E.M.G.2
TECHNOLOGIES INNOVANTES

MOTION CONTROL & POWER MANAGEMENT

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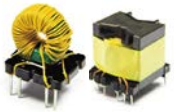
Motor control



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1. MOTORS

STEPPER MOTORS

- NEMA 17, step angle of 0.9°
- Detachment torque is practically zero
- Smooth and quiet operation
- High step accuracy
- Reduced resonance
- Hollow tree, diameter up to up to 11 mm
- No torque loss due to a large hollow bore

PERMANENT MAGNET STEPPER MOTORS

- Frame size from 20 mm to 42 mm
- Step angle from 7.5° to 18°
- Nominal voltage from 12 to 24 V
- A/phase from 0,16 à 0,85

SERVOMOTORS

- Frame size from 40 mm to 180 mm
- Power from 40 to 5 500 W
- Available in version AC or DC
- Maximum power density and optimized heat dissipation
- Nominal pairs from 0.1 to 180 Nm
- Speed up to 3 000 RPM
- Precision balancing and durability

BLDC MOTORS

- Standard, frameless, and slotless versions
- Voltage from 24 to 48 VDC
- Speed up to 50 000 RPM
- Custom windings and modifications available

SPECIAL FEATURES

IP65 :

- Dustproof and waterproof
- Resistant to low-pressure jets of sprayed water from 30 kPa at a flow rate of 12.5 l/mi

IP67 :

- Fully protected against dust
- Resists immersion in liquids to a depth of 1 m for 30 minutes
- Holding torque up to 1 288 oz-in

Space solutions

- Available motors: servo, stepper, torque, linear, solenoid.
- Integration possible with gearbox, bearings and spatial lubrication
- Custom-made and high reliability approach for space projects

Extended temperature type I:

- Operates at ambient temperatures between -40°C and 80°C and up to 110°C for the case temperature

Extended temperature type II:

- Operates at ambient temperatures from -70°C to 110°C and up to 140°C for the case temperature

Sous vide :

- Motors adapted for vacuum: hybrid stepper, standard framed BLDC and frameless BLDC motors
- Low outgassing: materials with low-outgassing, TML <1%
- Reduction in heat production
- Up to 10-7 Torr at 125°C
- Temperature from -50°C to 100°C (Optional -70°C to 130°C)
- Resistance to vibration and shock

2. LINEAR ENCODERS

FLEXe

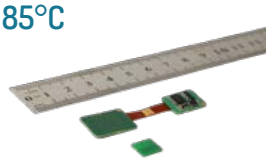
- Absolute – Incremental
- Immunity to dust, scratches, and harsh conditions
- Stroke length from 200 to 2 000 mm
- Accuracy of ±5 µm
- Resolution of 0.5 µm
- Operating speed up to 10 m/s
- Temperatures from -40 to 85°C
- BiSS C - A quad B

FREEe

- Absolute – Incremental
- Multiple cable-free readheads
- Stroke length from 200 to 1 000 mm
- Precision of ±5 µm
- Resolution of 0.5 µm
- Operating speed up to 6m/s
- Temperatures from -40 to 85°C
- BiSS C - A quad B

µFREE

- Miniature linear encoder
- Incremental with index
- Stroke length from 5 to 300 mm
- Precision of ±20 µm
- Resolution of 0.5µm, 0.2m/s max. speed
- Thin profile, thickness of 3 mm
- Temperatures from -40° to 85°C
- A quad B + Index

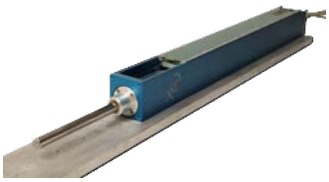


FLEXy

- XY Incremental
- Bidirectional position measurement
- Stroke length from 80 x 80 to 300 x 300 mm
- Accuracy of ±25 µm
- Resolution of 1 µm
- A quad B

DÉVELOPPEMENTS SUR MESURE

- Complete customization
- Modifies the mechanical dimensions (scale length)
- Respects the system constraints (size, shape...)
- Adds a specific feature
- Flexible time to market



POINTS FORTS

- Immunity to magnetic interference
- Immunity to liquids (including oil) and dust
- Resistant to Shock and vibration - DIN EN 60068-2-6
- Simple and easy to install
- Versatility and installation tolerance
- Customization on demand
- XY axis measurement possible

3. ROTARY ENCODERS

FEATURES

- Capacitive technology
- Absolute position
- Diameter from 16 to 247 mm
- Available with or without encapsulation
- Standard and custom-made products
- Temperatures from -40°C to 105°C
- Assessment kit available

KEY STRENGTHS

- Wide range of standard products
- High precision (<0.01°)
- Hardened (resistance to shocks, vibration)
- Lightweight and compact
- Strong integration
- Intrinsic resistance to electromagnetic fields, EMI and RFI
- No electromagnetic signature

Categories	Products	OD	ID	Height	Weight	Resolution	Accuracy	Interface
3 plastic encapsulated plates (hollow shaft)	DS	From 16 to 247 mm	From 4 to 171 mm	From 7 to 10 mm	From 3,1 to 81 g	From 16 to 21 bit	±0,006° to ±0,020°	SSi/BiSS-C
2 plates with shaft	DL	From 16 to 100 mm	Shaft from 4 to 8 mm	From 24,3 to 29 mm	From 30 to 350 g	From 17 to 20 bit	±0,020°	SSi/BiSS-C
2 non-encapsulated plates (hollow shaft)	VLM, VLP, VLS, VLT, VLX & VLZ	From 13 to 247 mm	From 2 to 171 mm	From 6 to 12,5 mm	From 2 to 410 g	From 14 to 23 bit	±0,001° to ±0,15°	SSi/BiSS-C

4. MOTOR CONTROLLERS

KEY STRENGTHS

- Robustness and durability
- Operating temperature: **-40°C to 71°C, expandable**
- Sinusoidal, flow-oriented, and trapezoidal drive
- Intelligence (numerous configurable points)
- Analog and/or digital controls
- Protections: temperature, voltage, CPU, encoders, hall sensors, short circuit, and motor lockup
- Miniature version available
- Product customization
- Multiple inputs and outputs
- Communication: CAN bus, Ethernet, RS422-485 and RS232

Categories	Puissance	Communication	Dimensions	Protection	Controls	Operating Temperatures
TMC	12-48 VDC motor, up to 720 W and 12.5 A RMS	RS232/422 and CAN bus	51 mm x 33 mm x 2,7 mm	ST01, ST02 MOSFET	Sinusoidal, FOC, and trapezoidal	-40°C to 71°C
Micro-rayon	12,5 A RMS, 700 W	RS232/422 (CAN optional)	30 mm x 25 mm x 9 mm 8 g	MOSFETs up to 100 V for high current 92 A	Sinusoidal, FOC, and trapezoidal	-40°C to 85°C
Single board	12-48 VDC motor, up to 960 W and 20 A RMS	RS232/422 and CAN bus	97 mm x 70 mm x 17 mm 74 g	MOSFET, hardware protection to protect against short-circuiting of the motor winding	Sinusoidal, FOC, and trapezoidal	-40°C to 71°C
Rayon 70	15-48 VDC motor, up to 6 kW and 55 A RMS	RS232/422 and CAN bus	120 mm x 67 mm x 34 mm 300 g	MOSFET up to 100V for high current and low RDS(on), material protection against the short circuits	Sinusoidal and trapezoidal	-40°C to 71°C
Rayon 300	12-48 VDC motor	RS232/422-485, CAN bus and Ethernet	160 mm x 171 mm x 65 mm	MOSFET up to 100V for high current	High-power sinusoidal	-40°C to 71°C, can be extended on request to -55°C or 85°C
EV-Rider 85	48 VDC motor, 6-10 kW and 85 A RMS	RS232, TTL and CAN bus	54 mm x 90 mm x 166 mm	MOSFETup to 120V for high current and low RDS(on)	Sinusoidal	-40°C to 85°C, can be extended on request to -55°C
EV-Rider 135	72 VDC motor, 8-15 kW and 135 A RMS	RS232 and/or CAN bus	54 mm x 90 mm x 166 mm	MOSFETup to 120V for high current and low RDS(on)	Sinusoidal	-40°C to 85°C, can be extended on request to -55°C
EV-Rider 200	72 VDC motor, 10-20 kW and 200 A RMS	RS232 and/or CAN bus	185 mm x 240 mm x 50 mm	MOSFETup to 120V for high current and low RDS(on)	Sinusoidal	-40°C to 85°C, can be extended on request to -55°C

5. TRANSFORMERS & INDUCTORS

CUSTOM PRODUCTS

- Input/output, common mode, power inductors
- PFC inductors, Boost (up to 900 V), Buck
- SMPS, planar, pulse, current and gate-drive transformers
- EMC filters for variable frequency drives, UPS systems, and telecommunications equipment
- DC-DC converter, power rectifier
- 2-in-1 transformers for automotive and industry

KEY STRENGTHS

- Tailor-made expertise
- Xgap Technology: a multigap technology to minimize current losses
- Edge-wound technology (flat wire on edge): better power density and better heat dissipation (20°C reduction in temperature compared to round wire)
- Systematic tests (mechanical, electrical, partial discharges)

STANDARD PRODUCTS

COMMON MODE CHOKES

- Single-phase I Encapsulated format
- From 0.4 mH to 82 mH, from 0.3 to 12 A
- Nominal voltage 250 Vac (50/60Hz)
- Compliant with EN 60938-2 and UL 1283
- 5 sizes available, 2 mounting versions
- Plastic case UL94V-0
- Temperatures from -40 °C to 125 °C

INPUT/OUTPUT CHOKES

- From 33 µH to 560 µH, from 1 to 10 A
- Toroidal format
- 5 sizes available
- UL 94V-0 plastic enclosure
- Temperatures from -40 °C to 125 °C

PFC CHOKES

- From 240 µH to 870 µH, from 2 to 5 A
- PQ ferrite format
- Linear inductance up to peak current (Ipk) I EMC Improvement
- Operating frequency from 50 kHz to 130 kHz
- Temperatures from -40 °C to 125 °C

GATE-DRIVE TRANSFORMERS

- SMT assembly, up to 180 V·µs, one secondary output
- Operational insulation 600 VAC, 1 500 VDC or 1 500 V RMS between Gate and Drive
- Frequency from 20 kHz to 500 kHz
- Temperatures from -40 °C to 130 °C

CURRENT TRANSFORMERS

- SMT or THT assembly
- Primary current up to 20 A I 2 primary wires (series or parallel)
- Primary/secondary insulation up to
- 1 500 VRMS
- Frequency 30 kHz to 500 kHz
- Temperatures from -40 °C to 125 °C

PULSE TRANSFORMERS

- Up to 2000 V·µs
- Insulation up to 6 kV
- Encapsulated format
- Frequency up to 40 kHz
- Temperatures from -25°C to 85°C

6. HARDENED POWER CONVERSION

AC-DC

SPECIFICATIONS

- Formats : baseplate mount, 2U rackmount, 3U/6U VPX I Single-phase/three-phase
- Inputs: 85-519 VAC I 50/60/400Hz
- 1-5 outputs
- Power: 50-8 000 W
- From -55°C to 85°C
- With or without EMI filter
- Compliant with MIL-STD-461, -704, -810, -1399, IEC 62368-1 standards

DC-DC

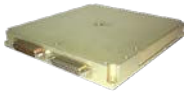
SPECIFICATIONS

- Formats : baseplate mount, PCB mount, 3U/6U VPX, VME, CompactPCI
- Inputs: 12-380 VDC I 250/400 kHz
- 1-10 outputs
- Power:6-2 000 W
- From -55°C to 100°C or from -95°C to 5°C
- With or without EMI filter
- Compliant with MIL-STD-461, -704, -810, -1275 standards

DC-AC

SPECIFICATIONS

- Format : baseplate mount
- Inputs: 18-70 VDC I 50/60/400Hz
- 50/60/400 kHz
- 1/5 outputs
- Power: 100-1 000 VA
- From -57°C to 90°C
- EMI filter
- Compliant with MIL-STD-461, -704, -810 standards



AC+DC-DC

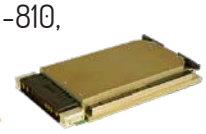
SPECIFICATIONS

- Format : baseplate mount I Monophasé
- Inputs: 12-70 VDC / 85-265 VAC
- 50/60/400 kHz
- 1/5 outputs
- Power: 340-500 W
- From -40°C to 85°C
- EMI filter
- Compliant with MIL-STD-461, -704, -810 standards

DC-DC HOLDUP UNIT

SPECIFICATIONS

- Formats : baseplate mount, 3U VPX
- Holdup : 30/140 W @50 ms
- Inputs: 1-100 VDC I 250 kHz
- 1/2 outputs
- Output power: 800 W / 1,5-85 J
- From -55°C to 85°C
- With or without EMI filter
- Compliant with MIL-STD-461, -704, -810, -1275 standards



INVERTERS

SPECIFICATIONS

- Formats : 1U/3U/4U rackmount
- Single-phase or three-phase
- Autonomy at 1 kW/2 h or 2 kW/1 h
- Up to 20 minutes of runtime at full power
- Max. output power: 2.5kW/3.0kVA
- From -55°C to 85°C
- Compliant with MIL-STD-167-1, -461, -901, -1399-300B standards

7. SMART CIRCUIT BREAKERS

KEY STRENGTHS

- Multi-channel solid-state circuit breaker (SSCB)
- Management of currents up to 240 A
- User-friendly and intuitive software interface (included)
- Energy management and maintenance tools
- Prioritization and synchronization mechanism
- More than 40 possible channel parameter configurations
- High electrical protection and high reliability (patented)

- Two-channel redundancy and grouping option (up to 50 A) – six groups in total
- Overview of complete energy consumption
- Log of triggering events and alerts
- Sequential operating capability
- Available with MIL-STD certification

Categories	Specific features	Common features

SSCB	• From 25 to 150 A
	• Automatic recovery plan configuration
	• 40 configurable parameters
	• One-way protection
		• Voltage: 8 to 48 VDC
		• Cascade option: one communication line for multiple connected units
		• Up to three levels of protection:
		  • Software: I2t, overcurrent, overvoltage, overheating
		  • Equipment: 1µ-second overcurrent cutoff
		  • Thermal fuse
		• Measurements: input voltage, output voltage, load current, and temperature
		• Communication: CAN bus (50 kbps-1 Mbps - J1939), Ethernet (UDP) or RS 422/485
		• Discrete I/O: 12 digital inputs, 2 digital outputs (open collector)
		• Sleep mode / Shutdown mode
		• BIT (Integrated Power-On and On-the-Fly Test)
		• Military standard option

PDU	• 12 or 16 channels • Up to 25 A for each channel circuit breaker • Gradual start • More than 20 flexible parameters for each channel • Circuit breaker (fuse), relay and contactor in each channel • Circuit breaker support network • Intuitive user interface, DLL library • Building block for PDU • Advanced reporting and easy maintenance (event logs, graphs, conditional alerts)	

8. LFP (LITHIUM IRON PHOSPHATE) BATTERIES

OLENBOX

SPECIFICATIONS

- Simple, flexible and modular
- Plug & Play
- 12, 24 or 48 V | 65 to 6 250 Wh per battery
- Integrated OlenPeps AI monitoring and optimization software
- 5-year warranty, extendable to 10 years
- Lifespan 8 times longer than lead-acid batteries

OLENPACK

SPECIFICATIONS

- Rack-mount or cubicle system
- Plug & Play
- 48 V | 4, 6 or 8 kWh
- Ultra compact (8 cm high)
- Integrated OlenPeps AI monitoring and optimization software
- Lifespan of up to 25 years
- Compatible with a wide ecosystem of products

OLENMOVE

SPECIFICATIONS

- Can be hybrid with a diesel engine: 75% fuel savings
- 230/400V:45kVA-100kWh|48V:100kW-150kWh
- IP68 | Pallet size 120 x 80 cm
- Integrated OlenPeps AI monitoring and optimization software
- Lifespan of up to 20 years
- Charges electric vehicles and is recharged via vehicle charging stations

OLENMOVE SUN

SPECIFICATIONS

- Pallet format
- Plug & Play: easy to install, even in confined spaces
- Modular: can be connected in series without limit to increase storage capacity
- Capacity of 100 kWh | 45 kVA - 36 kW
- Lifespan 20 years / 8,000 cycles 70% DoD
- IP54, fire protection

OLENMADE

SPECIFICATIONS

- Custom storage system
- From 3.2 to 1024 V
- Warranty up to 7 years
- Long lifespan
- Adapted to all environments, constraints, and discharge levels

OLENPOWER

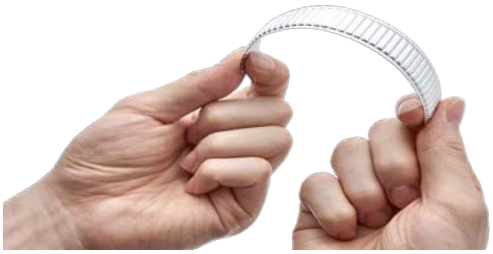
SPECIFICATIONS

- Containerized storage systems
- From 150kWh to 5MWh per unit
- Powerful: C/10 at 5C
- BESS + EMS local and Cloud
- Intelligent and efficient piloting
- Ultra-fast triggering
- Lifespan up to 25 years, 8000 cycles @70% DoD

9. THIN & FLEXIBLE BATTERIES

KEY STRENGTHS

- Lithium-Ion Technology
- Unique structure: The patented internal structure increases bending resistance and battery capacity
- Specialized outer pocket with electrodes to maximize flexibility and durability under bending
- Rechargeable battery
- Adaptable to all IoT applications and wearable



FEATURES

- Stable performance after 5000 bending cycles with a radius of 15mm
- Energy density 3 to 10 times greater for a similar solution
- Voltage: 4.4V charging / 3V discharging
- Temperature: charging from 0°C to 45°C / discharging from -20°C to 60°C
- UN 38.3 certification (resistant to shock, vibration, altitude, etc.), UL1642

Products	Dimensions				Specifications				
	Width	Length	Thickness	Curvature	Typical Capacity	Min. Capacity	Nominal Voltage	Cell	Pack Version
017053C07	17 mm	53 mm	2,8 mm	25 R mm	68 mAh	64 mAh	3,8 V	✓	
019055C11	19 mm	55 mm	4,1 mm		117 mAh	110 mAh		✓	
019081C07	19 mm	81 mm	2,8 mm		145 mAh	136 mAh		✓	✓
027074C11	27 mm	74 mm	4,1 mm		323 mAh	306 mAh		✓	
021157C11	21 mm	157 mm			545 mAh	516 mAh		✓	
028200C13	28 mm	200 mm		90 R mm	1 309 mAh	1 243 mAh		✓	✓

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For over 20 years, EMG2 has been at your service to offer you innovative electronic and technological solutions and to allow you to make a difference in your projects.

Thanks to its expertise and broad vision of the electronics market, but also thanks to a network of recognized partners in the field, EMG2 recommends the products best suited to your needs and supports you throughout your development, actively responding to your requests, with a view to a long-term relationship. and customer satisfaction.

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