MACK TECHNOLOGY

Integrated Servo Motors | Servo Drives | Servo Motors
for industrial automation

AXOR®IND. is an important reference in the European panorama of manufacturers of servo drives and brushless servomotors for robotics, automatic machines and high-performance systems.

On the market since 1988, the year of its foundation, it currently boasts a completely new range of technically innovative and innovative solutions customized, optimized by an excellent combination of price, size and performance.

All business processes are in-house, from reverse engineering, design and prototyping to production, sales and after-sales support.

*The headquarters of **AXOR®Ind**. it is inside an industrial archeology building, a place that in the early 1900s was of great importance for the local community, the structure has been intelligently renovated as an emblem of the role of **AXOR®Ind** in the new economic reality of the area, an expression of old values in modern markets*

35 YEARS OF INTEGRATED AUTOMATION

1988: AXOR®IND. IS FOUNDED
1988: CD180 AND MINISPEED
1991: PATENT APPLIED FOR CD180
1992: DISTRIBUTION IN EUROPE & USA
1993: MASTERSPEED AND B17
1996: ISO 9001 QUALITY CERTIFICATION
1998: COMPLETE MICROB SERIES
2002: AXOR®IND. MOVES TO CURRENT HQ
2004: SUPERSAX AND FAST BACK
2005: P2P & TCS IMPLEMENTATION
2006: CANOPEN COMMUNICATION

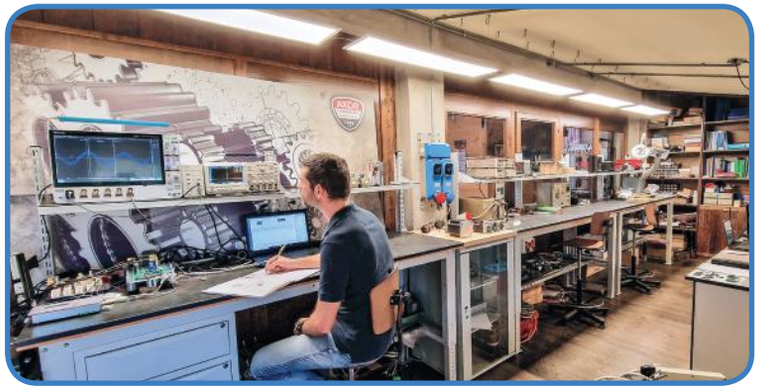
2007: COMPLETE MAGNUM SERIES
2008: 1.5 MILLION PRODUCTS IN THE WORLD
2010: PATENT FOR MACK® SERIES
2012: ETHERCAT FIELDBUS PROTOCOL
2015: MACK® NANO TECHNOLOGY
2017: MACK® TRON INTEGRATED SERVOMOTOR WITH DRIVE
2018: 30 YEARS ANNIVERSARY
2019: MACK® TRON POWER UP TO 400W
2022: MACK® TRON POWER UP TO 750W
2023: MACK® TRON2 INTEGRATED SERVOMOTOR WITH DRIVE

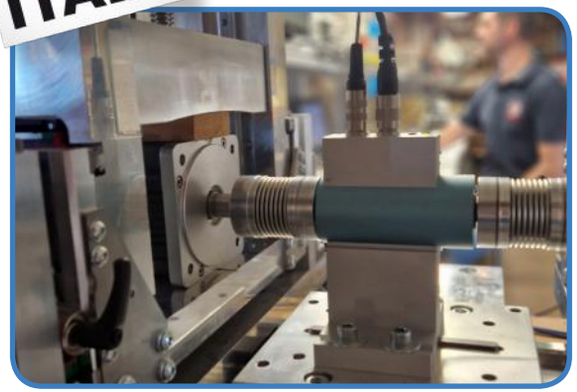
All ranges of integrated motors, drives and servomotors are of preferential origin and built in Italy; comply with the rules of origin that regulate preferential trade in the European Union Axor®Ind. has been ISO 9001 certified since 1996, the first Italian company in this sector.

Axor®Ind. is a CIA member for CAN Open
In addition to the commitment of each employee to self-control of quality and continuous improvement, end-of-line tests are carried out on each individual product:
- 72 hour burn-in test - Acoustic/vibration analysis
- Functional tests - Calibration

In addition to the efficiency of the products themselves, by providing complete systems such as servomotors, pre-wired cables for mobile or fixed installation, servodrives and even planetary gearboxes with reduced backlash, Axor®Ind. supports the customer in the design definition of their servo system with mechanical and electrical sizing.
The development and implementation of customized software functions in servo drives allows you to complete the picture of what is defined as TCS (Total Customer Service).
Axor Ind.'s long experience in designing standard solutions and customized products allows us to meet the needs of OEMs in all sectors, in new products and in added value for its customers.

With the aim of providing the customer with a complete service, the Axor®Ind. catalogue. offers integrated servomotors, servo drives, servomotors and complementary accessories such as: power supplies, current regulators, line filters, cables.





MACK®TECHNOLOGY latest generation products

USB Modbus-RTU-RS485 CANopen EtherCAT

Mack®Technology is the expression of 30 years of Axor®Ind. know-how and experience on the market: a reliable partner for every motion control need.

Mack®Technology implements all classic reference signals, including +/-10V analog, pulse/direction, digital speed and torque, positioning profiles and fieldbuses such as EtherCat, CANopen, Modbus-RTU.

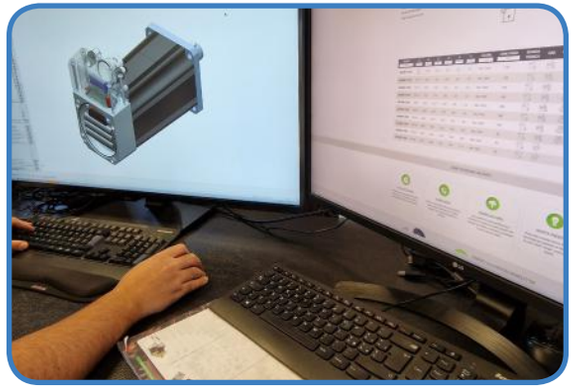
The Mack® line has two very distinct ranges, defined by AC or DC power.
Mack® AC products can be connected directly to all major mains power supplies. Mack® AC servo drives reach 8A rated current and are designed for brushless servo motors.
Mack® servo motors range from 0.16Nm to 11Nm and feature the Mack® single hybrid cable and single-turn or multi-turn absolute serial encoder.

The Mack® Nano and Uninano DC servodrives can be powered 12V-140Vdc and up to 50A nominal, they are such small servodrives (max 45x80mm) that they have revolutionized the concept of servo system architecture, ideal in narrow but dense architectures such as automatic machinery medical and format change sectors, labeling machines, AGVs, self-driving and self-propelled vehicles.

Compact, powerful, integrated: performing in both motion and automotive, both in new applications and in revisions.

Availability in a few days in the standard versions.

Customizable on request.



MACK TRON2 Servomotore Brushless Integrato

Mack®Tron2 is the upgrade of the previous servomotor with integrated drive Mack®Tron: a single device includes both the motor and its control unit, offering all the technology of our DC and brushless ranges contained in small dimensions in a single product.

The power supply is 24/48Vdc, it is available with a 60mm or 80mm flange, the M1 torque is 0.6 Nm or 1.2 Nm, the peak torque is 2.16 Nm or 3.5 Nm.

Control modes: CANopen, EtherCAT, Modbus-RTU, RS 485

Configurations are available where power supplies, controls and safety devices are included in a single cable: a compact and easy to install solution, ideal in narrow but dense architectures such as automatic machines in the medical and format change sectors, labelers, AGVs, self-driving and self-propelled vehicles .

The evolutions compared to the previous model are:
- higher continuous currents
- analog throttle function
- increased thermal efficiency
- back up voltage included in the voltage of power
- automatic management of the electromagnetic parking brake
- STO safe Torque off today in Performance Level "D"
- SBC Safe Brake control
- torque curves for cycles S1 and S3
- analogue input for reading external data coming from a possible sensor.

Characterized by fast and simple wiring as well as high performance in small dimensions, Mack®Tron2 is the ideal solution for applications with decentralized architectures, with a notable reduction in space in the electrical panel or even elimination of the panel itself.

It boasts particular attention to the drive/servomotor combination, paying great attention to the optimization of space and heat dissipation.
The result is high speeds and high starting points, leaving reliability intact.

It becomes the ideal solution for automatic rotating carousel systems: power supply, control and safety devices can be in a single cable, with great savings in the use of sliding contacts.

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Compact, powerful, integrated: performing in both motion and automotive, both in new applications and in revisions.
Unique, complete and reliable solution, designed and created together with users.
Standard availability of a few days in the standard versions.

Customizable on request.

Mack®Tron2 only one equipment includes both the engine and its control unit.

MACK TRON2 B60

48 Vdc	0.6-2.16 pk Nm

- Length 108 mm (141mm with the brake)
- Shaft 14mm diameter x 30mm long
- M1 torque at 100Rpm: 0.6Nm
- MKT peak torque: 2.16Nm
- M15 power connector

Axor Ind. cable in combination with M15 connector. Current up to 15A.

MACK TRON2 B80

48 Vdc	1.2-3.5 pk Nm

- Length 139 mm (172mm with the brake)
- Shaft diameter 19mm x 40mm long
- M1 torque at 100Rpm: 1.2Nm
- MKT" peak torque: 3.5 Nm
- M23 power connector

Axor Ind. cable in combination with M23 connector. Current up to 30A

NEW!

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Integrated Servomotor+Servodrive		MACK®TRON2 60 (MKT2B80)
Model		MKT2B60
Size		L
M1 Torque at 100Rpm (TA=40°C)		0.6 Nm
Mpk Peak Torque		2.16 Nm
Power Supply		48 VDC (24 Vdc available with reduction or rated speed)
WINDING CODE		J42
Rated Speed	48 VDC (Power Supply)	3000 N_n (Rpm)

NEW!

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Integrated Servomotor+Servodrive		MACK®TRON2 80 (MKT2B80)
Model		MKT2B80
Size		M
M1 Torque at 100Rpm (TA=40°C)		1.2 Nm
Mpk Peak Torque		3.5 Nm
Power Supply		48 VDC (24 Vdc available with reduction or rated speed)
WINDING CODE		P32
Rated Speed	48 VDC (Power Supply)	3000 N_n (Rpm)

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Integrated Servomotor+Servodrive	MACK®TRON (MKT)					
Model	MKT 42		MKT 60			MKT 80
Size	M	L	M	L	L	M
Torque Nm	0.15	0.3	0.6	1.0	1.2	2.0
PowerW	50	100	200	314	400	625
Rated Speed 48 VDC (rpm)	3000 (6000 max)	3000 (6000 max)	3000 (6000 max)	3000	3000	3000
Rated Speed 24 VDc (rpm)	3000	3000	3000	3000	1500	1500

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Brushless Servomotor	MACK BASIC MOTOR (MKBM)			
Model	MKBM 42		MKBM 60	
Size	M	L	M	L
Torque Nm	0.16	0.32	0.65	1.3
Power W	50	100	200	400
Rated Speed 48 VDC (rpm)	3000 (6000 max)			
Rated Speed 24 VDc (rpm)	3000			

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Universal Servodrive	MACK NANO (MKN)													
Model	MKN 48				MKN 60						MKN 110		MKN 140	
Size	1	5	8	10	1	5	8	10	25	50	15	35	8	25
Power Supply VDC	12 - 48				12 - 60						12 - 110		20 - 140	

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Universal Servodrive EtherCat	MACK UNI NANO (MKUN)													
Model	MKUN 48				MKUN 60						MKUN 110		MKUN 140	
Size	1	5	8	10	1	5	8	10	25	50	15	35	8	25
Power Supply VDC	12 - 48				12 - 60						12 - 110		20 - 140	

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Digital Breaking Module	MACK NANO CLAMP (MKNC)	
Model	MKNC 60	MKNC 140
Potenza continua	100W	100W
Power Supply VDC	20 - 80	20 - 179

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AC Brushless Servomotor	MACK MOTOR (MKM)												
Model	MKM 42		MKM 60		MKM 70			MKM 85			MKM 120		
Size	M	L	M	L	S	M	L	S	M	L	S	M	L
Torque Nm	0. 16	0.32	0.65	1.3	0.9	1.5	2.0	1.8	3.3	5	4	7.5	11
Power W	50	100	200	400	280	470	630	570	1050	1600	1250	2355	3450
400 VAC 3ph.	3000 rpm												
230 VAC 1 or 3ph.	3000 rpm										1500 rpm		

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Multiaxis Brushless System	MACK DRIVE (MKD) & MACK POWER (MKP)												
Tize Voltage 400VAC 3 ph.	1.5/3	1.5/3	1.5/3	2.5/5	1.5/3	1.5/3	2.5/5	1.5/3	2.5/5	3.5/7	2.5/5	5/10	7/14
Size Voltage 230VAC 1 or 3 ph.	2/4	2/4	2/4	4/8	2/4	2/4	2/4	2/4	4/8	6/12	4/8	6/12	8/16

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Stand alone Brushless Servodrives	MACK INDY (MKY)												
230 VAC 1 or 3 ph.	MKY 3000 rpm										MKY 1500 rpm		
Size	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	2.5/5	2.5/5	3.5/7	5/10	2.5/5	5/10	8/16
Power Supply	1 x 230 VAC (± 10%) - 50/60 HZ (grounded system only)												

AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK TRON2® B60 INTEGRATED SERVOMOTOR

EtherCAT®

CANopen®

Modbus-RTU-RS485

48 VDC	0.6-2.16 pk Nm

MADE IN AXOR IND.

MACK TECHNOLOGY: MACK TRON 2 B 60 (MKT2B60)

Brushless servo-motor with integrated drive

MackTron2 is the upgrade of the previous version of servo-motor with integrated drive Mack Tron. Power supply 48Vdc, rated torque M1 0.6 Nm - peak torque 2.16 Nm. It's distinguished by the simple and fast cabling, as well as high performances in small dimensions. MackTron2 is the ideal solution for applications with de-centralized architecture, significantly reducing the footprint inside the electric panel or even eliminating the panel itself. Ultra compact dimensions for installation in limited space, without affecting the machine design.

FEATURES

- B.E.M.F. and waveform current
- Very low torque fluctuation at low speeds
- Serial Mack encoder, absolute single-turn or multi-turn
- Automatic management of the electromagnetic holding brake
- Bi-colour status and diagnostic LED
- SpeederOne.2 software interface
- RS485 for configuration, diagnostic and positioning
- IP class protection IP54 and IP65
- STO Safe Torque Off
- SBC Safe Brake control
- 3 digital inputs
- Limit switches directly managed by MackTron2
- Performances declared in the worst conditions: torque curves measured with motor thermally insulated (in air) at 40°C ambient temperature

OPERATIVE MODE

- CANopen
- EtherCAT
- Modbus-RTU-RS485
- Analogic throttle for speed and torque control

HYBRID SINGLE CABLE

- Power supply, feedback and signals in a single cable
- Mobile usage for chain track, flame / oil resistant
- Vinyl flex external sheath - PVC
- 5 million bending cycles
- Minimum bending radius: 60 mm static, 120mm dynamic
- Operating temperature: -20°C / +80°C (dynamic)
- Assembling with front or rear connectors
- Trail speed: 300m/min. max
- Acceleration: 20m/sec^2

DIN VDE

MODEL		MKT2B60
SIZE		L
M1 Torque at 100Rpm (T_A=40°C)		**0.6Nm**
Mpk Peak Torque		**2.16 Nm**
Power Supply		**48 VDC** (24 Vdc available with reduction of rated speed)
WINDING CODE		J42
Rated Speed	**48 VDC** (Power Supply)	3000 N_n (Rpm)

MACK TECHNOLOGY: MACK TRON 2 B 60 (MKT2B60)

P.N. : Brochure/ 19/12/22/ MKT2B60

Digital inputs management (limit switch)

CB CanBUS control mode EC EtherCAT control mode

Connector orientation front/rear

Bi-colour status and diagnostic LED

Holding brake available

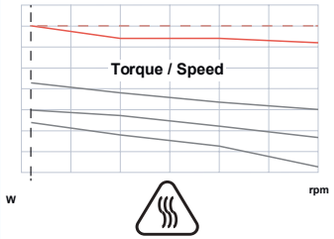
Mobile cable usage in Vinyl flex -

HIGH ENERGY EFFICIENCY PRODUCT

Less wiring through the single hybrid cable
Power supply, safeties, signals and Modbus-RTU- RS485

To receive the technical datasheet, fill in the form linked to this QR.

Axor Ind.'s original project



Torque Curves

Software interface included

Hibryd single cable

AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK TRON 2® B80

INTEGRATED SERVOMOTOR

EtherCAT®

CANopen®

Modbus-RTU-RS485

48 VDC	1.2-3.5pk Nm

MADE IN AXOR IND.

MACK TECHNOLOGY: MACK TRON 2 B 80 (MKT2B80)

Brushless servo-motor with integrated drive

MackTron2 is the upgrade of the previous version of servo-motor with integrated drive Mack Tron. Power supply 48Vdc, rated torque M1 1.2 Nm - peak torque 3.5 Nm. It's distinguished by the simple and fast cabling, as well as high performances in small dimensions. MackTron2 is the ideal solution for applications with de-centralized architecture, significantly reducing the footprint inside the electric panel or even eliminating the panel itself. Ultra compact dimensions for installation in limited space, without affecting the machine design.

FEATURES

- B.E.M.F. and waveform current
- Very low torque fluctuation at low speeds
- Serial Mack encoder, absolute single-turn or multi-turn
- Automatic management of the electromagnetic holding brake
- Bi-colour status and diagnostic LED
- SpeederOne.2 software interface
- RS485 for configuration, diagnostic and positioning
- IP class protection IP54 and IP65
- STO Safe Torque Off
- SBC Safe Brake control
- 3 digital inputs
- Limit switches directly managed by MackTron2
- Performances declared in the worst conditions: torque curves measured with motor thermally insulated (in air) at 40°C ambient temperature

OPERATIVE MODE

- CANopen
- EtherCAT
- Modbus-RTU-RS485
- Analogic throttle for speed and torque control

HYBRID SINGLE CABLE

- Power supply, feedback and signals in a single cable
- Mobile usage for chain track, flame / oil resistant
- Vinyl flex external sheath - PVC
- 5 million bending cycles
- Minimum bending radius: 60 mm static, 120mm dynamic
- Operating temperature: -20°C / +80°C (dynamic)
- Assembling with front or rear connectors
- Trail speed: 300m/min. max
- Acceleration: 20m/sec^2

DIN VDE

MODEL		MKT2B80
SIZE		M
M1 Torque at 100Rpm (TA=40°C)		**1.2Nm**
Mpk Peak Torque		**3.5Nm**
Power Supply		**48 VDC** (24 Vdc available with reduction of rated speed)
WINDING CODE		P32
Rated Speed	**48 VDC** (Power Supply)	3000 N_n (Rpm)

MACK TECHNOLOGY: MACK TRON 2 B 80 (MKT2B80)

P.N.: Brochure/ 19/12/22/ MKT2B80

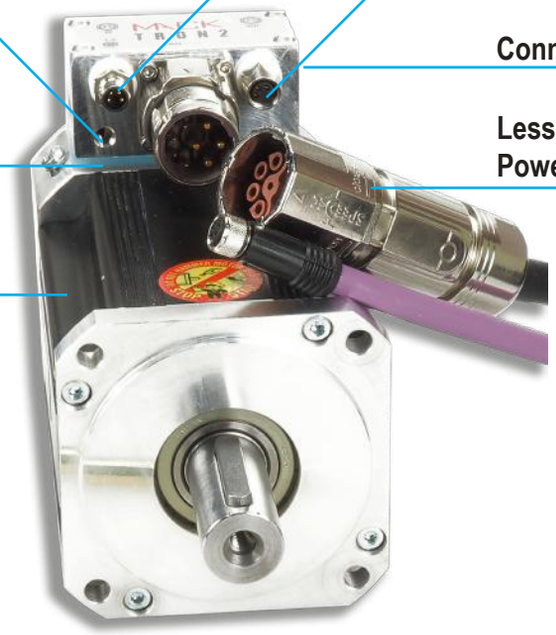
Digital inputs management (limit switch)

CB CanBUS control mode EC EtherCAT control mode

Connector orientation front/rear

Bi-colour status and diagnostic LED

Less wiring through the single hybrid cable
Power supply, safeties, signals and Modbus-RTU- RS485



Holding brake available

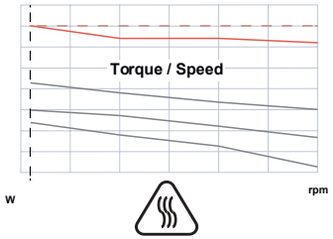
HIGH ENERGY EFFICIENCY PRODUCT

Mobile cable usage in Vinyl flex - PVC

To receive the technical datasheet, fill in the form linked to this QR.

INTEGRATED Servomotor

Axor Ind.'s original project



Torque Curves

Speeder one .2
Interface software and configuration

Software interface included

Hibryd single cable

AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK® TRON

INTEGRATED SERVOMOTOR

24-48 VDC | 0.15-1.2 Nm | 50-400 W

MACK TECHNOLOGY: MACK TRON (MKT)

Integrated Brushless Motor & Drive

A custom engineered solution to satisfy all demands for quick and simple cabling added to a first-in-class performance to size ratio.
Mack Tron motor with integrated drive is the ideal solution for decentralized application architectures.
Ultra compact for installation in limited space and discreet for enhanced machine design.

FEATURES

- 8 poles motors up to 400W
- B.E.M.F. and current sine waveforms
- Mack Serial Encoder, single or multiturn absolute
- Bi-color LED status signals
- SpeederOne.2 PC software interface
- RS485 for setup and monitoring
- Protection rating IP54 and IP65 on request
- Automatic holding brake
- Electromagnetic holding brake
- Special flanges and shafts
- STO Safe Torque Off
- 3 Digital inputs (programmable)

CONTROL MODES

- CANopen
- EtherCAT
- Modbus-RTU
- Digital positioning

HYBRID CABLE

- All Powers - Safeties - Signals - RS485 in 1 cable
- Mobile chain track usage, flame / oil resistant
- External sheath in PUR polyurethane
- Cycles: 5 million bend cycles
- Minimum bending radius: 7 x Ø mm
- Mounted with forward or reverse connector
- DIN VDE

Modbus-RTU CANopen EtherCAT

MODEL			MKTB42		MKTB60	
SIZE (Power)			M (50W)	L (100W)	M (200W)	L (400W)
Mn Rated torque at Nn (Δt=70°C)		Nm	**0.15**	**0.3**	**0.6**	**1.2**
Power Supply grounded system only			**24 - 48 VDC (9 VDC min - 65 VDC max)**			

WINDING CODE			F32	F42	J30	J32	J42
Rated Speed	**48 VDC** (Power Supply)	N_n (Rpm)	3000 (6000 max)	3000 (6000 max)	3000 (6000 max)	3000	3000
		IDC (ADC)	1.25	2.5	5	5	10
Rated Speed	**24 VDC** (Power Supply)	N_n (Rpm)	3000	3000	3000	1500	1500
		IDC (ADC)	2.5	5	10	5	10

MACK TECHNOLOGY: MACK TRON

P. N. : Brochure 15.05.21 / MKT

- High overvoltage management
- Optimized operating temperature management

Ethercat & Canbus IN/OUT

Digital Inputs(Limit Switch)

Bi-color LED status signals

Less cabling with the single hybrid cable.
all Powers - Safeties - Signals
RS485 for PC Setup and Modbus control

Axor designed & engineered drive integration

Peak Torque:3xRated Torque

Up to 6000 Rpm

STO - Safe Torque Off conforme a ISO EN 13849-1 PLd 60536

CEI EN 61800-5-2 SIL 2 Safety Class III

Automatic Holding Brake

Orientable connector blocks

Mack Nano Clamp
Digital Braking Module

All screw connectors
for quick and easy cabling PUR

FREEWARE!!

Speeder one .2

Interface & configuration software

AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK basic MOTOR

BRUSHLESS SERVOMOTOR

0.15-1.3 Nm | 50-400 W | 24-48 Vdc

MACK TECHNOLOGY: MACK BASIC MOTOR (MKBM)

Brushless Servo Motor

A very robust, high performance, low noise motor for DC voltage supplies.
Engineered & designed to meet axis control applications up to 1.3Nm. Compact dimensions and long-term reliability.

STANDARD FEATURES

- 8 Poles, no cogging
- B.E.M.F. sine wave
- Medium rotor inertia
- Very low torque fluctuation at minimum speed
- Mack Serial Encoder, incremental or multiturn absolute
- Absolute multiturn BiSS encoder feedback (Serial Synchronous Interface)
- Holding brake
- Protection rating IP54 & IP65
- 30cm stub cable for easy connection
- Special flanges and shafts

SINGLE HYBRID CABLE

- Power, feedback and signals in one cable
- Mobile chain track usage, flame / oil resistant
- External sheath in PUR polyurethane
- 5 million bend cycles
- Minimum bending radius: 7 x Ø mm
- Forward & reverse mounted connector
- DIN VDE

Optimazed for combination with Mack Nano and Mack Uni Nano

SERIES			MKBM 42		MKBM 60			
SIZE (Power)			M (50 w)	L (100 w)	M (200 w)		L (400 w)	
Mo	Stall Torque (Δt=70°C)	(Nm)	0.16	0.32	0.65		1.3	
Drive Supply Voltage	**In Rated Current**	(Arms)	2.6	5	10	5	20	10
48 VDC	**N_n** Rated Speed (Mo)	(Rpm)	**3000** (6000 max)	**3000** (6000 max)	**3000** (6000 max)	**3000** (3500 max)	**3000** (6000 max)	**3000** (3500 max)
24 VDC	**N_n** Rated Speed (Mo)	(Rpm)	**3000**	**3000**	**3000**	**1500**	**3000**	**1500**

MACK TECHNOLOGY: MACK BASIC MOTOR (MKBM)

Serial encoder with no moving parts.
Designed & engineered by Axor

Single cable system

FREEWARE!!

Speeder one .2

Interface & configuration software

Single cable for power, feedback & signals

BiSS INTERFACE

Absolute multiturn BiSS encoder feedback
(Serial Synchronous Interface)

30cm stub cable

Other flanges available

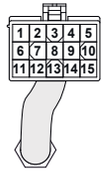
Easy fit, plug in connector,

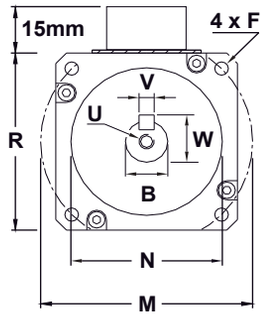
All screw connectors for quick and easy cabling PUR

Keystroke or smooth shaft

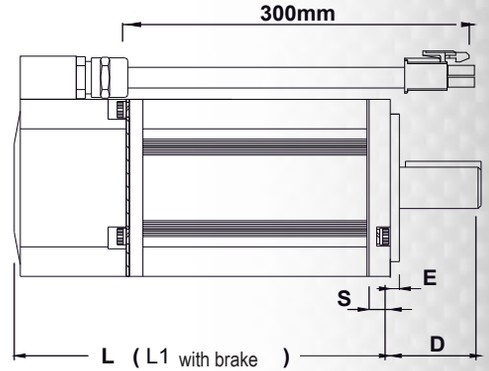
Holding Brake

HYBRID





TYPE	Mo	L	L1	B_{h7}	D	V_{h9}	W	U	N_{h6}	M	F	E	S	R
	Nm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MKBM 42 M	0.16	89	117	8	25	3 x 12	9.2	M3 x 6	30	45 ÷ 48	3.2	2.5	7.5	42 □
MKBM 42 L	0.32	104	132											
MKBM 60 M	0.65	99	132	14	30	5 x 25	16	M4 x 10	50	70	5.2	2.5	7	60 □
MKBM 60 L	1.3	113	146											



MACK TECHNOLOGY: MACK NANO (MKN)

Universal Servo Drive

State of the art technology in electronics, designed and engineered in-house by Axor Ind., has given us this Universal drive as a revolution in the market's view of automation. Ultra compact dimensions open the horizon to a multitude of new application concepts. High precision and excellent dynamic performance.

MACK NANO

UNIVERSAL SERVODRIVE

12-140 VDC | 50 ARMS | 2500 W

FEATURES

- Universal Servo Drive for motors up to 2500W
- Sine wave current
- Brushless Servo Motor, feedback: encoder, hall sensor & sensorless
- DC brushed motors, actuators and linear motors, feedback: encoder, armature, tachymeter & sensorless
- Stepper motor, feedback: encoder & sensorless (case A)
- Braking Circuit (case B)
- USB port for setup, control and diagnosis
- 3 digital IN, 2 digital OUT
- Enable digital IN
- STO Safe Torque Off (case B)

COMMAND MODES

- Pulse Direction
- ±10V analog speed
- 0/10V analog torque
- Analog to position
- Digital position profiles
- CW / CCW
- Master/slave gearing
- Modbus-RTU
- CanBUS

USB Modbus-RTU CANopen

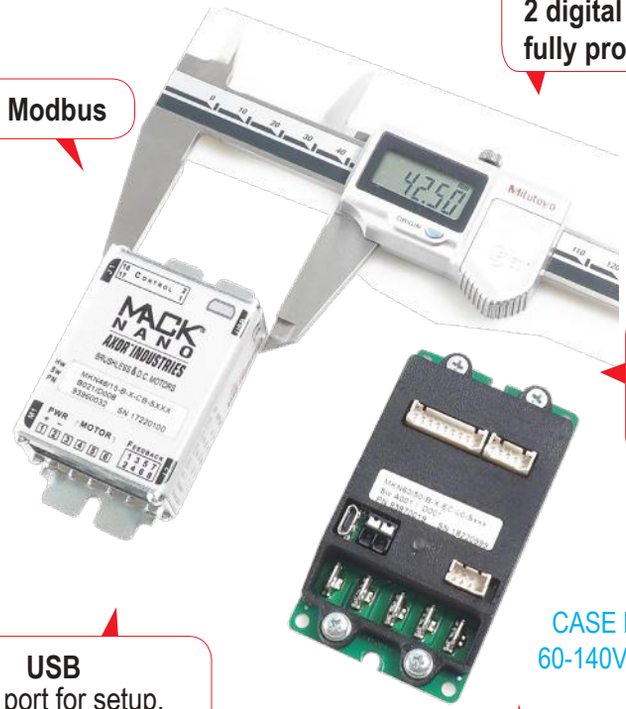
DRIVE MODEL		MKN 48				MKN 60						MKN 110		MKN 140	
SIZE		1	5	8	10	1	5	8	10	25	50	15	35	8	25
Rated Current	(Arms)	1	5	8	10	1	5	8	10	25	50	15	35	8	25
Peak Current x 3 sec	(Arms)	2	10	16	20	2	10	16	20	50	100	30	70	16	50
Power Supply		12 - 48 VDC (9-65 VDC max)				12 - 60 VDC (9-82 VDC max)						12 - 110 VDC (9-130 VDC max)		20 - 140 VDC (9-182 VDC max)	

MACK TECHNOLOGY: MACK NANO (MKN)

3 digital inputs
2 digital outputs
fully programmable

CANopen & Modbus

CASE A
60Vdc, 10A



STO - Safe Torque Off to CEI EN 61800-5-2 SIL 2
ISO EN 13849-1 PLd 60536
Safety Class III

CASE B
60-140Vdc

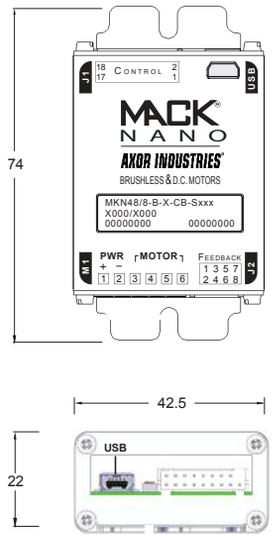
USB
USB port for setup, monitoring and diagnosis

The majority of control modes, & feedbacks

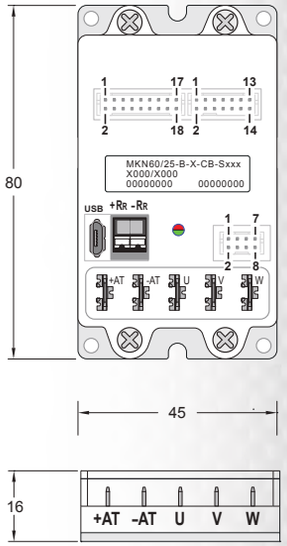
FREEWARE!!

Speeder one .2
Interface & configuration software

CASE A



CASE B



For any Servo Motor

Digital Braking Module
Mack Nano Clamp

AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK uniNANO

UNIVERSAL SERVODRIVE

12-140 VDC | 50 ARMS | 2500 W

MACK TECHNOLOGY: MACK uniNANO (MKUN)

Universal Servo Drive

Premium version of Mack Nano that offers extra functionalities in hardware and software.
Universal drive as a revolution in the market's view of automation. Ultra compact dimensions open the horizon to a multitude of new application concepts. High precision and excellent dynamic performance.

FEATURES

- Universal Servo Drive for motors up to 2500W
- Sine wave current
- Brushless Servo Motor, feedback: encoder, hall sensor & sensorless
- DC brushed motors, actuators and linear motors, feedback: encoder, armature, tachymeter & sensorless
- Stepper motor, feedback: encoder & sensorless (case A)
- Emulated Encoder
- Braking Circuit
- USB port for setup, control and diagnosis
- 3 digital IN, 2 digital OUT: fully programmble
- Enable digital IN
- STO Safe Torque Off

COMMAND MODES

- Pulse Direction
- ±10V analog speed
- 0/10V analog torque
- Analog to position
- Digital position profiles
- CW / CCW
- Albero elettrico / gearing
- Modbus-RTU
- CanBUS
- EtherCAT

USB Modbus-RTU CANopen EtherCAT

DRIVE MODEL		MKUN 48				MKUN 60						MKUN 110		MKUN 140	
SIZE		1	5	8	10	1	5	8	10	25	50	15	35	8	25
Rated Current	(Arms)	1	5	8	10	1	5	8	10	25	50	15	35	8	25
Peak Current x 3 sec	(Arms)	2	10	16	20	2	10	16	20	50	100	30	70	16	50
Power Supply		12 - 48 VDC (9 - 65 VDC max)				12 - 60 VDC (9 - 82 VDC max)						12 - 110 VDC (9-130 VDC max)		20 - 140 VDC (9-182 VDC max)	

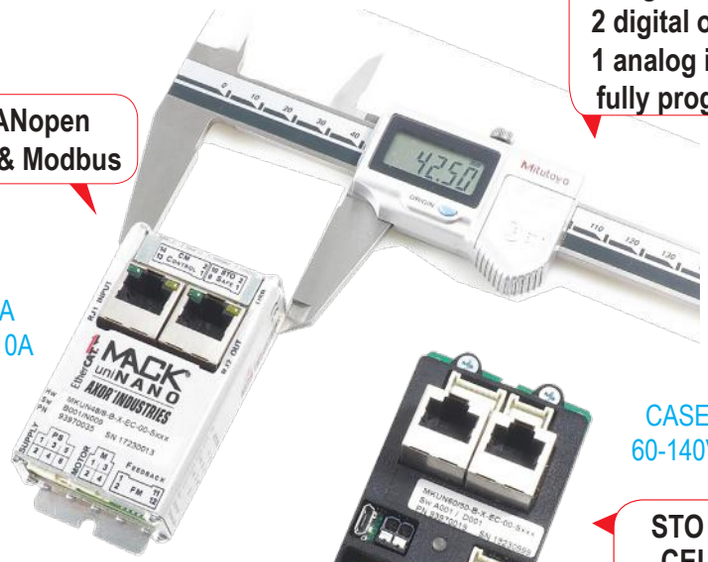
MACK TECHNOLOGY: MACK uniNANO

P.N. : Brochure / 12.10.23 / MKUN

4 digital inputs
2 digital outputs
1 analog input
fully programmable

RJ45 CANopen
EtherCAT & Modbus

CASE A
60Vdc, 10A



CASE B
60-140Vdc

STO - Safe Torque Off to
CEI EN 61800-5-2 SIL 2
ISO EN 13849-1 PLd 60536
Safety Class III

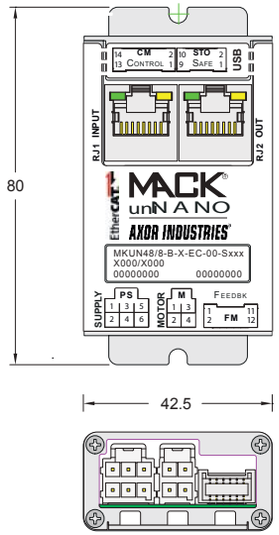
USB
USB port for setup,
monitoring and diagnosis

The majority of control modes,
& feedbacks

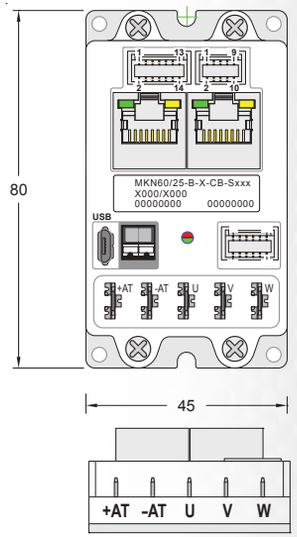
FREEWARE!!

Speeder one .2
Interface & configuration software

CASE A

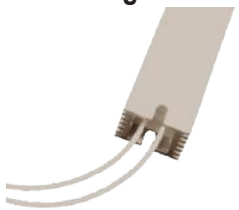


CASE B



For any Servo Motor

Braking resistor



AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK NANOclamp

DIGITAL BREAKING MODULE

20-179 VDC | 100 W

MACK TECHNOLOGY: MACK NANO CLAMP (MKNC)

Digital Braking Module

Universal braking module designed to be a constant, reliable protection of dc voltage power supplies against high return energy from the motor during braking or deceleration.

FEATURES

- Ultra compact module with built-in high power resistor
- Suitable for any servo system with dc supply
- Continuous braking power up to 100W
- 1 module can protect the dc supply of several drives
- No power supply needed
- 3 LED's for 6 status signals
- 2 Digital outputs for threshold warning and alarm block
- 2 Trimmers for braking voltage threshold adjustments
- Continuous monitoring of braking power
- Numbered single turn trimmers for easy presetting of standard machinery

DESCRIPTION

The power generated by a servo motor during deceleration and braking returns to the drive and supply line.
Many bridge rectifier, switching or similar supply systems cannot accept this return energy.
Mack Nano Clamp is designed to absorbe this return energy, thereby protecting the system upline.

MODEL		MKNC 60	MKNC 140
Continuous Power	**(on dissipating plate ≤ 0.7 °C / W)**	**100 W**	**100 W**
Continuous Power	**(no dissipating plate)**	**10 W**	**10 W**
Peak Braking Power	(W)	3200	6480
Braking Voltage setting range	(VDC)	20 ÷ 80	20 ÷ 179
Peak Braking Current	(ADC)	40 (at VB = 80 VDC)	36 (at VB = 179 VDC)
Average Braking Current	(ADC)	7	4,5
Built-in Braking Resistor	(OHM)	2	5

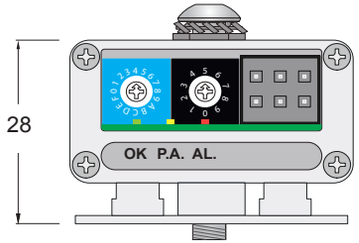
P.N. : Brochure / 12.10.23 / MKNC

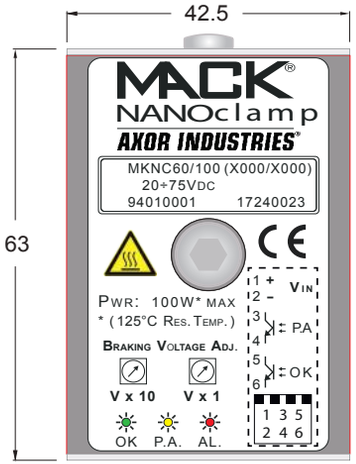
Installation on suitable dissipating surface

Digital outputs for warning & alam block

2 dip switchies for braking voltage adjustment

3 status LED's





AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK MOTOR

BRUSHLESS SERVOMOTOR

0.16-11 Nm | 50-3500 W

MACK TECHNOLOGY: MACK MOTOR (MKM)

Brushless Servo Motor

A very robust, high performance, low noise motor for AC three phase voltage supplies
Engineered & designed to meet axis control applications up to 11Nm. Compact dimensions and long-term reliability.

FEATURES

- 8 Poles, no cogging
- B.E.M.F. sine wave
- Medium rotor inertia
- Very low torque fluctuation at minimum speed
- Mack Serial Encoder, incremental or multiturn absolute
- Holding brake
- Higher rotor inertia
- Protection rating IP54 & IP65
- PTC thermal cutout
- Special flanges and shafts

SINGLE HYBRID CABLE

- Power, feedback and signals in one cable
- Mobile chain track usage, flame / oil resistant
- External sheath in PUR polyurethane
- 5 million bend cycles
- Minimum bending radius: 7 x Ø mm
- Springtek connector 270° swivel, spring lock,
- Forward & reverse mounted connector
- DIN VDE

Optimazed for combination with Mack Indy and Mack Drive+Power

			MKM 42		MKM 60		MKM 70			MKM 85			MKM 120		
SIZE			M	L	M	L	S	M	L	S	M	L	S	M	L
Power		(W)	50	100	200	400	280	470	630	570	1050	1600	1300	2400	3500
Mo	stall Torque (Δt=100°C)	(Nm)	0.16	0.32	0.65	1.3	0.9	1.5	2.0	1.8	3.3	5	4	7.5	11
	WINDING CODE		–	–	–	–	K26	K36	K46	Q28	Q38	Q48	V28	V38	V48
400 VAC	Io Stall Current	(Arms)	–	–	–	–	1.1	1.5	2	1.1	2	2.8	2.3	4.3	6.5
	N_n Rated Speed	(Rpm)	–				3000								
	WINDING CODE		F36	F46	J36	J46	K26	K36	K46	Q26	Q36	Q46	V28	V38	V48
230 VAC	Io Stall Current	(Arms)	0.5	0.9	1.45	2.4	1.1	1.5	2	2	3.3	4.7	2.3	4.3	6.5
	N_n Rated Speed	(Rpm)	3000										1500		

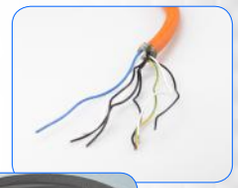
MACK TECHNOLOGY: MACK MOTOR (MKM)

FREEWARE!!

Speeder one .2

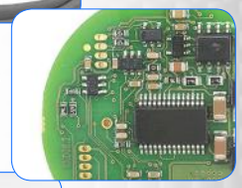
Interface & configuration software

Only 8 wires for power, feedback & signals

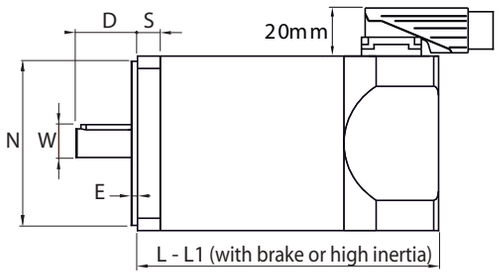


Highly flexibile & tight bend radius

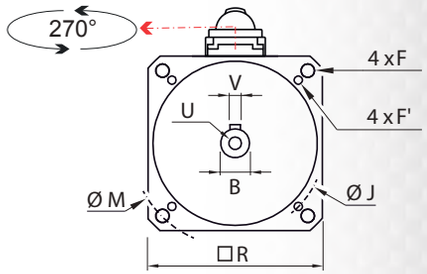
Serial encoder with no moving parts, 13bit / 17 bit
Designed & engineered by Axor



Easy fit, Clip-on connector
270° swivel - Anti-vibration - IP68



TYPE	Mo	L	L1	B_{h7}	D	V_{h9}	W	U	N_{h6}	M	F	J	F'	E	S	R
	Nm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MKM 42 M	0.16	93	121	8	25	3 x 12	9.2	M3 x 10	30	45/48	3.2	-	-	2.5	7.5	42 □
MKM 42 L	0.32	107	135													
MKM 60 M	0.65	91	124	14	30	5 x 25	16	M4 x 10	50	70	5.2	-	-	2.5	7	60 □
MKM 60 L	1.3	105	138													
MKM 70 S	0.9	100	125	11	23	4 x 18	12.5	M4 x 10	60	90	5.5	75	Ø4.2 x 10	2.5	10	75 □
MKM 70 M	1.5	125	150													
MKM 70 L	2.0	150	175													
MKM 85 S	1.8	115	145	14	30	5 x 25	16	M4 x 10	80	100	6.5	-	-	3	11	85 □
MKM 85 M	3.3	145	175													
MKM 85 L	5	175	205													
MKM 120 S	4	135	170	19	40	6 x 32	21.5	M6 x 16	110	145	9	-	-	3.5	12.5	120 □
MKM 120 M	7.5	170	205													
MKM 120 L	11	205	240													



AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK DRIVE + POWER

MULTIAXIS BRUSHLESS SYSTEM

3x400 VAC	8 ARMS	3500 W

MACK TECHNOLOGY: MACK DRIVE + POWER (MKD) (MKP)

Multiaxis Brushless System

Multi-axis system with a single power unit that offers centralized drive setup and control, reduction of heat stress on the drives and a common braking resistance. It is especially suited to applications involving 3 to 12 drives.
The flexiblity of the hardware enables countless solutions and the customer-specific software can be factory loaded or easily downloaded on demand for optimum stock management.

FEATURES

- Very compact multiaxis servo system for brushless motors
- 230V & 400V Power supplies direct from the mains
- Built-in EMC line filter, in-rush and braking circuits
- Suitable for MACK Motors up to 11 Nm (single hybrid cable)
- Suitable for other motors (2 cables)
- Single power unit for several drives
- Single USB on Mack Power for all drive setup, control, diagnosis
- Serial Encoder compatible with Mack single hybrid motor cable
- SpeederOne PC software interface
- Emulated encoder
- Holding brake control
- Over/Undervoltage, overtemperature, overcurrent and I2t control
- 9 digital IN, 2 analog OUT, 2 digital OUT: fully programmable
- STO Safe Torque Off
- Single braking resistance on Mack Power for all Drives

COMMAND MODES

- Pulse Direction
- ±10V analog speed
- 0/10V analog torque
- Analog to position
- Digital position profiles
- CW / CCW
- Master/slave gearing
- Modbus-RTU
- CanBUS
- EtherCAT

USB Modbus-RTU CANopen EtherCAT

MACK DRIVE MODEL		MKD 300				MKD 600				
SIZE		2 / 4	4 / 8	6 / 12	8 / 16	1.5 / 3	2.5 / 5	3.5 / 7	5 / 10	7 / 14
Rated Current / Peak Current x 5"	(Arms)	2 / 4	4 / 8	6 / 12	8 / 16	1.5 / 3	2.5 / 5	3.5 / 7	5 / 10	7 / 14
Power Supply		310 - 385 VDC (from MKP 300)				530 - 650 VDC (from MKP 600)				

MACK POWER MODEL		MKP 300 M	MKP 300 T	MKP 600 T
SIZE		3.0 (3000 W)	4.5 (4500 W)	4.5 (4500 W)
Power In (50/60 Hz - grounded system only)	(Vrms)	1 x 230 VAC (± 10%)	3 x 230 VAC (± 10%)	3 x 400 VAC (± 10%)
	(Arms)	8 A	12 A	7 A
Power Out (at full - load)	(VDC)	310 - 385 V	310 - 385 V	530 - 650 V
	(ADC)	10 A / 20 APK x 5"	15 A / 30 APK x 5"	8.5 A / 17 APK x 5"

P. N. : Brochure / 12.10.23 / MKDP

SALIENT FEATURES

- 230VAC and 400VAC power supply with built-in EMC filter
- Fully programmable via miniUSB
- SpeederOne PC software for configuration and setup
- Very smooth sine wave

FREEWARE!!

Speeder one .2

Interface & configuration software

Power supply direct from mains, with just one power line to Mack Power.

DC Bus daisy chain

Centralized diagnostics & alarm messages of all drives

All MACK Drive programming thru a single miniUSB on MackPower

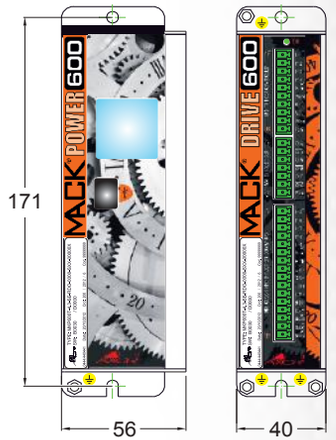
9 digital inputs
2 digital outputs
all fully programmable

Braking resistor

Holding brake control

STO - Safe Torque Off
to CEI EN 61800-5-2 SIL 2
ISO EN 13849-1 PLd 60536
Safety Class III

MACK POWER MACK DRIVE



AXOR ★ INDUSTRIES ★ drives & motors SINCE 1988 ITALY

MACK INDY

STAND ALONE BRUSHLESS SERVODRIVE

CE Pb RoHS

1x230 VAC	8 ARMS	2400 W

MACK TECHNOLOGY: MACK INDY (MKYD)

Stand Alone Brushless Servo Drive

Brushless drives powered directly from a 230VAC single phase mains, for motors up to 11Nm.
A truly flexible standalone drive for all servo requirements. It is compact and reliable,
ideal for one or more axis machinery and articulated workstations or lines.

FEATURES

- Very compact servodrive for brushless motors
- 230V 1ph Power supply direct from the mains
- EMC line filter, in-rush and braking circuits
- Suitable for MACK Motors up to 11 Nm (single hybrid cable)
- Suitable for other motors (2 cables)
- USB for drive setup, monitoring and diagnosis
- Serial Encoder compatible with Mack single hybrid motor cable
- SpeederOne PC software interface
- Emulated encoder
- 6 digital IN, 2 digital OUT
- STO Safe Torque Off

COMMAND MODES

- Step Direction Command
- ±10V analog speed (12 bit)
- 0/10V analog torque (12 bit)
- Analog to position
- Digital position profiles
- CW / CCW
- Master/slave gearing
- Modbus-RTU
- CanBUS
- EtherCAT

USB Modbus-RTU CANopen EtherCAT

DRIVE MODEL	MKYD 230				
SIZE	**1.5/3**	**2.5/5**	**3.5/7**	**5/10**	**8/16**
Rated Current / Peak Current x 5" (Arms)	**1.5 / 3**	**2.5 / 5**	**3.5 / 7**	**5 / 10**	**8 / 16**
Power & Backup Logic Supply	**1 x 230 VAC (±10%) -** 50/60 HZ (grounded system only)				

MACK TECHNOLOGY: MACK INDY (MKYD)

FREEWARE!!

Speeder one .2

Interface & configuration software

All MACK Indy programming via miniUSB with SpeederOne

RJ45 EtherCAT, CANopen, Modbus RTU

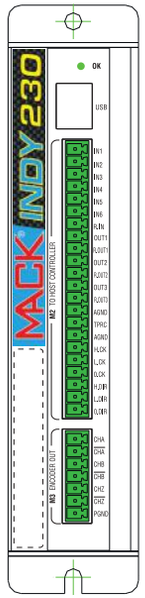
6 digital inputs
2 digital outputs
fully programmable

230Vac 1 phase supply direct from mains

Braking resistor

STO - Safe Torque Off to
CEI EN 61800-5-2 SIL 2
ISO EN 13849-1 PLd 60536
Safety Class III

Scalable emulated encoder



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120

servo drives & Motors
BRUSHLESS-BRUSHED

MACKTECHNOLOGYENG 11/2023

EST. 1988

AXOR IND.®
viale Stazione, 5
36054 Montebello Vicentino
Vicenza - Italy

ph: (+39) 0444 440441
info@axorindustries.com

www.axorindustries.com