

# PACMotion™ High Speed Servo Motion Control

## Integrated, Scalable, and Precise Control

Emerson provides flexible, easy to use, end-to-end solutions perfect for discrete manufacturing and hybrid control. PACMotion servo motion control continues this approach with high-speed motion, tighter control, and simple integration.

The PACMotion family gives you the ability to increase throughput, improve yield, and reduce expenses while minimizing development costs.

### Fully Integrated for System Simplicity

PACMotion is tightly integrated with Emerson PACSystems RX3i and PAC Machine Edition engineering tool. With motion, HMI, PLC, and machine logic events integrated into the same view, PACMotion streamlines synchronization for simple setup, maintenance, and troubleshooting. Standard motion blocks make it easy to assemble applications and operators can even dynamically change motion profiles. This gives you the ability to manage smaller lot sizes and rapid changeovers for increased machine utilization.

### High Speed, Precision Control

To facilitate quick and easy implementation, PACMotion uses the open EtherCAT communications protocol. Widely considered the standard for motion control, EtherCAT communications provides the peace of mind that all PACMotion products will work cohesively with your existing, and future, motion control technology.

### Scalability and Flexibility

Speed is critical for effective motion control, and PACMotion communicates across a 1 Gigabit per second throughput backplane for higher speeds than traditional networks. In fact, communications, position, and path planner loops are updated in quarter, half, and single millisecond intervals respectively. Utilizing a backplane also allows PACMotion to be a directly scalable solution. PACMotion's performance is maintained as you expand so update loops remain constant whether your



system requires 4 axes or 40. This ensures that you never have to worry about performance degradation.

### Three Components, One Solution

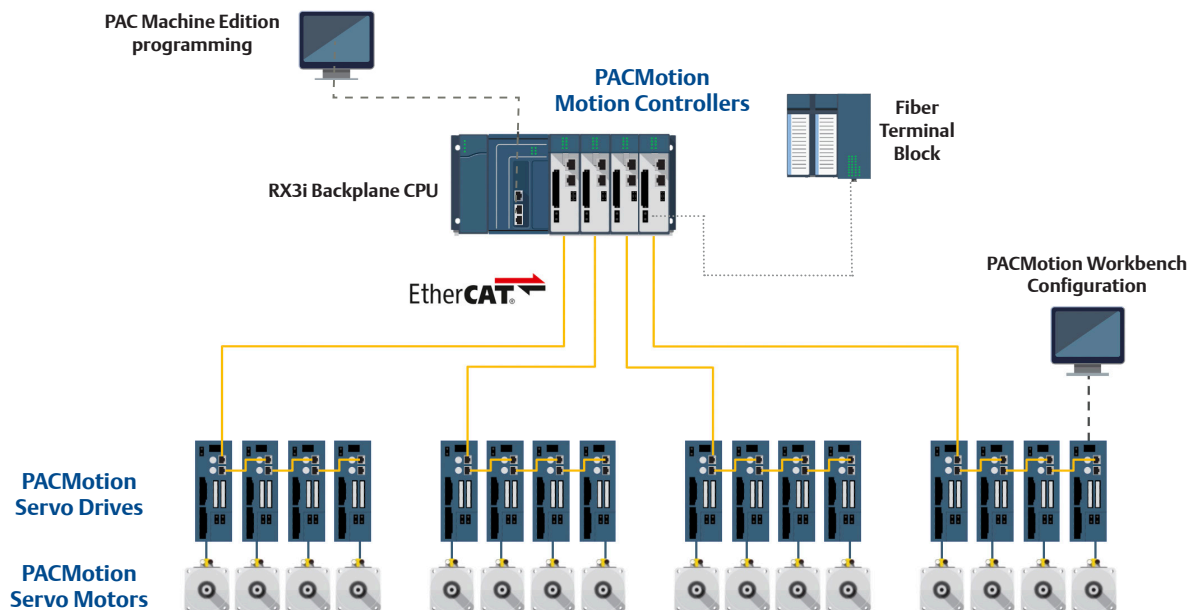
The PACMotion High Speed Servo Motion Control portfolio combines servo drives, and servo motors, with the PMM345 motion controller to create a single powerful solution.

PACMotion offers high-speed, reliable, and easy to use systems. At Emerson, we're a complete automation provider delivering a powerful and comprehensive portfolio of automation technology. We partner with end users to expand operations while tightening supply chain control.

### Easy Upgrade Path

For users with previous generations of PACMotion solutions, we've ensured the migration process is simple and painless. The PMM345 Motion Controller is the same footprint and utilizes the same motion commands as its PMM335 predecessor so you can easily upgrade. We also offer the intuitive PACMotion Workbench software for easy servo drive configuration, and a PACMotion Servo Sizing App to easily select the perfect motor for every situation.

## System Architecture



## PACMotion Motion Controller

Dedicated processor which enables PACSystems™ RX3i servo motion control and coordinates with PACMotion Servo Drives

Features	Benefits
Fast motion path planning (1ms), position (500µs), and communications (250µs) update rates	Improved accuracy and faster response to changing control requirements
Built on open EtherCAT communications	Easily integrate your existing, and future, motion control technology
Consistent motion update rate regardless of the number of axes	Scalability without worries of performance degradation
Patented JerkFree technology	Faster settling to final motion positions and prevents material slippage at any point in the motion execution
Double precision (64-bit) floating point	Advanced motion programming and control
5 axes per controller: 4 physical and 1 virtual	50 coordinated axes of control in a single system: 40 physical and 10 virtual
Optional Fiber Terminal Block (FTB) allows distributed motion-centric I/O	Reduced wiring complexity and cost
Change motion profiles on the fly	Ability to manage smaller lot sizes and rapid changeovers
Same footprint as PMM335 predecessor	Modernization in hours, not days



### PACMotion Servo Drives

Compact and powerful drives, perfect for driving synchronous servomotors with closed-loop control of torque, speed, and position

Features	Benefits
Drives covering 1,100 W – 16,000W of output current ratings	Multiple options to best fit your application
Built on open EtherCAT communications	Easily integrate your existing, and future, motion control technology
Safe Torque Off (STO) according to IEC 62061 SIL 2 onboard	Constant emphasis on operator safety
Designed for PACMotion Servo motors, but can also support 3rd-party motors	Seamlessly integrates into any motion application
Synchronized clocks with the motion controller	Entire system is synchronized to ensure all components work together



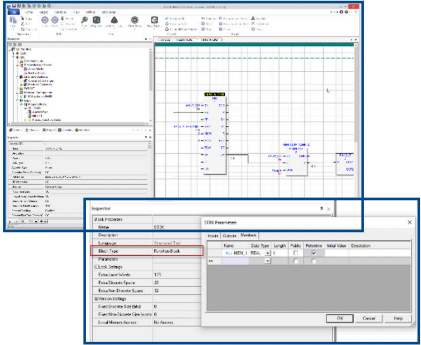
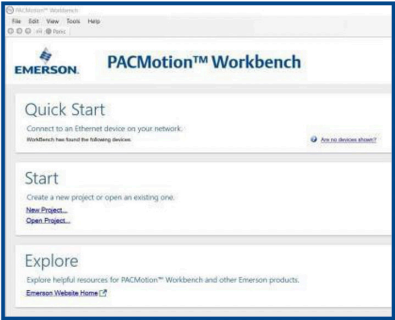
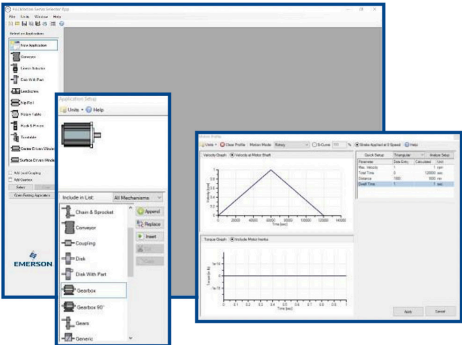
### PACMotion Servo Motors

Designed for a wide variety of servo motion needs including industrial robots, machine tools, textile/packing machinery and similar dynamic applications

Features	Benefits
Several sizes and customizations available	Multiple options to best fit your application
Built on open EtherCAT communications	Easily integrate your existing, and future, motion control technology
Functional replacements for FANUC motors	Modernization in hours, not days
Low inertia	Move to new positions quickly
Option for single cable connection	Save time on maintenance and installation
Exceptionally low cogging and harmonic distortion	Ensures smooth performance



## PACMotion Software Suite

Tool	Function
<p><b>PAC Machine Edition (PME)</b></p>	<p>A single programming solution for your entire automation portfolio, PME ensures streamlined deployment and management of all PACSystems and PACMotion devices. With PME you can program your high-speed servo motion control applications and your HMI, PLC, and machine logic all in the same view. PME also provides pre- defined, re-usable modules for reduced programming and configuration costs.</p> 
<p><b>PACMotion Workbench</b></p>	<p>Integrated within PME, PACMotion Workbench offers features like device discovery and servo tuning to help you configure your PACMotion Servo Drives. PACMotion Workbench has been designed for a simple user experience and even provides detailed connection diagrams to aid in troubleshooting. With an intuitive layout and comprehensive instructions, deploying a servo drive has never been easier.</p> 
<p><b>PAC Motion Servo Sizing Application</b></p>	<p>To ensure you always choose the right motor for your application, the PAC Motion Servo Sizing App is available to all PACMotion users. This tool aids in motion design by providing users a graphical interface to match PACMotion Servo Motors with various tools and products. Components like lead screws, timing belts, gear boxes, and electrical motors are all included. As users input key parameters like diameter of gears/pulleys, ratio of gear box, and load, the PAC Motion Servo Sizing App determines which motor is right for the job.</p> 

## Specifications

### PMM345 Motion Controller

Specification	Value	Additional Details
<b>Motion Path Planning Update Rate</b>	1ms	Consistent update regardless of the number of axes in the system
<b>Position Loop Update Rate</b>	500µs	All axes in the RX3i rack are updated simultaneously
<b>Communications Loop Update Rate</b>	250µs	All axes in the RX3i rack are updated simultaneously
<b>Controlled Axes / Module</b>	4	PACMotion servo motors (IC830M-) are supported via an EtherCAT interface
<b>Master Axes / Module</b>	1	Can be a virtual time-based or incremental encoder master
<b>Servo Command Interface</b>	EtherCAT (RJ45, CAT5e shielded or better)	100Mb/s data transfer
<b>Maximum Axes per RX3i</b>	40 + 10 master axes	Requires 16 slot backplane, CPU and 2 power supplies (AC or DC)
<b>Position Resolution:</b>	1,000,000 counts/rev	Consistent regardless of encoder type
<b>Accuracy by Encoder Type:</b>		
Smart Feedback Device (SFD3)	±9 arcmin ± 0.1500 degrees	Single-turn absolute encoder – Single Cable
Hiperface DSL	±1.33 arcmin ± 0.0222 degrees	Multi-turn absolute encoder – Single Cable
BiSS Multi-turn	±0.6 arcmin ± 0.0100 degrees	Multi-turn absolute encoder – Dual Cable (Bidirectional/Serial/Synchronous)
<b>Feedback Type</b>	Incremental/Absolute Serial Encoder	-
<b>Faceplate I/O:</b>		
24V General Purpose Inputs	4 optically isolated; source/sink	-
24V High-Speed Inputs	2 optically isolated; source/sink	Open circuit detection; can be used to connect a quadrature master encoder (500 kHz max)
24V General Purpose Inputs/Outputs	2 optically isolated; source/sink	125mA maximum output current each
<b>Connector</b>	Plug-on Screw Terminal	-
<b>Floating Point Support</b>	Yes	Double precision IEEE 754
<b>Cam Profiles per Module</b>	256 at one time	Up to 2048 profiles can be stored in the RX3i file system for use by any module
<b>Synch/Delayed Start</b>	Up to 8 axes	Axes can be on any module and are synchronized over the backplane. Ensures motion function blocks are executed on the same sample or at a specific offset
<b>High Speed Position Capture</b>	2 Inputs per axis	Configured as touch probes
<b>Certifications</b>	ATEX, CE	-

PACMotion Servo Drives

		Value by Drive Part Number: IC830DP _____ -NBEC							
Specification	Units	00306	00606	01206	02406	00307	00607	01207	02407
Drive Continuous Output Power	Watts	1100	2000	4000	8000	2000	4000	8000	16,000
Rated Supply Voltage	Vac	120/240				240/480			
Voltage Range	Vac	85-265				187-528			
Bus Voltage	Vdc	Approximately 1.33 x Vrms (continuous) (established strictly by incoming AC power, no internal settings necessary)							
Control Logic, Supply Voltage	V	24							
Rated Output Current (RMS value ±3%)	A	3	6	12	24	3	6	12	24
Peak Output Current (±3%)	A	9	18	30	48	9	18	30	48
Peak Time	s	5							
Current Loop Bandwidth Max.	kHz	2.5 to 4		2 to 3		2.5 to 4		2 to 3	
Velocity Loop Bandwidth Max.	Hz	0 to 1000		0 to 800	0 to 600	0 to 800			0 to 600
Position Loop Bandwidth Max.	Hz	1 to 250							
Update Rate	MHz	1.5							
Weight (Standard Width)	Kg	1.1		2	3.7	2.7			5.3
Weight (Extended Width)	Kg	1.3		2.2	4	2.9			5.5
Height, without Connectors	mm	168		196	248	256		306	385
Height, with Connector	mm	200		225	280	290		340	526
Standard Width Front/Back	mm	54/59		72/78.4	96/100	65/70		99/105	185/185
Extended Width Front/Back	mm	84/89		91/96	96/100	95/100		99/105	—
Depth, without Connectors	mm	156		187	228	185		228	225
Depth, with Connectors	mm	185		<215	<265	<225		<265	<265

### PACMotion Servo Motors– Frame Size 2 PerformanceData

		Specification	Symbol	Units	IC830M21C-	IC830M22E-	IC830M23E-	IC830M24F-
		PACMotion Servo Drive Compatibility	-	-	120/240V Drives only	120/240V Drives only	120/240V Drives only	120/240V Drives only
		Max Rated DC Bus Voltage	Vbus	Vdc	320	320	320	320
		Continuous Torque (Stall) for ΔT winding = 100°C *[1,2,7,8,9]	Tcs	Nm	0.48	0.87	1.16	1.42
				lb-in	4.2	7.7	10.3	12.6
		<b>Continuous Current (Stall) for ΔT winding = 100°C *[1,2,7,8,9]</b>	<b>Ics</b>	<b>Arms</b>	<b>1.58</b>	<b>2.73</b>	<b>2.78</b>	<b>3.89</b>
		Continuous Torque (Stall) for ΔT winding = 60°C *[1,2,7,8,9]	Tcs	Nm	0.38	0.70	0.93	1.14
				lb-in	3.4	6.2	8.23	10.1
		Max Mechanical Speed*[5]	Nmax	rpm	8000	8000	8000	8000
		Peak Torque *[1,2]	Tp	Nm	1.47	2.76	3.86	4.82
				lb-in	13.0	24.4	34.2	42.7
		Peak Current	Ip	Arms	6.3	10.9	11.1	15.6
Drive DC Bus Voltage	160 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	0.46	0.81	1.1	1.33
				lb-in	4.0	7.1	9.7	11.8
		Rated Speed	Nrtd	rpm	2500	3500	2500	3000
	Rated Power (speed) *[1,2,7,8,9]	Prttd	kW	k	0.12	0.30	0.29	0.42
					0.16	0.40	0.39	0.56
			Hp	0.16	0.40	0.39	0.56	
	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	k	0.39	.70	0.98	1.12
					lb-in	3.4	6.2	8.7
		Rated Speed	Nrtd	rpm	8000	8000	6500	8000
	Rated Power (speed) *[1,2,7,8,9]	Prttd	kW	k	0.32	0.59	0.67	0.94
					0.43	0.79	0.89	1.26
			Hp	0.43	0.79	0.89	1.26	
	560 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	-	-	-	-
					lb-in	-	-	-
		Rated Speed	Nrtd	rpm	-	-	-	-
	Rated Power (speed) *[1,2,7,8,9]	Prttd	kW	k	-	-	-	-
0					0	0	0	
Hp			-	-	-	-		
640 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	-	-	-	-	
				lb-in	-	-	-	-
	Rated Speed	Nrtd	rpm	-	-	-	-	
	Rated Power (speed) *[1,2,7,8,9]	Prttd	kW	k	-	-	-	-
0					0	0	0	
		Torque Constant (± 10%) *[1]	Kt	Nm/Arms	0.30	0.32	0.42	0.36
		Back EMF Constant (± 10%) *[6]	Ke	V/krpm	19.5	20.4	27.0	23.4
				lb-in/Arms	2.7	2.8	3.7	3.2
		Motor Constant	Km	N-m/√W	0.0679	0.114	0.147	0.171
				lb-in/√W	0.601	1.01	1.30	1.52
		Resistance (line-line) (± 10%) *[6]	Rm	ohm	13	5.22	5.44	2.94
		Inductance (line-line)	L	mH	19	9.7	11.1	6.16
		Inertia (includes Resolver feedback) (± 10%) *[3]	Jm	kg-cm2	0.11	0.16	0.22	0.27
				lb-in-s2	9.5E-05	1.4E-04	1.9E-04	2.4E-04
		Optional Brake Inertia (additional) (± 10%)	Jm	kg-cm2	0.012	0.012	0.012	0.012
				lb-in-s2	1.1E-05	1.1E-05	1.1E-05	1.1E-05
		Weight	W	kg	0.82	1.1	1.38	1.66
				lb	1.8	2.4	3.0	3.7
		Static Friction *[1,10]	Tf	Nm	0.002	0.005	0.007	0.01
				lb-in	0.02	0.04	0.06	0.09
		Viscous Damping *[1]	Kdv	Nm/krpm	0.0046	0.0055	0.0065	0.0074
				lb-in/krpm	0.04	0.05	0.06	0.07
		Thermal Time Constant	TCT	minutes	8	9	1.	11
		Thermal Resistance	Rthw-a	°C/W	1.43	1.19	1.10	1.07
		Pole Pairs	-	-	3	3	3	3

PACMotion Servo Motors – Frame Size 4 Performance Data

		Specification	Symbol	Units	IC830M41E	IC830M42E	IC830M42G	IC830M42H	IC830M43G	IC830M43K
		PACMotion Servo Drive Compatibility	-	-	All Drives	All Drives	All Drives	All Drives	All Drives	All Drives
		Max Rated DC Bus Voltage	Vbus	Vdc	640	640	640	640	640	640
		Continuous Torque (Stall) for ΔT winding = 100°C * [1,2,7,8,9]	Tcs	Nm	2.02	3.42	3.53	3.54	4.80	4.90
				lb-in	17.9	30.3	31.2	31.3	42.5	43.4
		<b>Continuous Current (Stall) for ΔT winding = 100°C * [1,2,7,8,9]</b>	<b>Ics</b>	<b>A(rms)</b>	<b>2.85</b>	<b>2.74</b>	<b>4.80</b>	<b>6.0</b>	<b>48.7</b>	<b>9.60</b>
		Continuous Torque (Stall) for ΔT winding = 60°C * [2]	Tcs	Nm	1.62	2.74	2.82	2.83	3.84	3.92
				lb-in	14.3	24.2	25.0	25.0	34.0	34.7
		Max Mechanical Speed* [5]	Nmax	rpm	6000	6000	6000	6000	6000	6000
		Peak Torque * [1,2]	Tp	Nm	6.28	11.3	11.5	13.34	16.1	16.4
				lb-in	55.6	99.7	102	118.1	142.5	145.2
		Peak Current	Ip	Arms	11.4	11.0	19.2	30	19.5	38.4
Drive DC Bus Voltage	160 Vdc	Rated Torque (speed) * [1,2,7,8,9,10]	Trtd	Nm	1.94	-	-	3.03	-	4.08
				lb-in	17.2	-	-	26.8	-	4.08
		Rated Speed	Nrtd	rpm	1200	-	-	2000	-	2500
	Rated Power (speed) * [1,2,7,8,9]	Prtd	1200	0.24	-	-	0.67	-	1.07	
			-	0.33	-	-	0.90	-	1.43	
	320 Vdc	Rated Torque (speed) * [1,2,7,8,9,10]	Trtd	-	1.82	3.12	2.90	2.72	4.00	2.62
				2000	16.1	27.6	25.7	24.1	35.4	23.2
		Rated Speed	Nrtd	-	3000	1800	3500	4500	2500	6000
	Rated Power (speed) * [1,2,7,8,9]	Prtd	2500	0.57	0.59	1.06	1.28	1.05	1.65	
			Hp	0.77	0.79	1.42	1.72	1.41	2.21	
	560 Vdc	Rated Torque (speed) * [1,2,7,8,9,10]	Trtd	Nm	1.58	2.81	2.35	-	3.01	-
				lb-in	14.0	24.9	20.8	-	26.6	-
		Rated Speed	Nrtd	rpm	6000	3500	6000	-	5000	-
	Rated Power (speed) * [1,2,7,8,9]	Prtd	kW	0.99	1.03	1.48	-	1.58	-	
			Hp	1.33	1.38	1.98	-	2.1	-	
	640 Vdc	Rated Torque (speed) * [1,2,7,8,9,10]	Trtd	Nm	1.58	2.72	2.35	-	2.57	-
lb-in				14.0	24.1	20.8	-	22.7	-	
Rated Speed		Nrtd	rpm	6000	4000	6000	-	6000	-	
Rated Power (speed) * [1,2,7,8,9]	Prtd	kW	0.99	1.14	1.48	-	1.61	-		
		Hp	1.33	1.53	1.98	-	2.2	-		
		Torque Constant (± 10%) * [1]	Kt	Nm/Arms	0.71	1.26	0.74	0.59	0.99	0.52
				lb-in/Arms	6.3	11.2	6.5	5.22	8.76	4.6
		Back EMF Constant (± 10%) * [6]	Ke	V/krpm	45.6	80.9	47.5	38.3	63.9	33.2
		Motor Constant	Km	N-m/√W	0.236	0.369	0.381	-	-	-
				lb-in/√W	2.09	3.26	3.37	-	-	-
		Resistance (line-line) (± 10%) * [6]	Rm	ohm	6.02	7.78	2.51	1.65	2.61	0.74
		Inductance (line-line)	L	mH	18.4	26.8	9.2	6.0	10.8	2.9
		Inertia (includes Resolver feedback) (± 10%) * [3]	Jm	kg-cm2	0.81	1.5	1.5	1.5	2.1	2.1
				lb-in-s2	7.2E-04	1.3E-03	1.3E-03	1.3E-03	1.8E-03	1.8E-03
		Optional Brake Inertia (additional) (± 10%)	Jm	kg-cm2	0.068	0.068	0.068	0.068	0.068	0.068
				lb-in-s2	6.0E-05	6.0E-05	6.0E-05	6.0E-05	6.0E-05	6.0E-05
		Weight	W	kg	2.44	3.39	3.39	3.39	4.35	4.35
				lb	5.4	7.5	7.5	7.5	9.8	9.8
		Static Friction * [1,10]	Tf	Nm	0.014	0.026	0.026	0.026	0.038	0.038
				lb-in	0.12	0.23	0.23	0.23	0.34	0.34
		Viscous Damping * [1]	Kdv	Nm/krpm	0.009	0.013	0.013	0.013	0.017	0.017
				lb-in/krpm	0.08	0.12	0.12	0.12	0.15	0.15
		Thermal Time Constant	TCT	minutes	13	17	17	17	20	20
		Thermal Resistance	Rthw-a	°C/W	0.97	0.80	0.80	0.80	0.70	0.70
		Pole Pairs	-	-	5	5	5	5	5	5



PACMotion Servo Motors – Frame Size 6 Performance Data

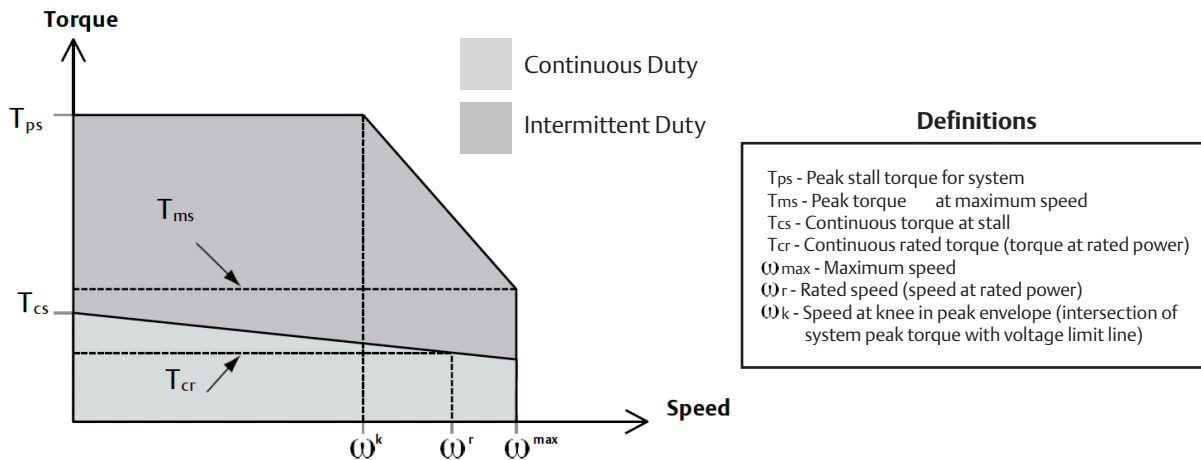
		Specification	Symbol	Units	IC830M62H	IC830M62K	IC830M62L	IC830M62M	IC830M63L	IC830M63M
		PACMotion Servo Drive Compatibility	-	-	All Drives	All Drives	All Drives	All Drives	All Drives	All Drives
		Max Rated DC Bus Voltage	Vbus	Vdc	640	640	640	640	640	640
		Continuous Torque (Stall) for ΔT winding = 100°C *[1,2,7,8,9]	Tcs	Nm	11.9	12.2	12.2	12.2	16.8	17.0
				lb-in	105	108	108	108	149	150
		<b>Continuous Current (Stall) for ΔT winding = 100°C *[1,2,7,8,9]</b>	<b>Ics</b>	<b>A(rms)</b>	<b>5.4</b>	<b>9.6</b>	<b>12.0</b>	<b>13.4</b>	<b>11.1</b>	<b>13.8</b>
		Continuous Torque (Stall) for ΔT winding = 60°C *[1,2,7,8,9]	Tcs	Nm	9.5	9.8	9.8	9.72	13.4	13.6
				lb-in	84	86.7	87	86.0	119	120
		Max Mechanical Speed*[5]	Nmax	rpm	6000	6000	6000	6000	6000	6000
		Peak Torque *[1,2]	Tp	Nm	29.6	41.2	30.1	30.2	42.6	43.0
				lb-in	262	365	266	267	377	381
		Peak Current	Ip	Arms	16.2	48.0	36.0	40.3	33.3	41.4
Drive DC Bus Voltage	160 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	-	-	-	-	-	-
				lb-in	-	-	-	-	-	-
		Rated Speed	Nrtd	rpm	-	-	-	-	-	-
	Rated Power (speed) *[1,2,7,8,9]	Prtd	kW	-	-	-	-	-	-	-
			Hp	-	-	-	-	-	-	
	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	10.8	10.4	10.0	9.50	14.2	14.3	
			lb-in	99	92	89	84.1	126	127	
	Rated Speed	Nrtd	rpm	1000	2000	2500	3000	1500	2000	
	Rated Power (speed) *[1,2,7,8,9]	Prtd	kW	1.17	2.18	2.62	2.98	2.23	2.99	
			Hp	1.57	2.92	3.51	4.00	2.99	4.01	
	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	10.2	9.0	7.42	5.70	12.9	11.3	
			lb-in	90.3	79.7	65.7	50.4	114	100	
	Rated Speed	Nrtd	rpm	2000	3500	5000	6000	3000	4000	
	Rated Power (speed) *[1,2,7,8,9]	Prtd	kW	2.14	3.30	3.89	3.58	4.05	4.73	
			Hp	2.86	4.4	5.21	4.80	5.43	6.34	
	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	9.9	9.0	5.74	5.70	12.0	10.5	
			lb-in	87.6	79.7	50.8	50.4	106	92.9	
	Rated Speed	Nrtd	rpm	2400	4500	6000	6000	3500	4500	
	Rated Power (speed) *[1,2,7,8,9]	Prtd	kW	2.49	3.77	3.61	3.58	4.4	4.95	
			Hp	3.34	5.06	4.84	4.80	5.90	6.63	
Torque Constant (± 10%) *[1]	Kt	Nm/Arms	2.2	1.28	1.0	0.91	1.5	1.24		
		lb-in/Arms	19.5	11.3	8.85	8.1	13.3	11.0		
Back EMF Constant (± 10%) *[6]	Ke	V/krpm	142	82.1	65.5	58.8	98.2	79.9		
Motor Constant	Km	N-m/√W	0.989	-	0.949	0.984	1.26	1.30		
		lb-in/√W	8.75	-	8.40	8.71	11.2	11.5		
Resistance (line-line) (± 10%) *[6]	Rm	ohm	3.3	1.08	0.74	0.57	0.94	0.61		
Inductance (line-line)	L	mH	25.4	8.5	5.4	4.4	7.4	4.9		
Inertia (includes Resolver feedback) (± 10%) *[3]	Jm	kg-cm2	17	17	17	17	24	24		
		lb-in-s2	0.015	0.015	0.015	0.015	0.021	0.021		
Optional Brake Inertia (additional) (± 10%)	Jm	kg-cm2	0.61	0.61	0.61	0.61	0.61	0.61		
		lb-in-s2	5.4E-04	5.4E-04	5.4E-04	5.4E-04	5.4E-04	5.4E-04		
Weight	W	kg	8.9	8.9	8.9	8.9	11.1	11.1		
		lb	19.6	19.6	19.6	19.6	24.4	24.4		
Static Friction *[1,10]	Tf	Nm	0.05	0.05	0.05	0.05	0.1	0.1		
		lb-in	0.44	0.44	0.44	0.44	0.9	0.9		
Viscous Damping *[1]	Kdv	Nm/krpm	0.04	0.04	0.04	0.04	0.06	0.06		
		lb-in/krpm	0.35	0.35	0.35	0.35	0.53	0.53		
Thermal Time Constant	TCT	minutes	20	20	20	20	25	25		
Thermal Resistance	Rthw-a	°C/W	0.46	0.46	0.46	0.46	0.41	0.41		
Pole Pairs	-	-	5	5	5	5	5	5		

PACMotion Servo Motors – Frame Size 7 Performance Data

		Specification	Symbol	Units	IC830M72L	IC830M72P	IC830M72Q	IC830M72R	IC830M73P	IC830M73Q	IC830M74Q
		PACMotion Servo Drive Compatibility	-	-	All Drives	All Drives	All Drives	120/240V Drives only	All Drives	All Drives	All Drives
		Max Rated DC Bus Voltage	Vbus	Vdc	640	640	640	320	640	640	640
		Continuous Torque (Stall) for ΔT winding = 100°C *[1,2,7,8,9]	Tcs	Nm	30	29.4	29.5	29.8	41.6	41.5	52.2
				lb-in	266	260	261	263.7	368	367	426
		<b>Continuous Current (Stall) for ΔT winding = 100°C *[1,2,7,8,9]</b>	<b>Ics</b>	<b>Arms</b>	<b>11.5</b>	<b>18.7</b>	<b>23.5</b>	<b>33.1</b>	<b>19.5</b>	<b>24.5</b>	<b>26.1</b>
		Continuous Torque (Stall) for ΔT winding = 60°C *[1,2,7,8,9]	Tcs	Nm	24	23.5	23.6	23.8	33.3	33.2	41.8
				lb-in	212	208	209	210.6	295	294	370
		Max Mechanical Speed*[5]	Nmax	rpm	6000	6000	6000	6000	6000	6000	6000
		Peak Torque *[1,2]	Tp	Nm	79.5	78.5	78.4	79.2	111	111	141
				lb-in	70.4	695	694	701	985	982	1250
		Peak Current	Ip	Arms	34.5	56.1	70.5	99.3	58.6	73.5	78.3
Drive DC Bus Voltage	160 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	-	-	-	25.1	-	-	-
				lb-in	-	-	-	222	-	-	-
		Rated Speed	Nrtd	rpm	-	-	-	1500	-	-	-
		Rated Power (speed) *[1,2,7,8,9]	Prtd	kW	-	-	-	3.94	-	-	-
				Hp	-	-	-	5.29	-	-	-
		320 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	-	23.8	23.3	19.4	34.7	33.4
	lb-in				-	211	205	171.7	307	296	379
	Rated Speed		Nrtd	rpm	-	1800	2000	3250	1300	1500	1200
	Rated Power (speed) *[1,2,7,8,9]		Prtd	kW	-	4.49	4.86	8.85	4.72	5.25	5.38
				Hp	-	6.01	6.52	6.60	6.33	7.04	7.21
	560 Vdc		Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	25.3	20.1	16.3	-	28.5	25.2
		lb-in			224	178	144	-	252	223	279
		Rated Speed	Nrtd	rpm	1500	3000	4000	-	2400	3000	2500
		Rated Power (speed) *[1,2,7,8,9]	Prtd	kW	3.97	6.31	6.83	-	7.16	7.92	8.25
				Hp	5.32	8.46	9.16	-	9.60	10.6	11.1
		640 Vdc	Rated Torque (speed) *[1,2,7,8,9,10]	Trtd	Nm	24.3	18.2	14.1	-	26.3	22.0
	lb-in				215	161	125	-	233	195	242
	Rated Speed		Nrtd	rpm	1800	3500	4500	-	2800	3500	3000
	Rated Power (speed) *[1,2,7,8,9]		Prtd	kW	4.58	6.67	6.65	-	7.71	8.07	8.58
				Hp	6.14	8.94	8.91	-	10.3	10.8	11.5
	Torque Constant (± 10%) *[1]		Kt	Nm/Arms	2.6	1.58	1.3	0.9	2.13	1.7	2.0
		lb-in/Arms		23.0	14.0	11.5	8.0	18.9	15	17.7	
	Back EMF Constant (± 10%) *[6]	Ke	V/krpm	169	102	81.2	58.3	137	109	129	
	Motor Constant	Km	N-m/√W	2.21	2.18	2.08	-	2.82	2.67	3.27	
lb-in/√W			19.6	19.3	18.4	-	25.0	23.6	28.9		
Resistance (line-line) (± 10%) *[6]	Rm	ohm	0.92	0.35	0.26	0.12	0.38	0.25	0.25		
Inductance (line-line)	L	mH	13.6	5.0	3.2	1.63	5.9	3.7	3.8		
Inertia (includes Resolver feedback) (± 10%) *[3]	Jm	kg-cm2	65	65	65	65	92	92	120		
		lb-in-s2	0.057	0.057	0.057	0.057	0.082	0.082	0.11		
Optional Brake Inertia (additional) (± 10%)	Jm	kg-cm2	1.64	1.64	1.64	1.64	1.64	1.64	1.64		
		lb-in-s2	1.46 x 10-3	1.46 x 10-3	1.46 x 10-3	1.46 x 10-3	1.46 x 10-3	1.46 x 10-3	1.46 x 10-3		
Weight	W	kg	19.7	19.7	19.7	19.7	26.7	26.7	33.6		
		lb	43.4	43.4	43.4	43.4	58.8	58.8	74.0		
Static Friction *[1,10]	Tf	Nm	0.16	0.16	0.16	0.16	0.24	0.24	0.33		
		lb-in	1.4	1.4	1.4	1.4	2.1	2.1	2.9		
Viscous Damping *[1]	Kdv	Nm/krpm	0.06	0.06	0.06	0.06	0.13	0.13	0.2		
		lb-in/krpm	0.5	0.5	0.5	0.5	1.2	1.2	1.8		
Thermal Time Constant	TCT	minutes	46	46	46	46	53	53	60		
Thermal Resistance	Rthw-a	°C/W	0.39	0.39	0.39	0.39	0.33	0.33	0.30		
Pole Pairs	-	-	5	5	5	5	5	5	5		

## PACMotion Servo Motors – Performance Data Notes

### Torque-speed Curve Calculations:



### Motor Compatibility and Sizing:

All motors will operate with the 120/240Vac drives. Motors with 320V Max DC Bus Voltage are not compatible with 240/480Vac drives. The Servo motor's Continuous Current is the key metric in properly sizing your drive.

### Drive DC Bus Voltage calculation:

- 1.33 x Vrms = Vdc bus
- Approximate Values -
  - 120 Vrms = 160Vdc
  - 240 Vrms = 320Vdc
  - 400 Vrms = 560Vdc
  - 480 Vrms = 640Vdc

Bus voltage of the drive is established strictly by the incoming AC power. No internal settings necessary.

### Table Footnotes:

- [1] Motor winding temperature rise,  $\Delta T=100^{\circ}C$ , at  $40^{\circ}C$  ambient.
- [2] All data referenced to sinusoidal commutation.
- [3] Add parking brake if applicable for total inertia.
- [4] Motor with standard heat sink.
- [5] May be limited at some values of Vbus.
- [6] Measured at  $25^{\circ}C$ .
- [7] Brake motor option reduces continuous torque ratings by following values (all values in Nm):

Frame Size 2			Frame Size 4	Frame Size 5	Frame Size 6		Frame Size 7
IC830M21	IC830M22	IC830M23	All Motors	All Motors	IC830M62	IC830M63	All Motors
0.00	0.01	0.02	0.12	0.15	0.5	0.9	1

- [8] Non-Resolver feedback options reduces continuous ratings following values (all values in Nm):

Frame Size 2	Frame Size 4		Frame Size 5	Frame Size 6		Frame Size 7	
All Motors	IC830M41	IC830M42	All Motors	IC830M62	IC830M63	IC830M72	IC830M73
0.00	0.1	0.1	0.15	0.9	1.2	2.0	2.7

- [9] Motors with non-resolver feedback and brake option reduce continuous torque by following values (all values in Nm):

Frame Size 2			Frame Size 4		Frame Size 5	Frame Size 6		Frame Size 7	
IC830M21	IC830M22	IC830M23	IC830M41	IC830M42	All Motors	IC830M62	IC830M63	IC830M72	IC830M73
0.00	0.02	0.05	0.22	0.36	0.39	1.6	2.4	3.9	5.1

- [10] For motors with optional shaft seal, reduce torque shown by following values and increase Tf by the same amount:

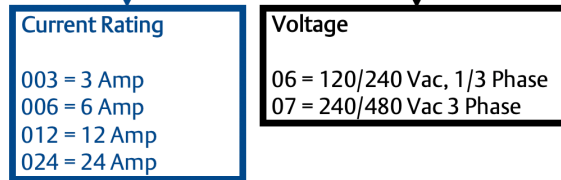
Frame Size 2	Frame Size 4	Frame Size 5	Frame Size 6	Frame Size 7
All Motors	All Motors	All Motors	All Motors	All Motors
0.047 Nm (0.41 lb-in)	0.071 Nm (0.63 lb-in)	0.013 Nm (0.1.2 lb-in)	0.25 Nm (2.21 lb-in)	0.25 Nm (2.21 lb-in)

**PACMotion Servo Motors – Motor Dimensions**

Motor	Flange Width	Overall Length (no brake)	Heat Sink Size [Aluminum Plate]	Pilot	Mounting Hole Diameter	Bolt Circle Diameter	Shaft Diameter	Shaft Length	Key Width	Key Height
	(mm)	(mm)	(in)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
IC830M21C-KK	58	95.4	10"x10"x1/4"	50	5.8	70	9	25	3	10.2
IC830M22E-KK	58	114.4	10"x10"x1/4"	50	5.8	70	9	25	3	10.2
IC830M23E-CK	58	133.4	10"x10"x1/4"	50	5.8	70	14	30	5	16
IC830M24F-CK	58	152.4	10"x10"x1/4"	50	5.8	70	14	30	5	16
IC830M41E-DC	84	147.8	10"x10"x1/4"	80	7	100	10	32	3	11.2
IC830M42E-DC	84	147.8	10"x10"x1/4"	80	7	100	10	32	3	11.2
IC830M42E-GC	84	147.8	10"x10"x1/4"	80	7	100	14	30	5	16
IC830M42G-DC	84	147.8	10"x10"x1/4"	80	7	100	10	32	3	11.2
IC830M42G-GC	84	147.8	10"x10"x1/4"	80	7	100	14	30	5	16
IC830M42H-DC	84	147.8	10"x10"x1/4"	80	7	100	10	32	3	11.2
IC830M43G-GC	84	176.8	10"x10"x1/4"	80	7	100	14	30	5	16
IC830M43K-GC	84	176.8	10"x10"x1/4"	80	7	100	14	30	5	16
IC830M62H-BK	138	172.2	18"x18"x1/2"	110	9	145	24	55	8	27
IC830M62H-EK	138	172.2	18"x18"x1/2"	110	9	145	19	55	6	21.5
IC830M62K-BK	138	172.2	18"x18"x1/2"	110	9	145	24	55	8	27
IC830M62L-BK	138	172.2	18"x18"x1/2"	110	9	145	24	55	8	27
IC830M62L-EK	138	172.2	18"x18"x1/2"	110	9	145	19	55	6	21.5
IC830M62M-BK	138	172.2	18"x18"x1/2"	110	9	145	24	55	8	27
IC830M63L-BK	138	197.2	18"x18"x1/2"	110	9	145	24	55	8	27
IC830M63M-BK	138	197.2	18"x18"x1/2"	110	9	145	24	55	8	27
IC830M72L-KK	188	201.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38
IC830M72P-KK	188	201.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38
IC830M72Q-KK	188	201.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38
IC830M72R-KK	188	201.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38
IC830M73P-KK	188	235.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38
IC830M73Q-KK	188	235.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38
IC830M74Q-KK	188	269.7	18"x18"x1/2"	114.3	13.5	200	35	79	10	38

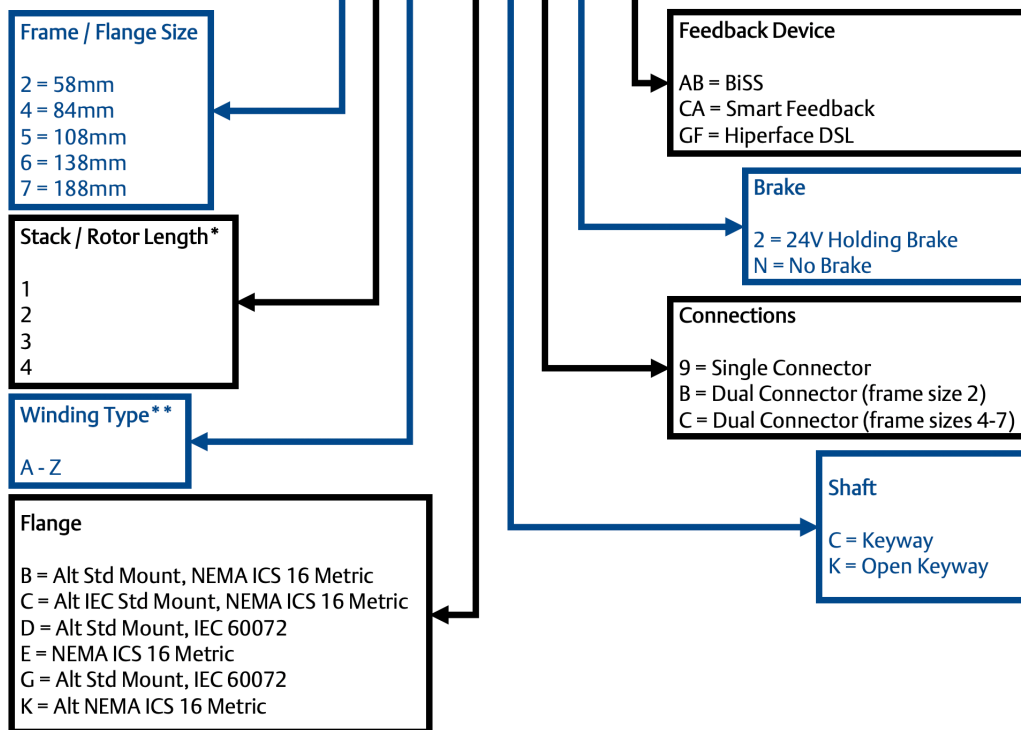
## Understanding the Part Numbers PACMotion Servo Drives

**IC830D P 003 06 – NB EC**



## PACMotion Servo Motors

**IC830M 2 3 E – C K B N AB 00**



\*value varies by frame size  
\*\*see manual for full definitions

## Ordering Info

Catalog Number	Description
<b>Servo Motion Controller</b>	
IC695PMM345	PACMotion Servo Motion Controller, compatible with RX3i backplane control systems
IC695FTB1B132	Fiber terminal Block kit: includes the base and two high density extended shroud box style screw terminal blocks
<b>Servo Drives</b>	
IC830DP00306-NBEC	PACMotion Servo Drive, 3A, 120/240 V
IC830DP00606-NBEC	PACMotion Servo Drive, 6A, 120/240 V
IC830DP01206-NBEC	PACMotion Servo Drive, 12A, 120/240 V
IC830DP02406-NBEC	PACMotion Servo Drive, 24A, 120/240 V
IC830DP00307-NBEC	PACMotion Servo Drive, 3A, 240/480 V
IC830DP00607-NBEC	PACMotion Servo Drive, 6A, 240/480 V
IC830DP01207-NBEC	PACMotion Servo Drive, 12A, 240/480 V
IC830DP02407-NBEC	PACMotion Servo Drive, 24A, 240/480 V
<b>Servo Motors – Frame Size 2</b>	
IC830M21C-KK92CA00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., Brake, SFD3, Single-Turn Abs
IC830M21C-KK92GF00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., Brake, HIPERFACE DSL, Multi-Turn Abs
IC830M21C-KK9NCA00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., SFD3, Single-Turn Abs
IC830M21C-KK9NGF00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., HIPERFACE DSL, Multi-Turn Abs
IC830M21C-KKB2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M21C-KKBNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M22E-KK92CA00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., Brake, SFD3, Single-Turn Abs
IC830M22E-KK92GF00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., Brake, HIPERFACE DSL, Multi-Turn Abs
IC830M22E-KK9NCA00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., SFD3, Single-Turn Abs
IC830M22E-KK9NGF00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Single Conn., HIPERFACE DSL, Multi-Turn Abs
IC830M22E-KKB2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M22E-KKBNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M23E-CK92CA00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., Brake, SFD3, Single-Turn Abs
IC830M23E-CK92GF00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., Brake, HIPERFACE DSL, Multi-Turn Abs
IC830M23E-CK9NCA00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., SFD3, Single-Turn Abs
IC830M23E-CK9NGF00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., HIPERFACE DSL, Multi-Turn Abs
IC830M23E-CKB2AB00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M23E-CKBNAB00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M24F-CK92CA00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., Brake, SFD3, Single-Turn Abs
IC830M24F-CK92GF00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., Brake, HIPERFACE DSL, Multi-Turn Abs
IC830M24F-CK9NCA00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., SFD3, Single-Turn Abs
IC830M24F-CK9NGF00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Single Conn., HIPERFACE DSL, Multi-Turn Abs
IC830M24F-CKB2AB00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M24F-CKBNAB00	PACMotion Servo Motor, NEMA, 14x30mm Shaft, 5mm Open Key, Dual Conn., BiSS, Multi-Turn Abs







IC830M63L-BK92CA00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., Brake, SFD3, Single-Turn Abs
IC830M63L-BK92GF00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., Brake, HIPERFACE DSL, Multi -Turn Abs
IC830M63L-BK9NCA00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., SFD3, Single-Turn Abs
IC830M63L-BK9NGF00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., HIPERFACE DSL, Multi-Turn Abs
IC830M63L-BKC2AB00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M63L-BKCNAB00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M63M-BK92CA00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., Brake, SFD3, Single-Turn Abs
IC830M63M-BK92GF00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., Brake, HIPERFACE DSL, Multi-Turn Abs
IC830M63M-BK9NCA00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., SFD3, Single-Turn Abs
IC830M63M-BK9NGF00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Single Conn., HIPERFACE DSL, Multi-Turn Abs
IC830M63M-BKC2AB00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Dual Conn., Brake, BiSS, Multi -Turn Abs
IC830M63M-BKCNAB00	PACMotion Servo Motor, NEMA, 24x55mm Shaft, 8mm Open Key, Dual Conn., Bi SS, Multi-Turn Abs
<b>Servo Motors – Frame Size 7</b>	
IC830M72L-KKC2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M72L-KKCNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi -Turn Abs
IC830M72P-KKC2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M72P-KKCNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi -Turn Abs
IC830M72Q-KKC2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M72Q-KKCNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M72R-KKC2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M72R-KKCNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M73P-KKC2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M73P-KKCNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi -Turn Abs
IC830M73Q-KKC2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M73Q-KKCNAB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
IC830M74Q-KKH2AB00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., Brake, BiSS, Multi-Turn Abs
IC830M74Q-KKHNA00	PACMotion Servo Motor, NEMA, 9x25mm Shaft, 3mm Open Key, Dual Conn., BiSS, Multi-Turn Abs
<b>Cables</b>	
CCJ1A2-015-001-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 240VAC), 1 meter
CCJ1A2-015-003-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 240VAC), 3 meter
CCJ1A2-015-006-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 240VAC), 6 meter
CCJ1A2-015-009-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 240VAC), 9 meter
CCJ1A2-015-012-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 240VAC), 12 meter
CCJ1A2-015-025-00	Hybrid Servo Motor Cable, Power & SFD3 Only Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 240VAC), 25 meter
CCJ2A2-015-001-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 480VAC), 1 meter
CCJ2A2-015-003-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 480VAC), 3 meter
CCJ2A2-015-006-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 480VAC), 6 meter
CCJ2A2-015-009-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 480VAC), 9 meter
CCJ2A2-015-012-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 480VAC), 12 meter
CCJ2A2-015-025-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback with Brake, 1.5 mm <sup>2</sup> , SpeedTec 1.0 Connector (6A, 480VAC), 25 meter
CCJ2A2-025-001-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback w/ Brake, 2.5 mm <sup>2</sup> , SpeedTec 1.0 Conn. (20A, 240/480VAC), 1m
CCJ2A2-025-003-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback w/ Brake, 2.5 mm <sup>2</sup> , SpeedTec 1.0 Conn. (20A, 240/480VAC), 3m
CCJ2A2-025-006-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback w/ Brake, 2.5 mm <sup>2</sup> , SpeedTec 1.0 Conn. (20A, 240/480VAC), 6m
CCJ2A2-025-009-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback w/ Brake, 2.5 mm <sup>2</sup> , SpeedTec 1.0 Conne. (20A, 240/480VAC), 9m
CCJ2A2-025-012-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback w/ Brake, 2.5 mm <sup>2</sup> , SpeedTec 1.0 Conn. (20A, 240/480VAC), 12m
CCJ2A2-025-025-00	Hybrid Servo Motor Cable, Power & SFD3/H-DSL Feedback w/ Brake, 2.5 mm <sup>2</sup> , SpeedTec 1.0 Conn. (20A, 240/480VAC), 25m

CP-507CCAN-01-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 1 meter
CP-507CCAN-03-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 3 meter
CP-507CCAN-06-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 6 meter
CP-507CCAN-09-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 9 meter
CP-507CCAN-12-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 12 meter
CP-507CCAN-15-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 15 meter
CP-507CCAN-20-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 20 meter
CP-507CCAN-25-0	Servo Motor Power Cable, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 25 meter
CP-507CDAN-01-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 1 meter
CP-507CDAN-03-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 3 meter
CP-507CDAN-06-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 6 meter
CP-507CDAN-09-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 9 meter
CP-507CDAN-12-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 12 meter
CP-507CDAN-15-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 15 meter
CP-507CDAN-20-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 20 meter
CP-507CDAN-25-0	Servo Motor Power Cable w/Brake, BiSS, High Flex w/ Intercontec Style Connector, (12A, 240VAC), 25 meter
CF-SB7374N-01-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 1 meter
CF-SB7374N-03-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 3 meter
CF-SB7374N-06-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 6 meter
CF-SB7374N-09-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 9 meter
CF-SB7374N-12-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 12 meter
CF-SB7374N-15-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 15 meter
CF-SB7374N-20-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 20 meter
CF-SB7374N-25-0	Servo Motor Feedback Cable w/ Intercontec Style Connector, BiSS & EnDat, 25 meter
<b>Accessories</b>	
IC830M7-FAN	Cooling Fan Kit, IC830M7
153-230000-01	Ground Plate, Medium Voltage
153-254001-00	Shield Bracket, 12A
153-255000-02	Shield Bracket, 24A
AKD-X2+SK14-KIT	Mating Connector (Drive) X2, motor, with shield clamp SK14
AKD-X2+SHIELD-KIT	Mating Connector (Drive) X2, motor, with shield plate
CON-AKDX3A-SL	Mating Connector (Drive) X3, mains, DC-Bus, Regen Resistor
CON-AKDX3B-SL	Mating Connector (Drive) X3, mains, DC-Bus, Regen Resistor
CON-AKDX3C-SL	Mating Connector (Drive) X4, mains
CON-AKDX3C-SL-Y	Mating Connector (Drive) X4, DC-Bus, Regen-R Mating Connector X4v.Y
AKD-CONKIT-MV3-6-SL	Screw Lock Mating Connectors for IC830D-x00306 and IC830D-x00606 (includes X1, X2, X3, X7 and X8)
AKD-CONKIT-MV12-SL	Screw Lock Mating Connector for IC830D-x01206 (includes X1, X2, X3, X7 and X8)
AKD-CONKIT-MV24-SL	Screw Lock Mating Connector for IC830D-x02406 (includes X1, X2, X3, X4, X7 and X8)
AKD-CONKIT-HV3-12-SL	Screw Lock Mating Connector for IC830D-x00307, x00607, and x01207 (includes X1, X2, X3, X4, X7 and X8)
AKD-CONKIT-HV24-SL	Screw Lock Mating Connector for IC830D-x00306 and IC830D-x00606 (includes X1, X2, X3, X4, X7 and X8)
CON-AKDX1-SL	Mating connector X1, 24Vdc and STO
CON-AKDX2A-SL	Screw Lock X2 connector for IC830D-x00306 and IC830D-x00606
CON-AKDX2B-SL	Screw Lock X2 connector for IC830D-x01206, IC830D-x02406 & IC830D-xxxx07
CON-AKDX3A-SL	Mating connector X3 connector for IC830D-x00306 and IC830D-x00606
CON-AKDX3B-SL-J	Mating connector X3 connector for IC830D-x01206

CON-AKDX3C-SL-J	Mating connector X3 connector for IC830D-x02406 & IC830D-xxxx07
CON-AKDX4-SL	Mating connector X4 connector for IC830D-x02406 & IC830D-xxxx07
CON-AKDX7-SL	Mating connector X7, Digital I/O
CON-AKDX8-SL	Mating connector X8, Digital I/O
CON-AKDX21-SL	Mating connector X21, I/O Option
CON-AKDX22-SL	Mating connector X22, I/O Option
CON-AKDX23-SL	Mating connector X23, I/O Option
CON-AKDX24-SL	Mating connector X24, I/O Option
AKD-X9-X10-KIT	Connector kit with X10 male 15 pin high density, X9 female 9 pin, 2 housings, screws
DE-201565	Mains filter 1NF-10 (230 VAC, 10A)
DE-201566	Mains filter 1NF-12 (230 VAC, 12A)
DE-201865	Mains filter 1NF-20B (125V/230V, 20A)
DE-201568	Mains filter 1NF-25 (230 VAC, 25A)
DE-201569	Mains filter 3NF-07 (480 VAC, 07A)
DE-201570	Mains filter 3NF-16 (480 VAC, 16A)
DE-201571	Mains filter 3NF-30 (480 VAC, 30A)
KCM-S200-0000	Energy Saving Module (Capacitor), 1.6 kW
KCM-P200-0000	Power Module (Capacitor), 2 kW
KCM-E200-0000	Expansion Module (Capacitor) 2 kW
KCM-E400-0000	Expansion Module (Capacitor) 4 kW
BAR-500-15	Regen resistor BAR(U) 500-15
BAR-1000-15	Regen resistor BAR(U) 1000-15
BAS-2000-15	Regen resistor BAS(U) 2000-15
BAS-3000-15	Regen resistor BAS(U) 3000-15
BAS-6000-15	Regen resistor BAS(U) 6000-15
BAR-600-23	Regen resistor BAR(U) 600-23
BAR-1000-23	Regen resistor BAR(U) 1000-23
BAS-2000-23	Regen resistor BAS(U) 2000-23
BAS-3000-23	Regen resistor BAS(U) 3000-23
BAS-4000-23	Regen resistor BAS(U) 4000-23
BAFP-100-33	Regen resistor BAFP(U) 100-33
BAFP-200-33	Regen resistor BAFP(U) 200-33
BAR-250-33	Regen resistor BAR(U) 250-33
BAR-500-33	Regen resistor BAR(U) 500-33
BAR-1500-33	Regen resistor BAR(U) 1500-33
BAS-3000-33	Regen resistor BAS(U) 3000-33
3YLN-06	Motor Choke, 6A
3YLN-14	Motor Choke, 14A
3YLN-24	Motor Choke, 24A

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