

MINAS LIQI

MINAS LIQI, the simple and cost-effective servo drive solution from Panasonic. Especially for dynamic applications MINAS LIQI offers many advantages as far as reliability, speed, and precision is concerned compared to stepping motors, asynchronous motors or pneumatic solutions. As for the MINAS A5 series, the PANATERM software and the MINAS SELECTION TOOL assist users in setting up and configuring the MINAS LIQI series. The series is optimally suited for the processing industries involving food, packaging, printing, metals, and plastics.



Features

- Incremental encoder: 2500 pulses per revolution
- Response frequency: 1kHz bandwidth (velocity response)
- PANATERM V5.0: Free software for configuration and motion simulation via USB port
- Real-time autotuning function during operation
- Damping (1-200Hz) and notch filters (50-5000Hz)
- Rotary switch (RSW): to set the stiffness manually



Driver (50W–1000V AC 1-phase)							
Driver	MINAS LIQI	Type	MBDJT2207		MBDJT2210	MCDJT3220	MCDJT3230
	Frame	mm	B (D: 55.5 x H: 150 x W: 150)			C (D: 65.5 x H: 150 x W: 190)	
Rated power	W	50	100	200	400	750	1000
Motor (MSMD***J1* low inertia)							
Motor	Type	MSMD5AZJ1□	MSMD012J1□	MSMD022J1□	MSMD042J1□	MSMD082J1□	MSMD102J1□
Nominal torque (peak torque)	Nm	0.16 (0.48)	0.32 (0.95)	0.64 (1.91)	1.3 (3.8)	2.4 (7.1)	3.2 (9.5)
Rated rotational speed (max. rotational speed)	r/min	3000 (5000)				3000 (4500)	3000 (4000)
Inertia (with holding brake)	x10 ⁻⁴ kg · m ²	0.025 (0.027)	0.051 (0.054)	0.14 (0.16)	0.26 (0.28)	0.87 (0.97)	1.16 (1.26)
Encoder	Pulses per revolution	p/r	2500				
	Resolution		10,000				
Degree of protection		IP65 (excluding shaft feedthrough and connectors)					

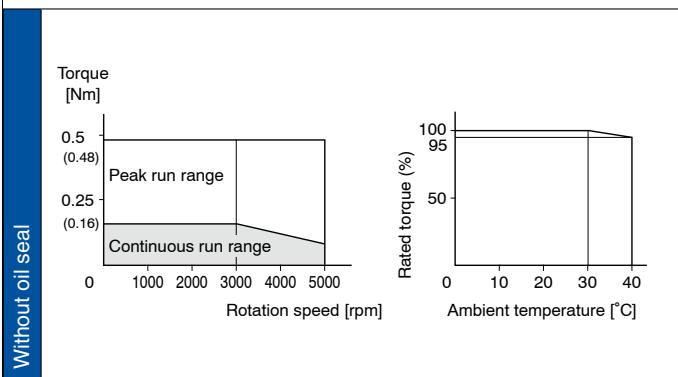
MINAS LIQI driver functions

			Frame	MINAS LIQI	
Supply voltage	Main circuit	200V	B	1-phase, 220–240V +5%, -10%, 50/60Hz	
			C	1-phase, 220–240V (+5%, -10%), 50/60Hz	
	Control circuit		B	1-phase, 220–240V (+5%, -10%), 50/60Hz	
			C	1-phase, 220–240V (+5%, -10%), 50/60Hz	
Operating conditions	Temperature			0–50°C, storage temperature: -20 to +65°C (max. temperature 80°C for 72 h)	
	Ambient humidity			Operation and storage: 20–85% RH (non-condensing)	
	Altitude			Max. 1000m above sea level	
	Vibration			Max. 5.88m/s ² , 10–60Hz (no continuous use at resonance frequency)	
Control method			IGBT sinusoidal PWM		
Encoder	Incremental (default)			2500 r/min (resolution 10,000, 5-core, serial incremental encoder)	
Control signals	Input points		6 (multifunctional, customizable)		
	Output points		3 (multifunctional, customizable)		
Pulse signals	Input points		2 (photocoupler, line driver)		
	Output points		3 line driver (A, B, and Z-phase) and 1 open collector (Z-phase)		
Interface	USB		Interface to PC, etc.		
Front panel				2 digital 7-segment LED displays, 2 digital rotary switches	
Regenerative brake resistor				No built-in brake resistor (external brake resistor only)	
Dynamic brake				Built-in	
Control mode				Position control	

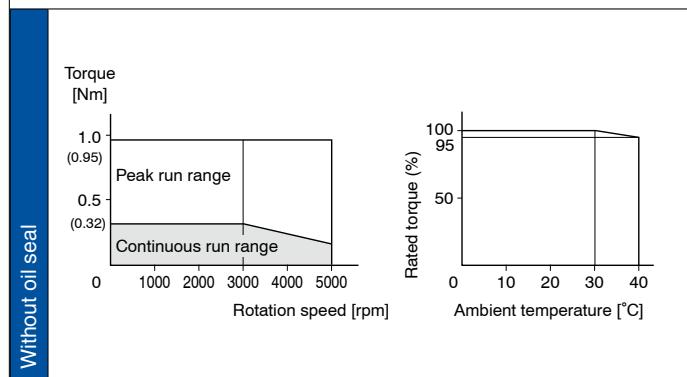
			MINAS LIQI	
Functions	Control input		1. Clear deviation counter 2. Command pulse inhibition 3. Damping control switching	
	Control output		Positioning complete etc.	
	Pulse input	Line driver	500kpps	
		Signal format	Differential input/square-wave pulse	
		Electronic gear	Scaling of pulse frequency from 1/1000 – 1000 times	
		Smoothing filter	Primary delay filter or FIR filter, customizable	
Damping control			Available	
Other features	Autotuning		Automatic adjustment of the servo controller's rigidity to the vibration behavior of the mechanical parts and changes to the load	
	Division of encoder feedback pulse		Any value up to the max. number of encoder pulses	
	Protective function	Error messages causing switch-off		Overtorque, undervoltage, overspeed, over-load, overheat, overcurrent and encoder error, etc.
		Error messages requiring acknowledgement		Excessive position deviation, command pulse division error, EEPROM error, etc.
	Alarm history		Can be logged for reference	

MINAS LIQI torque characteristics

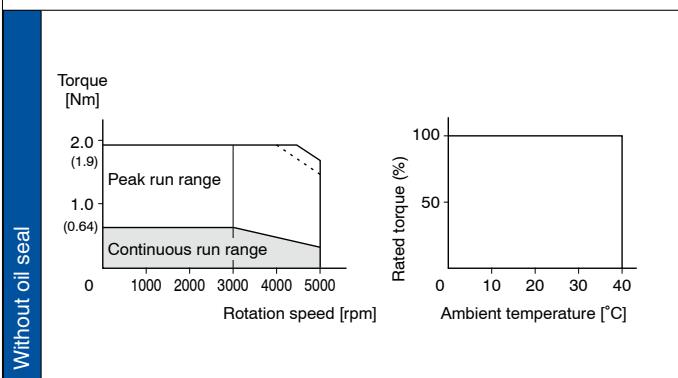
MSMD5AZJ1□



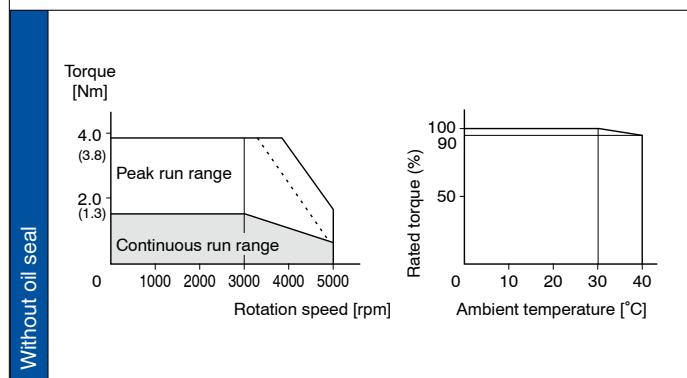
MSMD012J1□



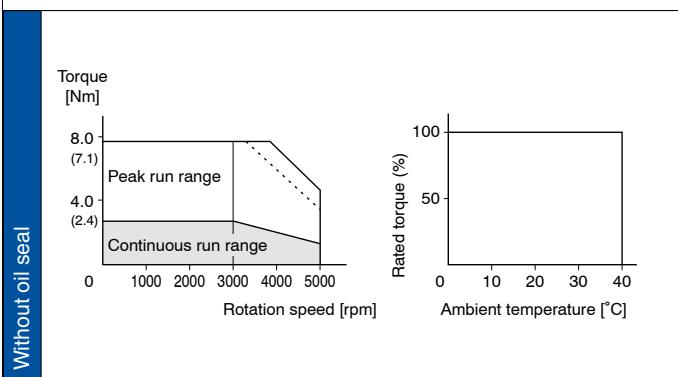
MSMD022J1□



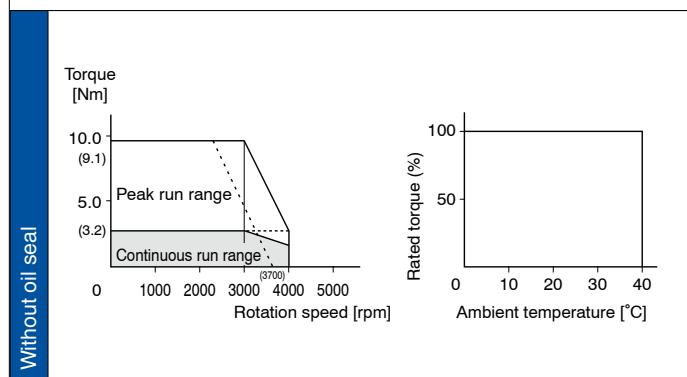
MSMD042J1□



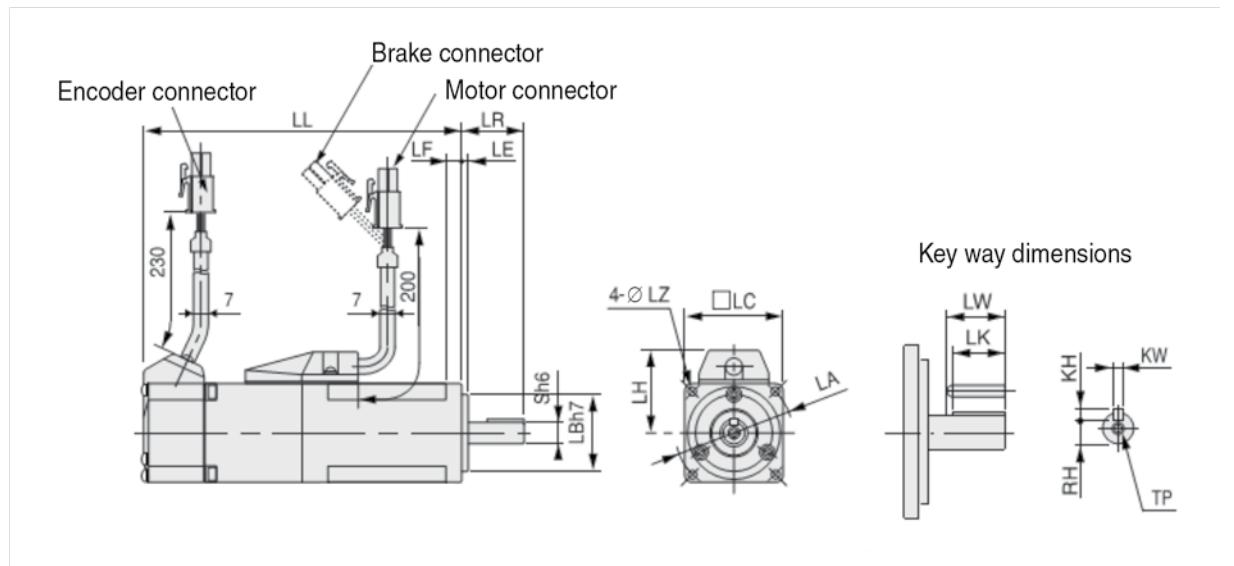
MSMD08J1□



MSMD102J1□



MINAS LIQI motor dimensions



MINAS LIQI motors (low inertia)														
Motor		Type	MSMD5AZJ1□	MSMD012J1□	MSMD022J1□	MSMD042J1□	MSMD082J1□	MSMD102J1□						
Encoder	Resolution	Pulses/r	10,000 (2500p/r incremental)											
Motor with/without holding brake		With-out	With	With-out	With	With-out	With	With-out	With	With-out	With			
LL	mm	72	102	92	122	79.5	116	99	135.5	112	149.2			
LR	mm	25				30			35					
S	mm	Ø 8 h6				Ø 11 h6	Ø 14 h6			Ø 19 h6				
LA	mm	Ø 45 ± 0.2				Ø 70 ± 0.2			Ø 90 ± 0.2					
LB	mm	Ø 30 h7				Ø 50 h7			Ø 70 h7					
LC	mm	38				60			80					
LE	mm					3								
LF	mm	6				6.5			8					
LZ	mm	4 Ø 3.4				4 Ø 4.5			4 Ø 6					
Key way	LW	mm	14				20		25		25			
	LK	mm	12.5				18		22.5		22			
	KW	mm	3 h9				4 h9		5 h9		6 h9			
	KH	mm	3				4		5		6			
	RH	mm	6.2				8.5		11		15.5			
	TP	mm	M3 depth 6				M4 depth 8		M5 depth 8		M5 depth 10			
Weight		kg	0.32	0.53	0.47	0.68	0.82	1.30	1.2	1.7	2.3	3.1	2.8	3.6

 = Length

1 | 0 = 1m

5 | 0 = 5m