Better Magnets!

ELSOMAG® IIM2k Impulse magnetisation head

The ELSOMAG® IIM2k impulse magnetisation head is a microprocessor-controlled magnetizing device with integrated diagnostic and measuring functions. It is particularly suitable for magnetising plastic-and elastomer-bonded hard ferrite magnets. The ability to emit very short magnetising pulses enables the production of multi-pole magnets with pole pitches in the range of 1 to 5 mm. The short pulses lead to low thermal losses, which in turn, enable fast writing speeds. The magnetisation current level and profile are programmable, offering an intelligent and flexible solution to many different magnetisation tasks. The IIM2k head can be used to write incremental and absolute code tracks on either linear or rotary magnetisation machines.

Features

- Stepless programming of the magnetisation current from 50 to 2000 A
- Programmable current profile for impulse lengths between 1 and 10 µs (resolution 20 ns)
- Easily exchangeable tools for all common pole lengths (1 to 5 mm)
- Tools available for radial and axial magnetisation
- Triggering of the magnetising impulse via USB-interface (set-up mode) or via opto-coupler with TTL- or RS485 signal level (production mode)
- Opto-coupler input enables minimal jitter and coherent timing with minimal phase error even during continuous writing
- Integrated measurement of impulse current (under development)
- Integrated diagnostic software (under development)

Your Benefits

- Intelligent, programmable design enables precise and fast magnetisation of linear magnetic scales and rotary pole rings for encoders
- Programmable impulse current profile allows minimization of start/end pole errors for pole rings
- Suitable for writing all common incremental and absolute code patterns, e. g. vernier or pseudo-random binary sequences
- High magnetising field strength of up to 1750 kA/m (for 1 mm pole length) allows all common hard-ferrite based magnetic layers to be fully saturated for high stray field level and large air gaps
- Compact, lightweight design allows easy integration of the IIM2k impulse-head on cantilever- or gantry-type magnetisation machines
- Easy parametrisation using a graphical user-interface under Windows 10/11 and USB-interface

Highlights

High magnetising fields

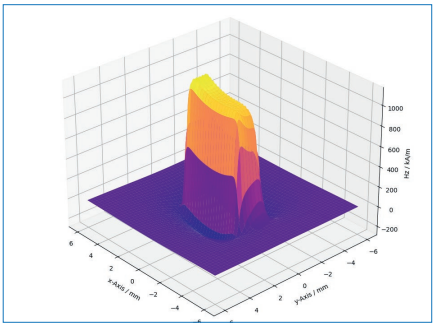
The maximum impulse current of up to 2000 A provides magnetising fields of more than 1750 kA/m for a 1 mm pole length. This field strength completely saturates all common hard ferrite based magnets.

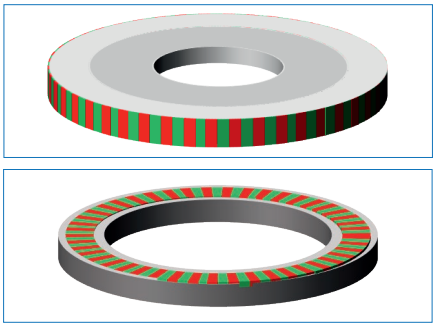
Axial and radial magnetisation

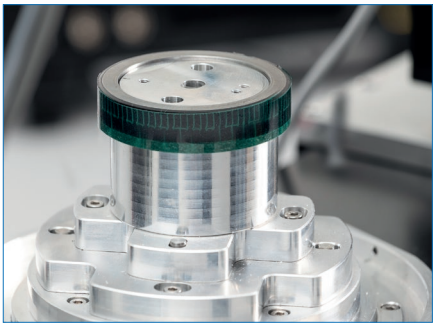
The IIM2k is available with exchangeable radial and axial (under development) tools to allow the magnetisation of tracks in both directions. This is particularly interesting for the manufacturers of rotary encoders.

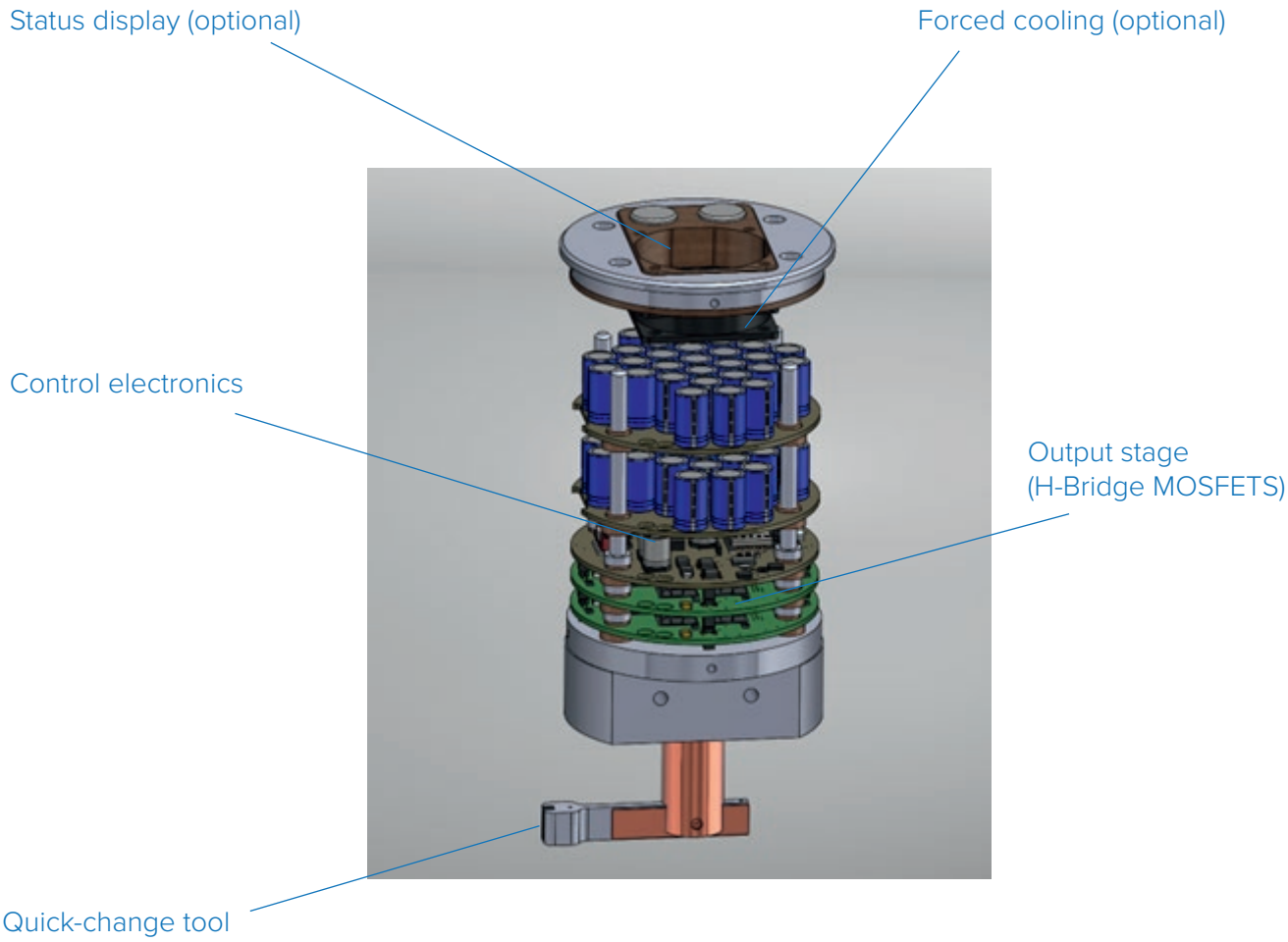
Incremental and absolute tracks

The impulse-head can be used to write all common incremental and absolute pole patterns according to DIN SPEC 91411. Both vernier and pseudo-random codes can be written for absolute encoder scales.









Programmable current profile

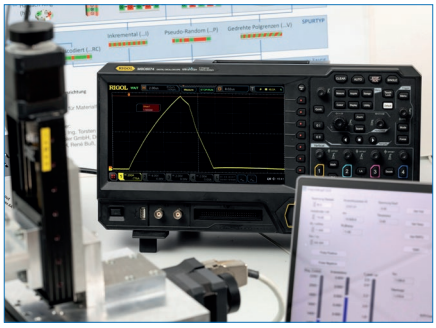
Current profiles with a peak value from 50 to 2000 A and a pulse width between 1 and 10 µs can be easily and steplessly programmed. This provides great flexibility and also helps eliminate or greatly reduce start/end pole errors.

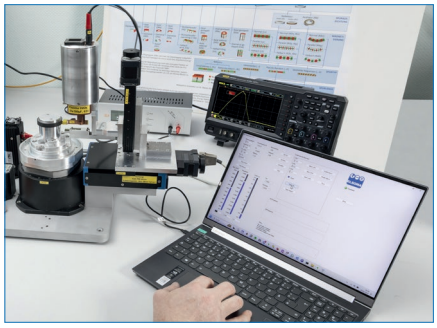
Drop-in design

The compact and lightweight design allows easy mechanical integration. Electrical integration is also simple via coded 4-pole LEMOtech-connectors for both power supply and signal cables.

Flexible parametrisation

The USB-interface of the IIM2k is configured as a virtual COM-port. The protocol to parametrise and control the impulse-head is based on the well-known SCPI-standard. The head is delivered with a simple GUI running under Windows 10/11.

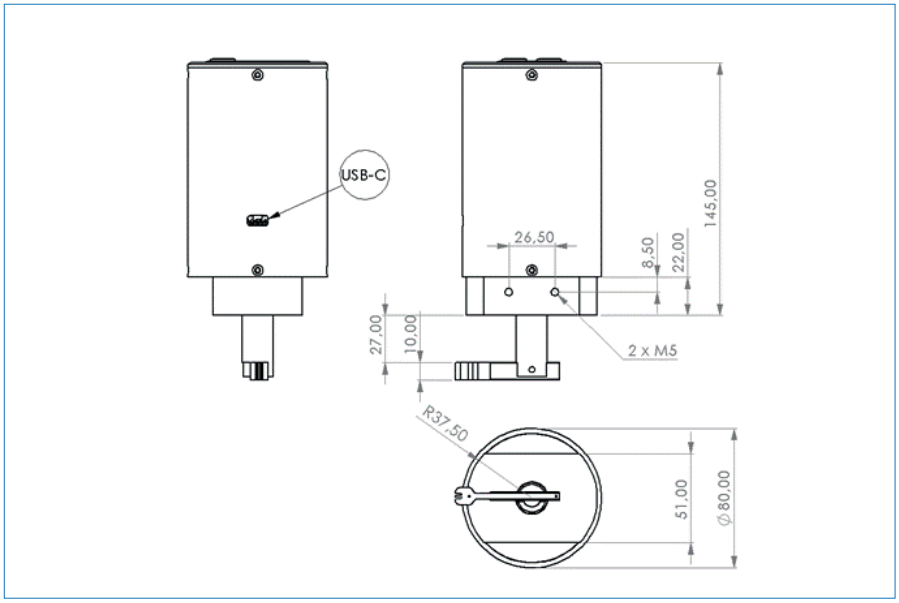




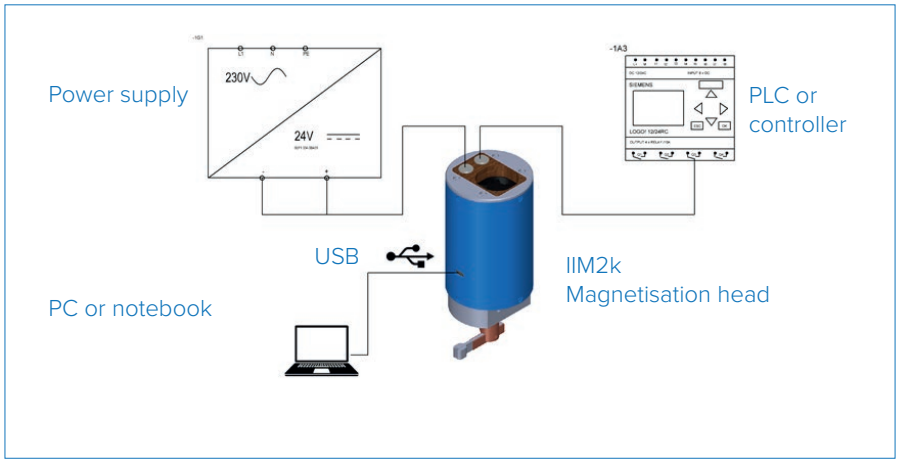
Technical Data

Parameter		Value
Maximum impulse current	I_{imp}	2000 A
Magnetising field (typical)	H_{mag}	1750 kA/m (for 1 mm pole length)
Supply voltage	V_{DD}	30 V
Current consumption (max.)	I_{DDmax}	5 A
Current consumption (avg.)	I_{DDavg}	≤ 0.5 A
Impulse duration	t_{on}	1 µs....10 µs (resolution 20 ns)
Writing frequency (max.)	f	30 Hz (50 Hz under development)
Pole lengths	l_p	1 mm to 5 mm

Dimensions (in mm)



System Integration



Areas of application: Magnet manufacturers | magnet users | encoder manufacturers | sensor manufacturers | motor manufacturers | automotive suppliers

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