

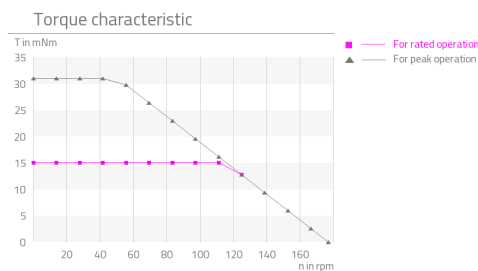


Attributes

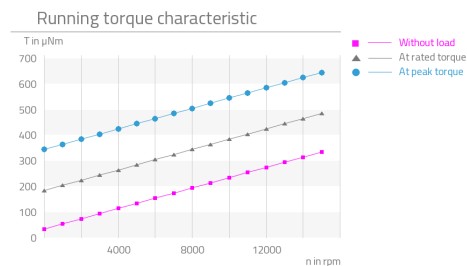
Highlights	Description
<ul style="list-style-type: none"> ▪ High repeatability ▪ Compact build up ▪ Zero backlash at high speed ▪ Easy controllability ▪ Preloaded ball bearing 	<p>The MaalonDrive® HighAcc 6mm - type 1 micro servo actuator is driven by a brushless DC motor with rated voltage of 6V and integrated encoder with a resolution of 256 pulses per rotation. At the heart of this extremely miniaturised and yet absolutely reliable micro positioning system is a zero-backlash MaalonDrive® gear with a reduction ratio of 120:1. The application can be directly connected by means of the preloaded ball bearings on the output shaft.</p>

Technical parameter

P-019



P-029



Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	120 : 1	
P-004	Self-locking		yes	

Technical Supply Specifications: MaalonDrive® HighAcc 6mm - Type 1



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Nr.	Parameter	Symbol	Value	Hint
P-008	Repeatability unidirectional		20 arcsec	
P-009	Repeatability bidirectional		30 arcmin	
P-010	Accuracy		20 arcmin	
P-011	Transmission accuracy		30 arcmin	
P-012	Resolution		0.01172 °	
P-013	Torsional stiffness		2.17 ^{Nm} /rad	
P-014	Lost motion		30 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	15 mNm	
P-017	Peak torque	T	31 mNm	
P-018	Momentary peak torque	T	77 mNm	
P-021	Rated input speed	n	15000 rpm	
P-022	Maximum input speed	n	50000 rpm	
P-023	Rated output speed	n	125 rpm	
P-024	Maximum output speed	n	416.667 rpm	
P-026	No-load starting torque	T	51 µNm	
P-027	No-load running torque	T	34 µNm	
P-028	Rated running torque	T	364 µNm	
P-034	Lifetime for rated operation		1000 h	
P-035	Radial backlash output shaft		0 µm	
P-036	Axial backlash output shaft		0 µm	
P-037	Radial stiffness	c	0.48 ^N /µm	
P-038	Axial stiffness	c	10 ^N /µm	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	10 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	5 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	2 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	2 N	
P-043	Max. axial load on output shaft (non-operating, constant load)	F	30 N	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	10 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	100 N	

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Nr.	Parameter	Symbol	Value	Hint
P-046	Max. axial load on output shaft (operating, impulsive load)	F	38 N	
P-055	Moment of inertia	I	$82.8 \cdot 10^{-4}$ gcm ²	
P-056	Weight	m	4 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-20 °C	
P-058	Min. permissible ambient temperature (operating)	T	-20 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	125 °C	
P-060	Max. permissible ambient temperature (operating)	T	100 °C	

Motor data: EC-Motor EC 6 1.5W 6V

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		EC	
P-102	Maximum speed of motor	n	100000 rpm	
P-104	Speed constant of motor	Kn	7900 rpm/V	
P-106	Stall torque of motor	T	0.832 mNm	
P-107	Torque constant of motor	Km	1.21 mNm/A	
P-108	No-load current of motor	I	46.9 mA	
P-110	Max. continuous current of motor	I	314 mA	
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	8.72 ohm	
P-113	Inductance of motor	L	0.065 mH	
P-114	Amplitude BEMF of motor	U	0.127 mV/rpm	
P-118	Max. coil temperature of motor	T	125 °C	
P-119	Thermal resistance of motor between coil and housing	R _{th1}	16.1 K/W	
P-120	Thermal resistance of motor between housing and air	R _{th2}	67.1 K/W	
P-121	Thermal time constant of the coil of the motor	T _{w1}	1690 ms	
P-122	Thermal time constant of the housing of the motor	T _{w2}	71800 ms	

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Encoder data

Nr.	Parameter	Symbol	Value	Hint
P-201	Impulses per revolution of encoder		256	
P-202	Channels of encoder		A, B, I	
P-203	Frequency range of encoder	f	64 kHz	
P-204	Operating voltage of encoder	U	5.3 ±0.3 V	
P-206	Output current of encoder	I	4 mA	
P-207	Signal/phase shifting of encoder		90±45 °	

Material information

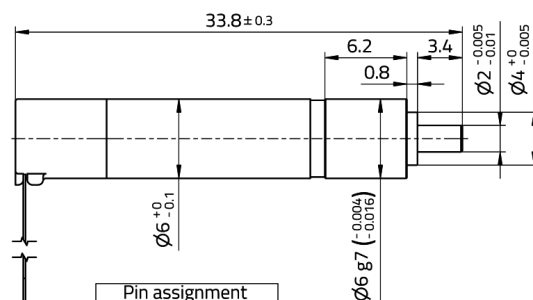
Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		Longtime PD2	
P-903	Lubrication of gear component set		Molykote BR 2 plus	
P-908	Material of gear component set		NiFe	
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-911	Material of bearing motor		Stainless steel	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-914	Material of motor housing		Steel, black coated	

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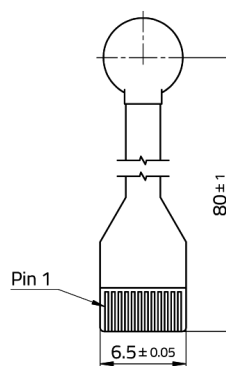
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Technical drawing



Pin assignment	
Pin	Signal
1	W1
2	W2
3	W3
4	GND
5	+Vcc
6	Enc. A
7	Enc. B
8	Enc. I
9	Hall 1
10	Hall 2
11	Hall 3
12	n.c.

Flex PCB
 Thickness: 0,1mm
 Bending radius 1mm min.
 Thickness of pads area (stiffener)
 0,3mm (±0,05), not flexible



Recommended connectors
 Pitch: 0.5mm - FPC/FFC, 12 poles
 Molex 52745-0697 or Tyco 1-1734839-4



Micromotion GmbH | An der Fahrt 13 | 55124 Mainz
 +49(0)6131-66927-25 | sales@micromotion.de | www.micromotion-drives.com