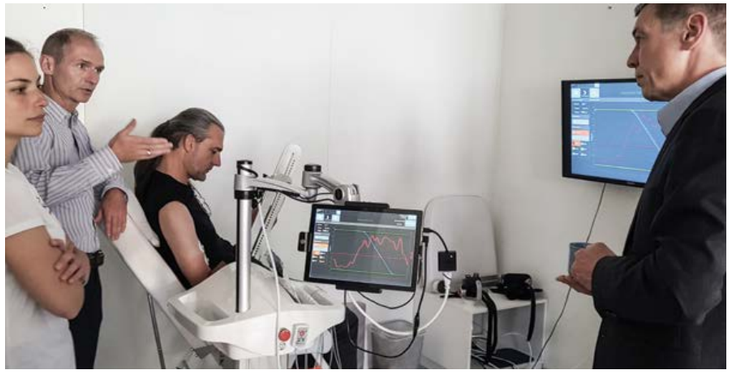
- Brain strokes
- Incomplete spinal cord injuries, spina bifida
- Multiple sclerosis, ALS
- Duchenne's, Spinal muscular atrophy
- Any partial innervation neurological disorders
- Pelvic floor (incontinence)
- Bone factures
- Post-surgical recovery

**and more ...**

**Maik Hartwig**
Occupational therapist and CEO, THERAMotion Rehabilitation Clinic, Schweinfurt, Germany

"Luna EMG contains all important elements of motor learning such as biofeedback, external focus, intensive active and passive repetition, neural reeducation, positive reinforcement and work on the performance limit. Deficient tone conditions such as hypertonia, hypotonia and spasticity can be easily treated with Luna EMG".

"Daily training with Luna EMG allows improvement in motor deficits in all patients. We believe that Luna is an important element in neurological and orthopedic rehabilitation."



"My head almost exploded with happiness! **After so many years, my body had suddenly begun listening to me."**

Michal Pabian from Krakow,
after 1st treatment on Luna EMG (SMA)

"When my son picked up his rattle, I started crying my heart out. He wasn't able to do that in 6 months."

Agnieszka Czuj with her son Radek,
after 5th treatment on Luna EMG (SMA)

**Wojciech Romanowski**
Physiotherapist and Co-founder of Rehabilitation and Orthopedic Medicine Center in Bielsko, Poland

"For us, the greatest success is the ability to help the patient in an objective and appropriate manner. Luna controls and monitors our therapy, thus minimizing therapeutic mistakes and providing evidence of improvement."

"Thanks to the attractive form of training with Luna, patients are willing to share their results with others, which increases the number of arranged therapy sessions with the use of Luna EMG."

# *Luna* **EMG** IN THERAPY AND RESEARCH

"We've used 'reactive electromyography' exercises in therapy of our patient with brachial plexus injury. He had the opportunity to perform active exercises, that he wouldn't normally be able to carry out. From day to day he saw improvement and became more independent."

Piotr Gomola, physiotherapist
Sanatorium Róża, Ustroń, Polska

"Children love exercising with Luna EMG, at the same time their muscular strength and the range of motion increases."

Mirosława Napinotek, physiotherapist
Rehabilitation Center „NEURON", Małe Gacno, Poland

"We use the assessment of muscle strength and muscle activity during active movement, while overcoming the resistance generated by Luna. It enables us to objectively assess the effectiveness of physiotherapy in patients with orthopedic and neurological disorders."

Krystyna Stańczyk, MD
AMED Upper Silesian Rehabilitation Center, Katowice, Poland

"It was interesting to see, how quickly I got tired. I didn't realize that you could pick up on the muscle flickers so easily."

Issy,
SCI patient

"Luna is the best robot for all patients with Duchenne Muscle Dystrophy. We started seeing improvements after just two weeks, training twice a day with Dawid."

Anna,
Dawid's mother, after 10th treatment on Luna EMG (DMD)

"Thanks to Luna, when my muscles were conected, I could see how to perform certain movements."

Weronika,
SCI patient

# ALL IN ONE SOLUTION FOR **KINESIOTHERAPY**

Every patient needs personalized care!
With Luna EMG's **exchangeable extensions** you will be able to provide the best care **possible in various settings**!

**Explore the possibilities!**

## **UPPER EXTREMITY** EXERCISES

Forearm pronation / supination

Elbow flexion / extension

Arm flexion / extension - lying on the back

Arm internal / external rotation

## **LOWER EXTREMITY** EXERCISES

Knee flexion / extension in sitting

Knee flexion / extension
- prone lying

Hip flexion / extension

Hip abduction / adduction

## **CLOSED CHAIN** EXERCISES

Bilateral exercise in closed chain

Unilateral exercise in closed chain

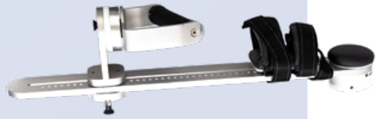
Trunk exercise

Unilateral exercise
- frontal plane

Unilateral exercise
- sagittal plane

# *Luna* **EMG**
# BASIC SET

- Forearm extension



- Upper extremity extension

- Steering wheel extension

- Lower limb extension

- Ankle extension

*Luna* EMG standart version includes:

- Luna EMG Robot;
- 5 extensions set;
- remote control;
- 2-channel EMG cable;
- Microsoft Surface 4 Pro i5 – with EgzoApp, EgzoServices, EgzoGames;
- 5 packages of EMG/EKG gel electrodes (50 pcs.);
- glove for hand stabilization.

# *Luna* **EMG**
# ADDITIONAL ACCESSORIES


Luna EMG additional accessories:

- seat with adjustable backrest and leg rest;
- a set of extensions for occupational therapy;
- set for pelvic floor training - internal electrodes, EMG cable (5 + 1 channels);
- 6-channel EMG cable;
- additional hand glove;
- TV with wall mount bracket or mobile stand.

# *Luna* **EMG**
# EXTENSION SET FOR OCCUPATIONAL THERAPY

Luna EMG enables functional hand exercises thanks to a specially designed extensions for occupational therapy in different sizes.

Set includes:

- 1 x Key extension - small;
- 1 x Key extension - large;
- 1 x Disc extension - pediatric;
- 1 x Disc extension - small;
- 1 x Disc extension - medium;
- 1 x Disc extension - large;
- 1 x Screwdriver extension - small;
- 1 x Screwdriver extension - medium;
- 1 x Screwdriver extension - large;
- 1 x Glove for hand stabilization;
- 1 x Suitcase.



# *Luna* **EMG**
# SET FOR PELVIC FLOOR TRAINING

## EMG PELVIC FLOOR TRAINING IN INCONTINENCE

Thanks to the integrated EMG functionality you can use Luna EMG to help patients suffering from incontinence using special pelvic floor electrodes! It will expand your services to patients with incomplete spinal cord injuries, as well as women after childbirth and the elderly.

Set includes:

- EMG cable 5 + 1 channels, 1.5 m long;
- 10 x PR-02A Two-wire vaginal electrode;
- 5 x PR-09A Two-wire rectal electrode;
- 1 x PR-14A Two-wire pediatric vaginal electrode;
- 1 x PR-20A Two-wire pediatric rectal electrode;
- 1 x Conductive gel 250g.

# TRAINING IN **ALL STAGES OF REHABILITATION**

## REACTIVE ELECTROMIGRAPHY

### EMG CONTROLLED EXERCISES FOR CLINICALLY WEAK PATIENTS

With Luna, you can now start an active-assistive training for every innerved patient, even when the contraction is only visible on the EMG and not palpable.

Thanks to the movement being controlled by the electromyograph, **the action-reaction pattern of the sensorimotor cortex is strengthen considerably** and **proprioception is being improved.**

**"Reactive electromyography" types of exercises:**

- **"Trigger and hold"-** the assist of the robot depends on the activation and maintenance of the muscle tension;
- **"Trigger and release"** robot assist depending on activation, without having to maintain the muscle tension.

## DYNAMIC VARIABLE RESISTANCE

With the assistance of Luna EMG, we can provide:

- **Isokinetic** exercises;
- **Proprioception** exercises;
- Exercises **with "weight" resistance;**
- Exercises **with elastic resistance.**

## PASSIVE EXERCISES

The device also enables to conduct passive exercises with the help of:

- **Continuous passive motion;**
- **Progressive passive motion** with increasing range of motion.

## EMG BIOFEEDBACK

Utilize the integrated electromyography to train any surface or pelvic floor muscles, even without extensions. You can focus on and train all motor units: fast-fatigable, fatigue-resistant and slow one.



# NEVER AGAIN **WILL THERAPY BE BORING!**

Forget about hard and boring trenings!

Use ***Luna's* built in rehabilitation games** to enhance the experience of physical therapy and **spike your patient's involvement**. Works perfectly for both kids and adults.

Luna's **Space Shooter** and **Bubbles** games can be used with:

- **Concentric, isokinetic** exercises with any extension and any limb;
- **EMG Biofeedback** exercises with surface or pelvic floor electrodes

*Luna* **EMG**

# EXPAND YOUR
# **DIAGNOSTIC SERVICES**

With *Luna* **EMG** you can now supply your patients with **objective, data driven diagnosis**.

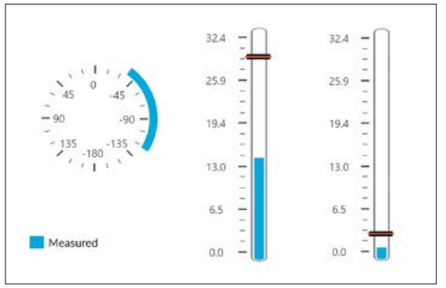
With the built in 6 channel electromyogram, integrated torque sensor and position measurements, Luna will allow you to provide specialized, clinical evaluations:

- **Innervation diagnosis and motor unit recruitment** (through surface and pelvic floor electromyography);
- **Dynamometric strength measurements** - maximal torque;
- **Range of motion measurements** (passive, assisted and active);
- Quantifiable spasticity and rigidity during passive movement;
- Muscle activation sequence and compensation
- Coordination.

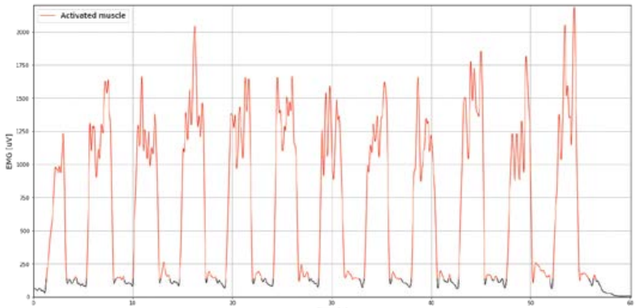
Luna EMG generates PDF reports and CSV exports (comma separated values) from training sessions, that can be used as the patient's history file. With it, you can provide the healthcare insurance companies or national healthcare systems with the evidence that you and your clinic delivers the results they are paying for.

## Use *Luna* **EMG** as a **tool for evaluation in scientific research**

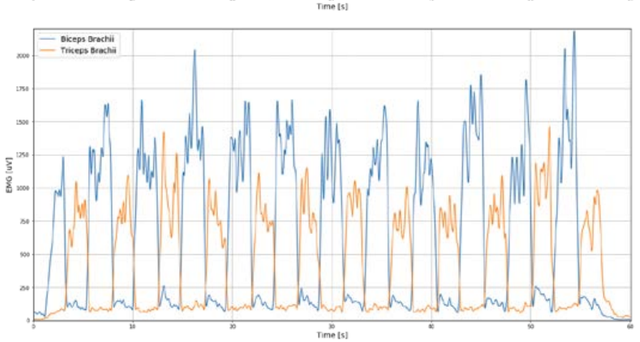
- Analyze changes in muscle strength.



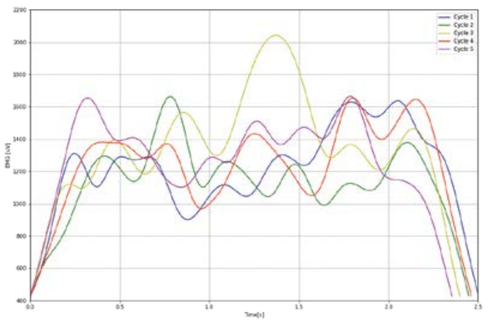

- Assess the activation of the muscles during performed exercises.



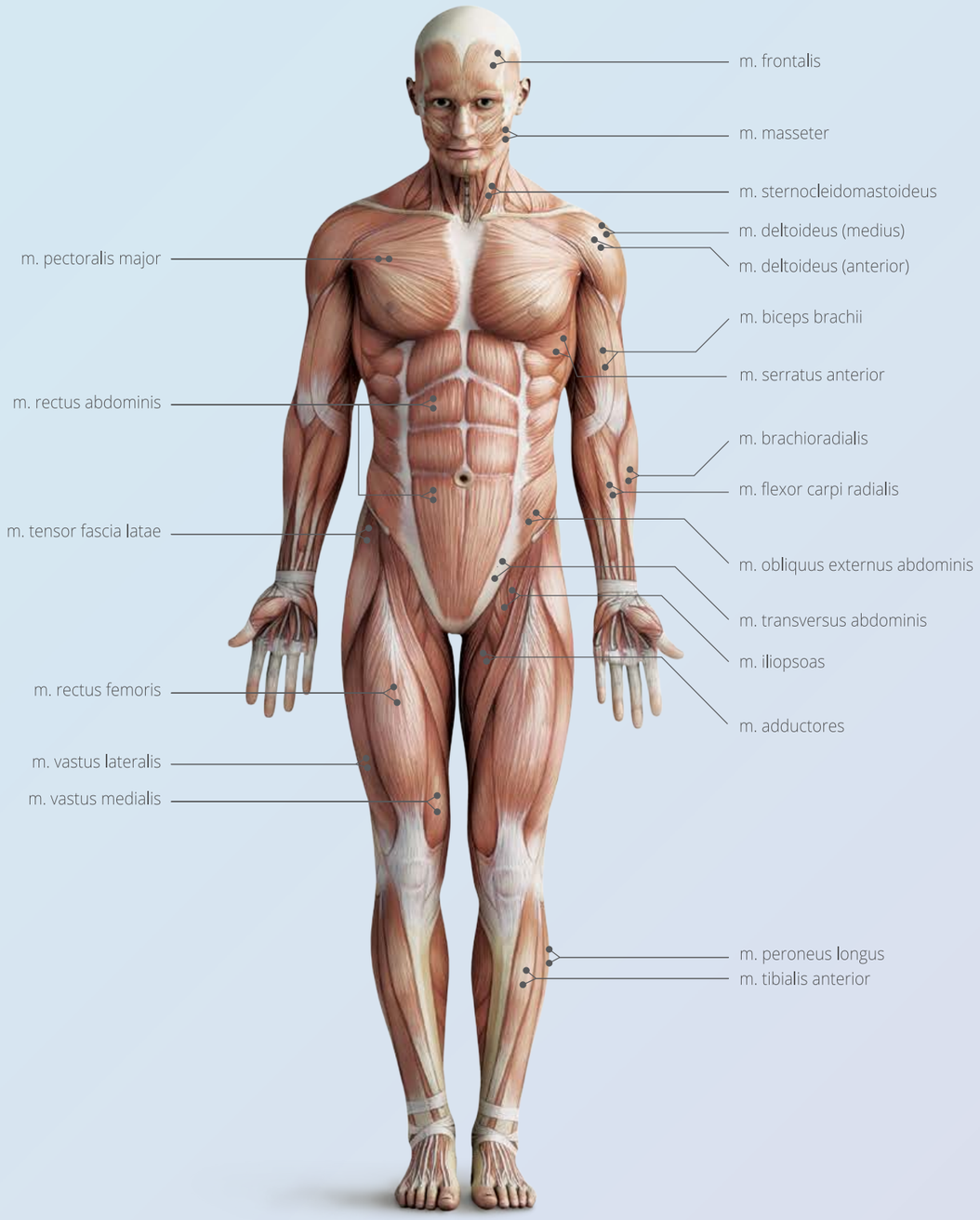

- Analyze the work of antagonists, agonists or synergist muscles.



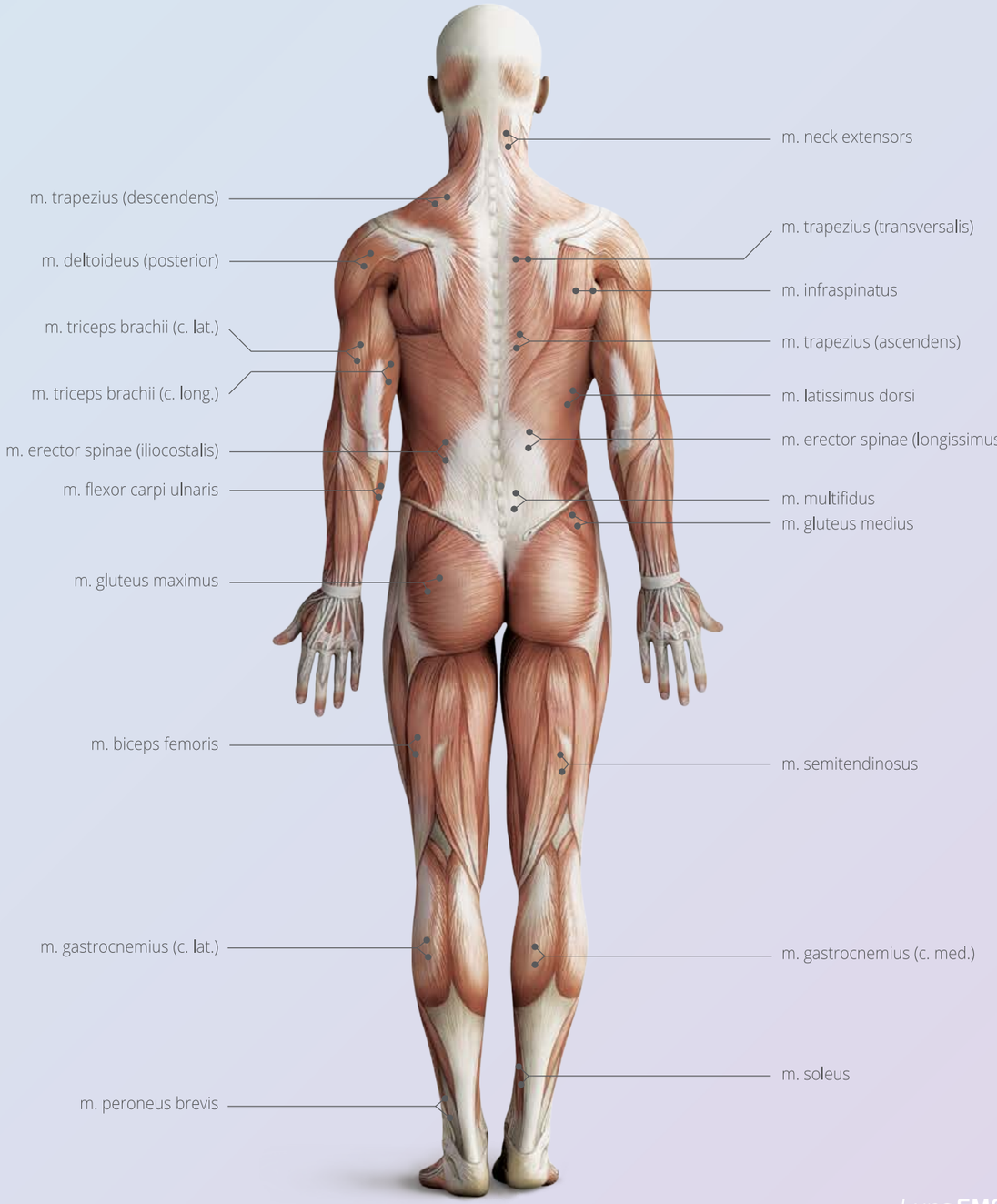

- Assess muscle tone during repetitive motion sequences.



# SURFACE ELECTRODES PLACEMENT – FRONT




# SURFACE ELECTRODES PLACEMENT – BACK



# REHABILITATION ROBOTS
# IN SCIENTIFIC RESEARCH

Robotic therapy compared to traditional rehabilitation:

- enables more repetitions during training;
- increases motivation;
- gives you the opportunity to self-exercise.

“Electromechanical-assistive devices allow a therapy paradigm which is intensive, frequent, repetitive, and accords to the principles of motor learning” (Mehrholz et al. 2012).

“Robotic- and computer-assisted therapies are an important part of optimization in rehabilitation” (Lo et al 2010, Hesse i in. 2014).

## TECHNICAL SPECIFICATION

| REGISTRATION SPECS | |
|---|---|
| Protection class against electric current | class I |
| 93/42/EEC medical device classification | class IIa |
| European Union EC/CE certifying Notified Body | TÜV NORD Polska Sp. z o.o. (CE 2274) |

| SIZE SPECS | |
|---|---|
| Total Length | 420 mm |
| Total Width | 600 mm |
| Total Height | 1135 - 1485 mm |
| Weight (exc. Extensions) | max 90 kg |
| Maximal applied weight (per extension) | 30 kg |
| Base Height | 97.5 - 122 mm |
| Wheel diameter | Ø 75 mm |
| Lifting column stroke length | 350 mm |
| Head’s rotation axis height | 720 - 1070 mm |

| MECHANICAL SPECS | |
|---|---|
| Head’s rotation limits | -315 - 315 ° |
| Head’s rotation position accuracy | ± 2 ° |
| Maximal Head’s rotation torque | 60 Nm |
| Torque measurement accuracy | ± 0.2 Nm |
| Head’s rotation speed (no load) | 10 - 50 °/s |
| Lifting column stroke accuracy | ± 1 mm |
| Maximal Lifting column’s speed (no load) | 10 mm/s |
| Operation type | continuous, software controlled |

| ENVIRONMENTAL SPECS | |
|---|---|
| Usage temperature | 10 - 40 °C |
| Maximal temperature variation in 12h | 20 °C |
| Usage humidity | 5 - 95 % RH, not condensed |
| Cooling | convectional |
| Maximal usage altitude | 3000 m a.s.l. |
| Liquid ingress and solid particle protection | IP0 |

| ELECTRICAL SPECS | |
|---|---|
| Power supply | 200 - 240V 50 Hz grounded |
| Current required | max 2.5 A at 240 VAC, exc. tablet |
| Bioelectric accuracy | ± 1 µV |
| Applied part types | B, BF |
| Fuses used | 4 A |

Luna EMG is required by warranty to have continuous Internet connection for automatic software updates and maintenance, especially related to safety, as well as for customers support.

CE 2274


# GET A HEAD OF THE COMPETITION!

SCHEDULE A **LUNA EMG** DEMO
TODAY AT **EGZOTECH.COM**

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