

스위스 아미에트(주)

주 소	서울 영등포 여의도17-10	전 화	027834774	팩 스	027852599
소 속	영업책임 주 재현이사	mail	jjoo@swissamiet.com		

문서번호 : 201310318

시행일자 : 2013 03 18

공개여부 :

수 신 : 최 대 성부장님

참 조 :

선 결			지 시	
접 수	일자 시간		결 재	
	번호		·	
	처리과		공 람	
	담당자			
	심사자		심사일	

제 목 : Faulhaber 모터 승인원의 건

귀사의 일익 번창하심을 기원합니다.

안녕하십니까? 최 대 성부장님!

폐사의 Faulhaber 제품은 100% 검수과정을 통하여 생산하고 있습니다. 공급되는 제품의 품질 기준은 아래와 같이 일정한 품질규격으로 공급됨을 확인하여 드립니다.

1. 공급 모델명 : DC-2224L009SRP51-X4616, DC-2232L009SRP51-X4616
2. 제조사 : Faulhaber GmbH

3. 공급 모델의 특성 및 허용공차

3.1 모터 특성에 대한 허용 공차 (하기 data sheet 참조)

<u>Resistance</u>	: 허용공차 [Ω]±12%
<u>No-load current</u>	: 허용공차 [A]±50%
<u>No-load speed</u>	: 허용공차 [rpm] ±12% (@ 9V)
<u>Speed constant</u>	: [rpm/V]
<u>Mechanical time constant</u>	: [ms]
<u>Torque constant</u>	: [mNm/A]
<u>Vibration balance</u>	: Option 51 as G2.5 level according to DIN ISO 1940-1:2004-04
<u>Rotation</u>	: End cap indicated “+” as CW
<u>Life time</u>	: Over 1,200 hours in continuous at no load current and nominal voltage indicated on the data sheet below.

Note: Test condition at 22℃

4. 모터의 특성곡선

4.1 2224L009SRP-51-X 4616 at 12V

14.01.2013 / D. Frei



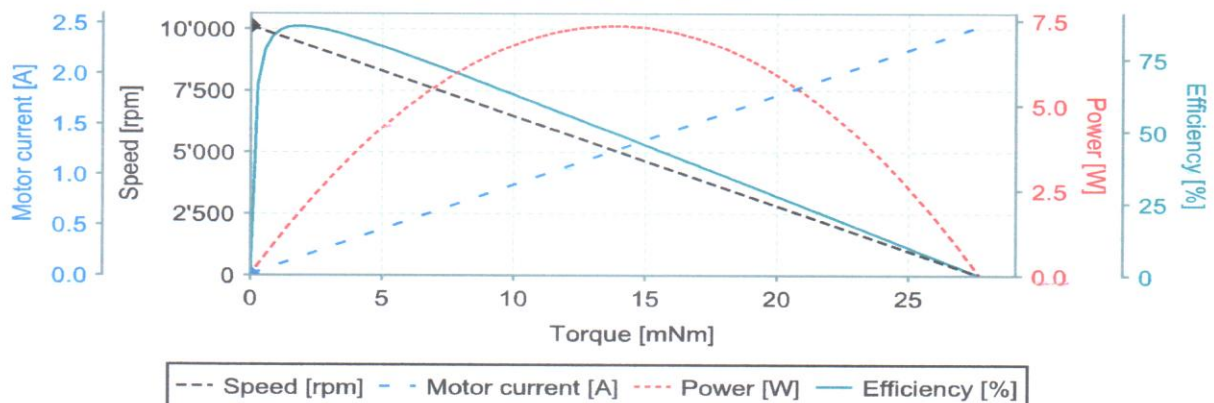
Dongburobot - RC servo module

Static - Continuous

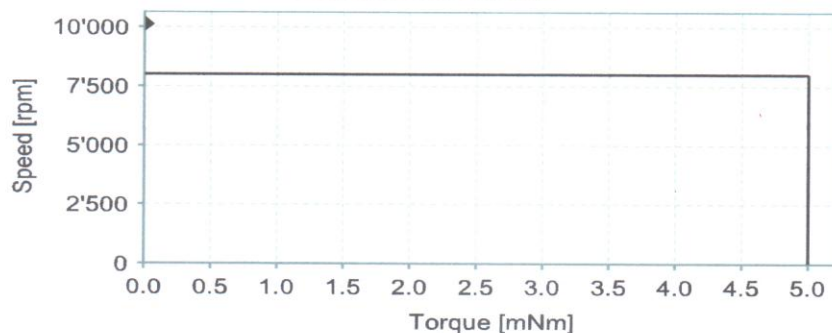
Series 2224L009SRP-51-X4616

2224L009SRP-51-X4616		
Max. voltage supply	[V]	24
Max. current supply	[A]	5
Ambient temperature	[°C]	22
Reduction	[%]	0
Motor voltage	[V]	12
Motor current	[A]	0.012
Motor speed	[rpm]	10'118
Motor torque	[mNm]	0.00
Motor power	[W]	0.0
Motor efficiency	[%]	0
Coil temperature	[°C]	22.0
Coil resistance	[Ω]	4.86
Housing temperature	[°C]	22.0
Thermal resistance	[K/W]	20.00

Main characteristics curves



Continuous limits



14.01.2013 / D. Frei



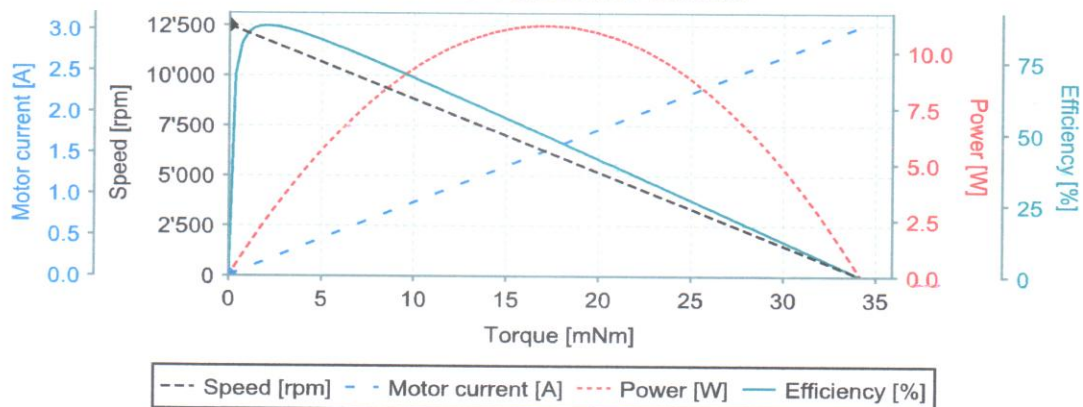
Dongburobot - RC servo module

Static - Continuous

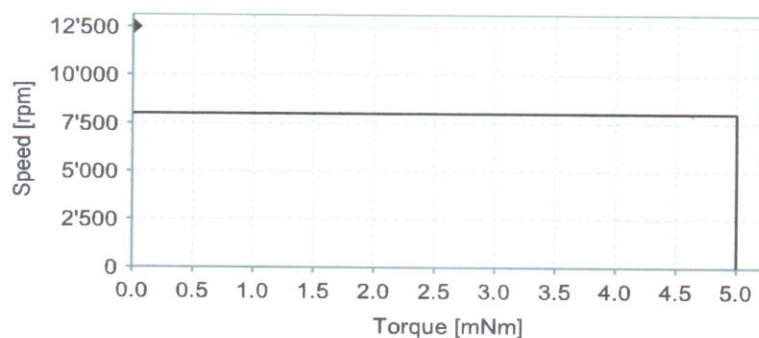
Series 2224L009SRP-51-X4616

		2224L009SRP-51-X4616
Max. voltage supply	[V]	24
Max. current supply	[A]	5
Ambient temperature	[°C]	22
Reduction	[%]	0
Motor voltage	[V]	14.8
Motor current	[A]	0.012
Motor speed	[rpm]	12'491
Motor torque	[mNm]	0.00
Motor power	[W]	0.0
Motor efficiency	[%]	0
Coil temperature	[°C]	22.0
Coil resistance	[Ω]	4.86
Housing temperature	[°C]	22.0
Thermal resistance	[K/W]	20.00

Main characteristics curves



Continuous limits



4.3 2232L009SRP-51-X4616 at 12V

14.01.2013 / D. Frei



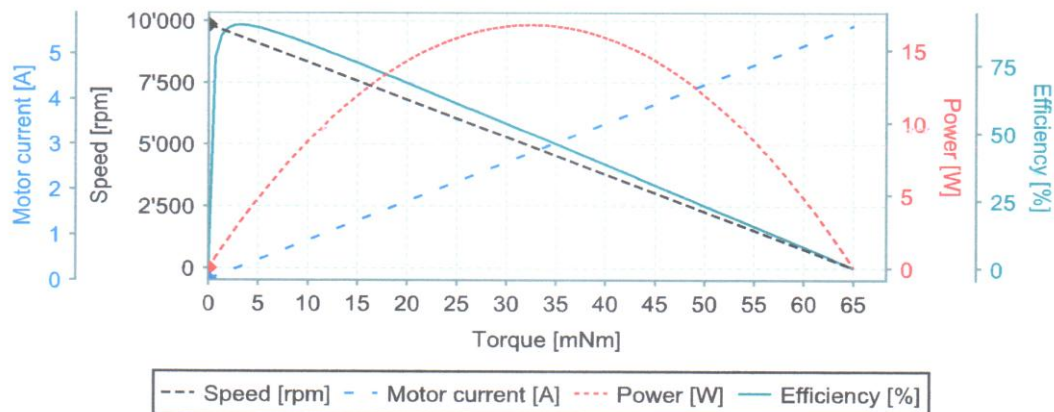
Dongburobot - RC servo module

Static - Continuous

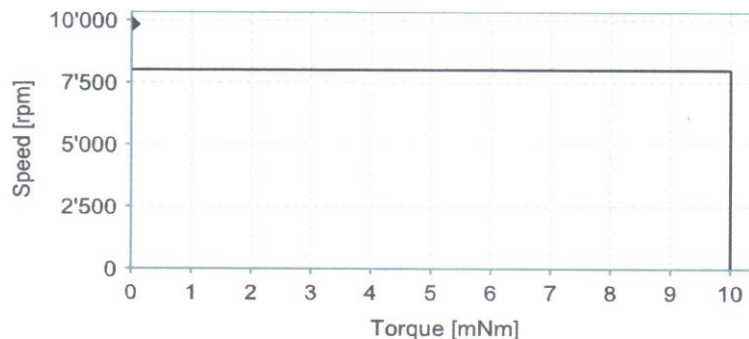
Series 2232L009SRP-51-X4616

		2232L009SRP-51-X4616
Max. voltage supply	[V]	24
Max. current supply	[A]	5
Ambient temperature	[°C]	22
Reduction	[%]	0
Motor voltage	[V]	12
Motor current	[A]	0.015
Motor speed	[rpm]	9'827
Motor torque	[mNm]	0.00
Motor power	[W]	0.0
Motor efficiency	[%]	0
Coil temperature	[°C]	22.0
Coil resistance	[Ω]	2.14
Housing temperature	[°C]	22.0
Thermal resistance	[K/W]	13.00

Main characteristics curves



Continuous limits



14.01.2013 / D. Frei



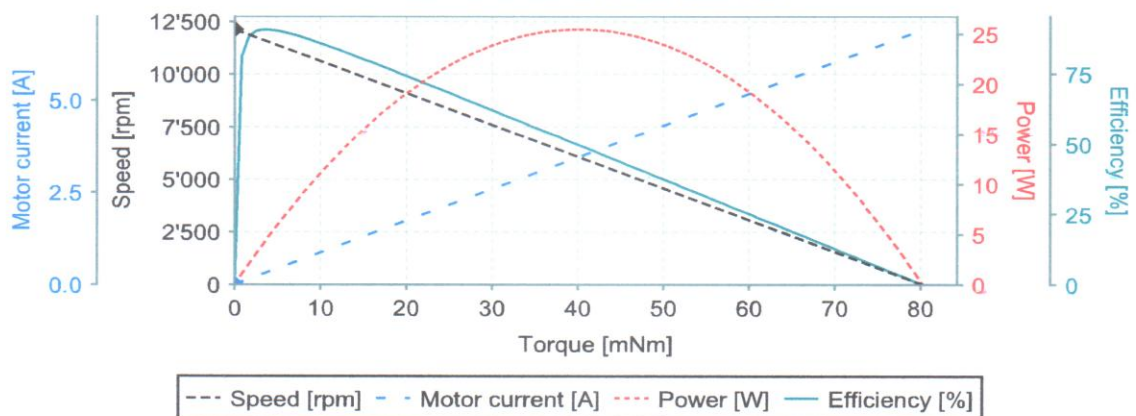
Dongburobot - RC servo module

Static - Continuous

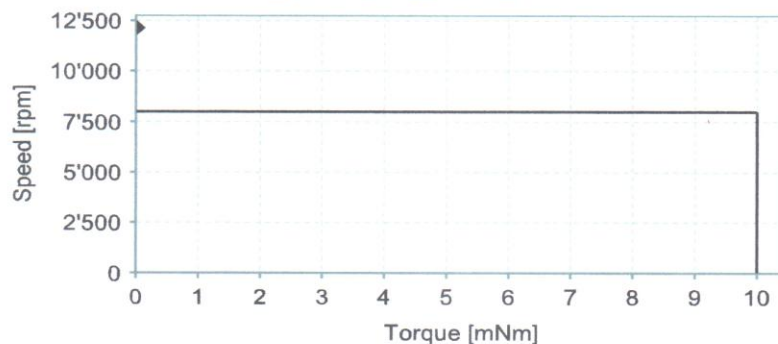
Series 2232L009SRP-51-X4616

		2232L009SRP-51-X4616
Max. voltage supply	[V]	24
Max. current supply	[A]	5
Ambient temperature	[°C]	22
Reduction	[%]	0
Motor voltage	[V]	14.8
Motor current	[A]	0.015
Motor speed	[rpm]	12'126
Motor torque	[mNm]	0.00
Motor power	[W]	0.0
Motor efficiency	[%]	0
Coil temperature	[°C]	22.0
Coil resistance	[Ω]	2.14
Housing temperature	[°C]	22.0
Thermal resistance	[K/W]	13.00

Main characteristics curves



Continuous limits



**DC-Micromotor****5 mNm**

Precious Metal Commutation

Type 2224 ... SR

2224.32572		2224L009S RP51-X4616	
1. Nominal Voltage	9	V	
2. Terminal Resistance	4,86	Ohm	
3. Maximum Output Power	4,1	W	
4. Maximum Efficiency	85	%	
5. No Load Speed	7600	rpm	
6. No Load Current	0,012	A	
7. Stall Torque	20,7	mNm	
8. Friction Torque	0,13	mNm	
9. Speed Constant	847	rpm/V	
10. Back EMF Constant	1,18	mV/rpm	
11. Torque Constant	11,27	mNm/A	
12. Current Constant	0,089	A/mNm	
13. Slope of Speed-Torque Curve	365	rpm/mNm	
14. Armature Inductance	170	µH	
15. Mechanical Time Constant	10	ms	
16. Armature Inertia	2,7	gcm ²	
17. Maximum Angular Acceleration	77	10 ³ rad/s ²	
18. Thermal Resistances:	Rth1 / Rth2	5 / 20	K/W
19. Thermal Time Constants:	tw1 / tw2	6,8 / 440	s
20. Operating Temperature Range	Motor	-30 ... 85	°C
	Rotor, max. permissible	125	°C
21. - 23. Shaft Bearing, Shaft Load, Shaft Play	See Drawing		
34. Housing Material	steel, black coated		
25. Weight	46	g	
26. Direction of Rotation	clockwise, viewed from the front face		

Recommended Values for Continuous Operation

27. Speed up to	8000	rpm
28. Torque up to	5	mNm
29. Current up to	0,7	A

Comment

Revision
Date 13.12.2012

DC-Micromotor

10 mNm

Precious Metal Commutation

Type 2232 ... SR

2232.21605		2232L009S RP51-X4616	
1. Nominal Voltage	9	V	
2. Terminal Resistance	2,14	Ohm	
3. Maximum Output Power	9,39	W	
4. Maximum Efficiency	88	%	
5. No Load Speed	7400	rpm	
6. No Load Current	0,015	A	
7. Stall Torque	48,7	mNm	
8. Friction Torque	0,18	mNm	
9. Speed Constant	821	rpm/V	
10. Back EMF Constant	1,218	mV/rpm	
11. Torque Constant	11,63	mNm/A	
12. Current Constant	0,086	A/mNm	
13. Slope of Speed-Torque Curve	151	rpm/mNm	
14. Armature Inductance	95	μ H	
15. Mechanical Time Constant	6	ms	
16. Armature Inertia	3,8	gcm ²	
17. Maximum Angular Acceleration	128	10 ³ rad/s ²	
18. Thermal Resistances:	Rth1 / Rth2	4 / 13	K/W
19. Thermal Time Constants:	tw1 / tw2	7 / 340	s
20. Operating Temperature Range	Motor	-30 ... 85	°C
	Rotor, max. permissible	125	°C
21. - 23. Shaft Bearing, Shaft Load, Shaft Play	See Drawing		
34. Housing Material	steel, black coated		
25. Weight	62	g	
26. Direction of Rotation	clockwise, viewed from the front face		

Recommended Values for Continuous Operation

27. Speed up to	8000	rpm
28. Torque up to	10	mNm
29. Current up to	1,3	A

Comment

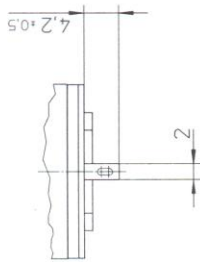
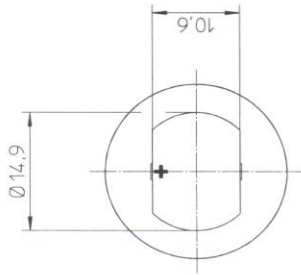
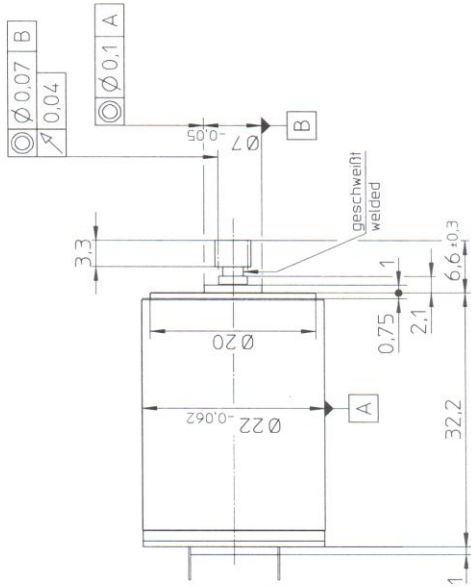
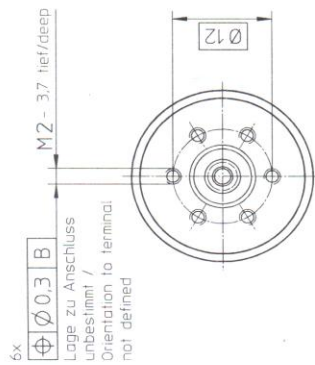
Revision
Date 14.12.2012

Nur zur Information - 20.03.2013

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주 재현
Managing Director
Swiss Amiet Co.,Ltd.

Nur zur Information - 22.04.2013



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Verzahnungsdaten / Gear specification		General lat		DFF number		DN material designation	
Bezugsprofil / Basic rack tooth profile	DIN 867	DR. FRITZ FAULHABER GMBH & CO. KG		Zeichnungsnummer / Drawing number		Type	
Zahnezahn / No. of teeth	z 12	Minidrive Drive Systems		2232.21600		Scale	
Modul / Module	m 0.3	Diameters: 23 71101 Schönach		0		2:1	
Profilversch.-Faktor / Addendum modification coefficient	x +0.25	Ersatz für / Replaces		Rev. 03.09.2012		Pos.	
Schrägungswinkel / Helix angle	0°	Aenderung		Name		Sheet 1/1	
Toleranz nach / Tolerance according to	DIN 3963/3967	NEU erstellt		Date			
Werkstoff / Material	Stahl/steel	Alteration		Benennung / Title:			
		Index		MOTOR 2232L009S RX4616			
		Datum / Date		IV33961a			
		Name					
		koya					

Maße in mm /
All dimensions in mm
Maße bei eingedruckter Welle /
All dimensions with shaft pushed in position

Weitere Angaben siehe Katalog, Motordatenblatt bzw. auf Anfrage
For further information see catalogue, motor data sheet or inquire

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