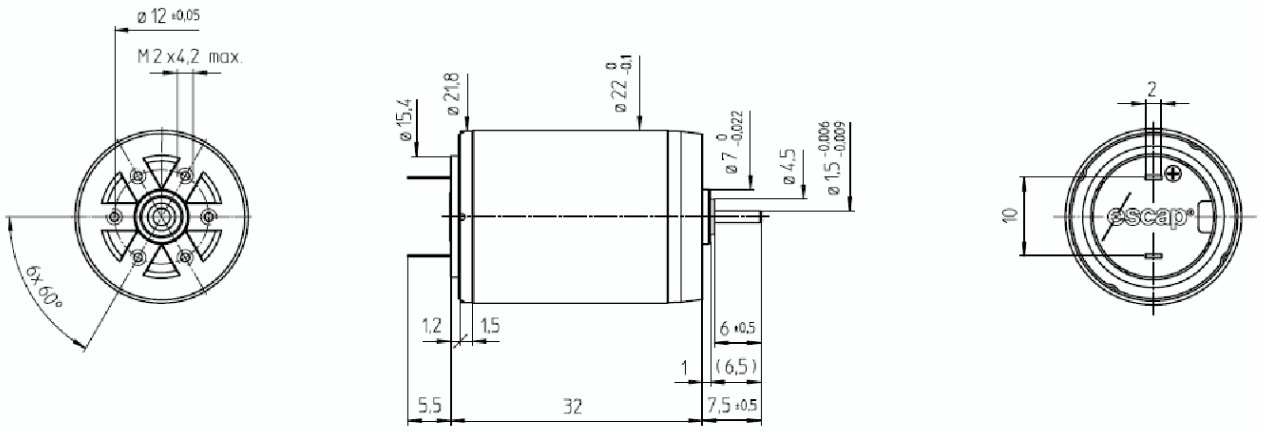
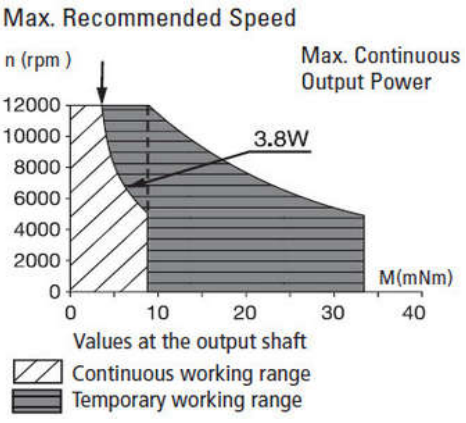
22N28 Precious metal commutation Ø22mm 8.8 mNm



Electrical Data	****	216P	216E	213E	210E	208E	105	
1 Nominal Voltage	V	3	6	9	12	18	18	Volt
2 No-Load Speed	n_0	5,275	5,580	7,000	5,880	6,300	3,580	rpm
3 No-Load Current	I_0	12.6	7.0	6.0	4.5	3.5	1.4	mA
4 Terminal Resistance	R	1.5	5.8	10.3	27.0	59.0	200.0	Ω
5 Output Power	$P_{2max.}$	4.3	4.2	3.8	3.7	3.5	3.3	W
6 Stall Torque	mNm	10.9 (1.55)	10.5 (1.49)	10.7 (1.52)	8.6 (1.22)	8.2 (1.17)	4.3 (0.61)	mNm (oz-in)
7 Efficiency	$\eta_{max.}$	85	84	84	81	80	77	%
8 Max continuous speed	$n_{e\ max.}$	12,000	12,000	12,000	12,000	12,000	12,000	rpm
9 Max continuous torque	$M_{e\ max.}$	8.8 (1.19)	8.4 (1.19)	7.5 (1.07)	7.3 (1.04)	6.9 (0.98)	6.5 (0.93)	mNm (oz-in)
10 Max continuous current	$I_{e\ max.}$	1.63	0.83	0.62	0.38	0.26	0.14	A
11 Back-EMF Constant	k_E	0.57	1.07	1.28	2.02	2.83	4.95	mV/rpm
12 Torque Constant	k_M	5.40	10.20	12.20	19.30	27.00	47.30	mNm/A
13 Motor Regulation	R/k^2	51.4	55.7	69.2	72.49	80.93	89.39	10^3/Nms
14 Friction Torque	T_F	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	mNm (oz-in)
15 Rotor Inductance	L	0.10	0.35	0.50	1.20	2.30	7.00	mH
16 Mechanical Time Constant	τ_m	18.0	19.5	19.4	21.7	23.5	17.9	ms
17 Rotor Inertia	J	3.50	3.50	2.80	3.00	2.90	2.00	$g.cm^2$
18 Thermal Resistance (rotor/body)	R_{th1} / R_{th2}	5/20	5/20	5/20	5/20	5/20	5/20	°C/W
19 Thermal Time Constant (rotor/stator)	τ_{w1}/t_{w2}	5/550	5/550	5/550	5/550	5/550	5/550	°C/W
20 Operating Temperature Range:	motor	-30°C to 85°C (-22°F to 185°F)						°C (°F)
	rotor	100°C (212°F)						°C (°F)
21 Shaft Load max.:		With sleeve bearings						
at 3,000 rpm (5mm from bearing)	-radial	3.0 (10.8)						N (oz)
at 3,000 rpm	-axial	150 (539.5)						N (oz)
22 Shaft play:	-radial	<0.03 (0.0012)						mm (inch)
	-axial	0.15 (0.0059)						mm (inch)
23 Weight	g	53 (1.87)						g (oz)

Execution				
Gearbox	**Single Shaft**	**F16**	**E9**	**MR2**
	22N28	**22N28**	**22N48**	**22N48**
R22	286	286	309	Contact Us
M22	286	286	308	483
K24	286	286	308	Contact Us
K27	286	286	308	Contact Us



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