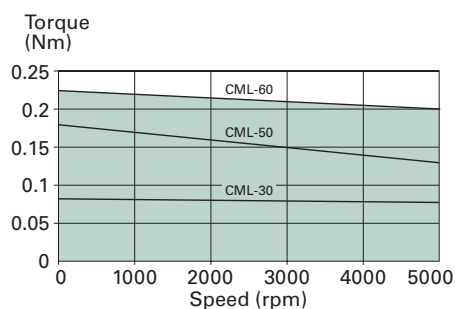


# DC Servo Motors CML Series

- Small dimensions.
- Radial magnetic flux.
- High performances.
- Square format.



## Performance Curves



## Encoder Specifications

Waveform	Square Wave
Line Counts	1000 ppr
Channels	A, B, Z, $\bar{A}$ , $\bar{B}$ , $\bar{Z}$ / U, V, W, $\bar{U}$ , $\bar{V}$ , $\bar{W}$ Line drives (RS422)
Supply Voltage	5VDC $\pm$ 10%
Frequency Response	200 kHz
Operating Temperature	-40 °C ~ +120 °C

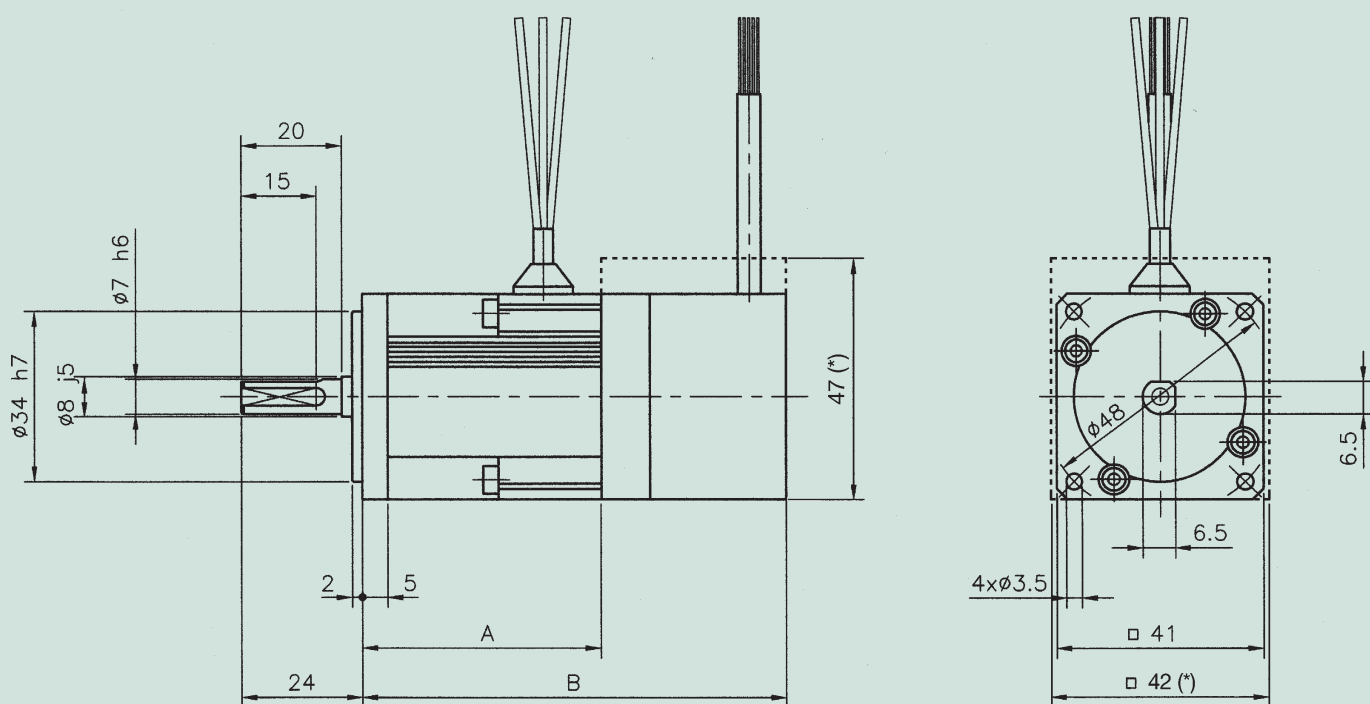
## Tachometer Specifications

	UNITS	TYPE
		D40
Voltage Constant	V/krpm	10 $\pm$ 5%*
Ripple @ 1000 rpm (pp)	%	<1.5
Linearity @ 6000 rpm	%	$\leq$ 0.1
Reversing Error	%	$\leq$ 0.12
Temperature Coefficient	%/°C	0.03
Rotor Inertia	kg m <sup>2</sup> 10 <sup>-3</sup>	0.004
Resistance	$\Omega$	86
Inductance	mH	13
Current	mA	2
Maximum Current	mA	8
Maximum Speed	rpm	9,000
Mass	kg	0.105

\*other voltages available

## Technical Specifications

ALL CHARACTERISTICS MEASURED AT 25°C AMBIENT TEMPERATURE				CML-30	CML-50	CML-60
	SYMBOLS	UNITS				
RATED SPEED	n	rpm		3000	3000	3000
RATED VOLTAGE ±5%	U	V		24	24	34
RATED CURRENT	I	A		2.1	3.9	2.7
RATED OUTPUT POWER <sup>(1)</sup>	P	W		25	47	63
RATED TORQUE	T	Nm		0.08	0.15	0.2
MAX TORQUE	T <sub>max</sub>	Nm		0.32	0.6	0.8
MAX SPEED WITHOUT LOAD	n <sub>max</sub>	rpm		4750	5000	3550
EMF CONSTANT ±5%	K <sub>E</sub>	V/1000 rpm		4.80	4.71	9.00
TORQUE CONSTANT ±5%	K <sub>T</sub>	Nm/A		0.0458	0.0450	0.0859
FRICTION TORQUE	T <sub>F</sub>	Nm		0.01	0.011	0.02
DAMPING CONSTANT	K <sub>D</sub>	Nm/1000 rpm		0.002	0.005	0.004
TERMINAL RESISTANCE	R	Ω		3.1	1.45	2.45
ARMATURE INDUCTANCE	L	mH		1.1	0.4	0.95
ROTOR INERTIA	J	kg m <sup>2</sup> 10 <sup>-3</sup>		0.0039	0.0065	0.0094
MECHANICAL TIME CONSTANT	T <sub>M</sub>	ms		5.75	4.66	3.12
ELECTRICAL TIME CONSTANT	T <sub>E</sub>	ms		0.35	0.28	0.39
THERMAL TIME CONSTANT	T <sub>TH</sub>	s		900	1260	1380
THERMAL RESISTANCE	R <sub>TH</sub>	°C/W		3.8	2.0	1.5
MASS (Only motor. No system)	M	kg		0.38	0.50	0.62
RADIAL LOAD (at mid-length of shaft)	F <sub>R</sub>	N		150	150	150
AXIAL LOAD	F <sub>A</sub>	N		80	80	80
(1) With an aluminium heat sink plate				150x150x10	150x150x10	150x150x10



WITH ENCODER OPTION

	CML-30	CML-50	CML-60
A	47.5	62.5	77.5
B	84	99	114

WITH TACHO OPTION (\*)

	CML-30	CML-50	CML-60
A	29	44	59
B	86	101	116