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**MAVILOR**  
INFRANOR GROUP COMPANY



## Motors

ISSUE 2001

## DC Servo Motors EExdIIC Series

EExdIIC Series are axial air-gap servomotors housed in an enclosure into which gas can gain access: the gas can be ignited within the enclosure without the explosion damaging the enclosure or being transmitted to any flammable atmosphere external to the enclosure. These motors comply with the requirements for Apparatus Group IIC specified in EN 50 018 (1977) + A1 to 3 and EN 50 014 (1977) + A1 to 5.

The temperature classification referred to an ambient temperature of 70°C is:

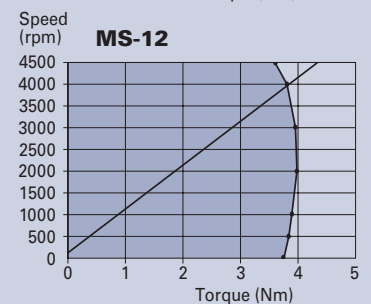
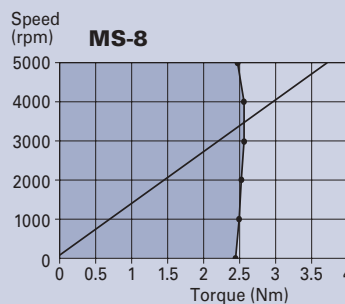
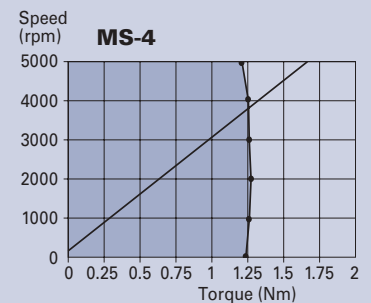
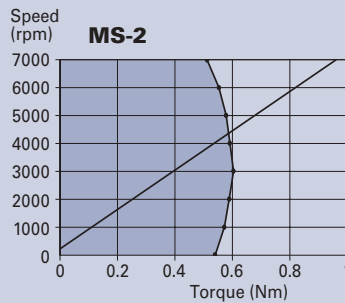
T5 for  $\left\{ \begin{array}{l} \text{MS-2 / MS-12 / MS-22} \\ \text{MA-3 / MA-20 / MA-30} \end{array} \right.$

T3 for  $\left\{ \begin{array}{l} \text{MS-4 / MS-6 / MS-8} \\ \text{MA-6 / MA-10} \end{array} \right.$

D.C. and A.C. "brushless" motors are included in EExdIIC Series, incorporating options of tachometer, resolver and parking brake fitted internally.



### Performance Curves



## Technical Specifications

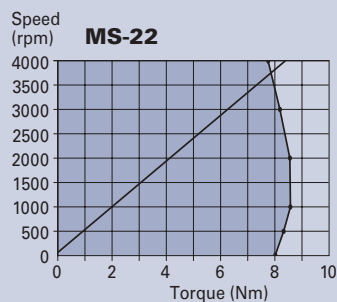
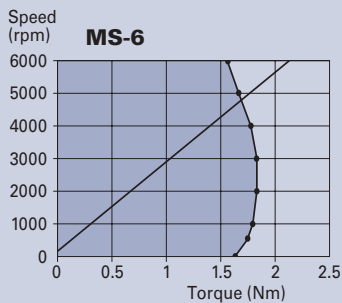
ALL CHARACTERISTICS MEASURED AT 40°C AMBIENT TEMPERATURE EXCEPT TERMINAL RESISTANCE (25°C)			MS-2	MS-4	MS-6	MS-8	MS-12	MS-22
	SYMBOLS	UNITS						
RATED SPEED	n	rpm	3,000	3,000	3,000	3,000	3,000	3,000
RATED VOLTAGE ±5%	U	V	39.4	67	67.8	89.7	106.7	181
RATED CURRENT	I	A	6.5	7.8	10.7	10.7	14	16
RATED OUTPUT POWER (1)	P	W	190.3	397	575	805	1,240	2,573
EFFICIENCY	η	%	74	76	80	84	83	89
RATED TORQUE	T	Nm	0.6	1.26	1.83	2.56	3.95	8.19
MAXIMUM TORQUE (2)	T <sub>max</sub>	Nm	3.6	7.58	11	15.38	23.7	49.14
MAXIMUM SPEED (3)	n max	rpm	7,000	6,000	6,000	5,000	4,500	4,000
EMF CONSTANT ±5%	K <sub>E</sub>	V/1000 rpm	10.4	18	19	26.3	30.85	55.6
TORQUE CONSTANT ±5%	K <sub>T</sub>	Nm/A	0.099	0.172	0.181	0.251	0.295	0.53
FRICTION TORQUE	T <sub>F</sub>	Nm	0.03	0.05	0.05	0.06	0.09	0.09
DAMPING CONSTANT	K <sub>D</sub>	Nm/1000 rpm	0.003	0.009	0.018	0.021	0.02	0.05
TERMINAL RESISTANCE (25°C)	R	Ω	1	1.25	0.75	0.82	0.75	0.67
ARMATURE INDUCTANCE	L	μH	<102	<130	<120	<150	<200	<250
INERTIA	J	kg m <sup>2</sup> 10 <sup>-3</sup>	0.15	0.37	0.40	0.82	1.7	5.1
MECHANICAL TIME CONSTANT	T <sub>M</sub>	ms	14.38	15	9	10.17	14	11.6
TRANSITORY POWER	P <sub>S</sub>	kW/s	89	155	300	288	330	473
THERMAL TIME CONSTANT ROTOR TO HOUSING	T <sub>AC</sub>	s	170	180	190	200	300	360
THERMAL TIME CONSTANT (1) HOUSING TO AMBIENT	T <sub>CA</sub>	s	1,700	1,750	1,800	2,000	2,700	3,000
THERMAL RESISTANCE ROTOR TO HOUSING	R <sub>AC</sub>	°C/W	0.8	0.5	0.5	0.5	0.3	0.2
THERMAL RESISTANCE (1) HOUSING TO AMBIENT	R <sub>CA</sub>	°C/W	0.5	0.3	0.4	0.4	0.3	0.2
RADIAL LOAD (at mid-length of shaft)	F <sub>R</sub>	N	200	200	300	300	500	600
AXIAL LOAD	F <sub>A</sub>	N	150	200	200	200	250	400
MASS (Only motors. No options)	M	kg						28
			300x300x10			400x400x10		
			3	3.5	4	7	10	
			9,000		6,000		4,500	

(1) With an aluminium heat sink plate

(2) For an S3 cycle

(3) Maximum speed in continuous service. During a very short time (r.p.m.)

## Tachometer Specifications



	UNITS	MS-2	MS-4	MS-6	MS-8	MS-12	MS-22
	SIZE	D40	D40	D40	D40	D40	D26
Voltage Constant	V/krpm	10 ± 5%*	10 ± 5%*	10 ± 5%*	10 ± 5%*	10 ± 5%*	10 ± 5%*
Ripple @ 1000 rpm (pp)	%	<1.5	<1.5	<1.5	<1.5	<1.5	<1.2
Linearity @ 6000 rpm	%	≤0.1	≤0.1	≤0.1	≤0.1	≤0.1	≤0.1
Reversing Error	%	≤0.12	≤0.12	≤0.12	≤0.12	≤0.12	≤0.12
Temperature Coefficient	%/°C	0.03	0.03	0.03	0.03	0.03	0.02
Rotor Inertia	kg m <sup>2</sup> 10 <sup>-3</sup>	0.004	0.004	0.004	0.004	0.004	0.024
Resistance	Ω	86	86	86	86	86	90
Inductance	mH	13	13	13	13	13	25
Current	mA	2	2	2	2	2	4
Maximum Current	mA	8	8	8	8	8	17
Maximum Speed	rpm	9,000	9,000	9,000	9,000	9,000	8,000
Mass	kg	0.105	0.105	0.105	0.105	0.105	0.295

\*other voltages available

