

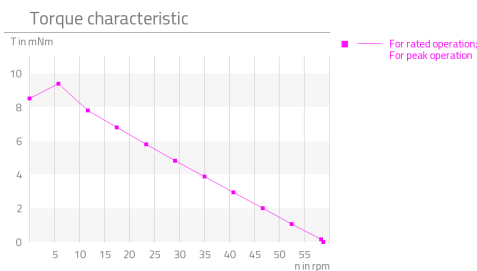


Attributes

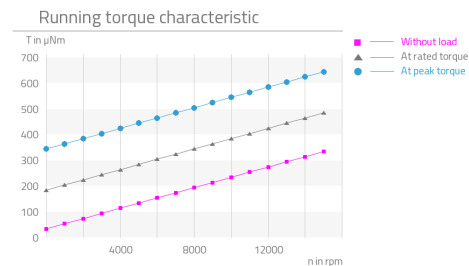
Highlights	Description
<ul style="list-style-type: none"> ▪ Integrated tool fitting ▪ Robust control without feedback system ▪ Compact build up ▪ Zero backlash at high torque capacity ▪ Preloaded ball bearing 	<p>The MaalonDrive® ToolFit 6mm - type 1 micro positioning system is an extremely compact solution for applications in which a sample must be precisely aligned. The robust bearing of the output shaft and the ability to use a sample holder directly in the coupling element characterise this robust micro actuator solution. At the heart of the micro positioning system is a zero-backlash MaalonDrive® gear with a reduction ratio of 120:1. The system can easily be operated in an open loop control, as it is equipped with a stepper motor with 20 steps per rotation and rated voltage of 2V.</p>

Technical parameter

P-019 Curve measured with 2.5x nominal voltage and load inertia $3 \cdot 10^{-9} \text{ kg/m}^2$ in $\frac{1}{4}$ micro steps.



P-029 Curve measured with 2.5x nominal voltage and load inertia $3 \cdot 10^{-9} \text{ kg/m}^2$ in $\frac{1}{4}$ micro steps.



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



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Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	120 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		47 arcsec	
P-009	Repeatability bidirectional		30.9 arcmin	
P-010	Accuracy		21.8 arcmin	
P-011	Transmission accuracy		33.6 arcmin	
P-012	Resolution		0.15 °	
P-013	Torsional stiffness		2.17 $\frac{\text{Nm}}{\text{rad}}$	
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	21000 rpm	
P-023	Rated output speed	n	125 rpm	
P-024	Maximum output speed	n	175 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)	F	30 N	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	10 N	

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Nr.	Parameter	Symbol	Value	Hint
P-045	Max. axial load on output shaft (operating, constant load)	F	100 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	38 N	
P-055	Moment of inertia	I	$52.5 \cdot 10^{-4}$ gcm ²	
P-056	Weight	m	5 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-35 °C	
P-058	Min. permissible ambient temperature (operating)	T	-20 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	130 °C	
P-060	Max. permissible ambient temperature (operating)	T	70 °C	
P-061	Tool fitting		Tool alignment fitting by 6 screws	

Motor data: Stepper FDM 0620-2R-V2-31

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		Stepper	
P-102	Maximum speed of motor	n	21000 rpm	
P-103	Resonance frequency of motor	f	60 Hz	
P-105	Holding torque of motor (unpowered)	T	0.06 mNm	
P-109	Rated current of motor	I	130 mA	
P-111	Rated voltage of motor	U	2 V	
P-112	Phase resistance of motor	R	13.6 ohm	
P-113	Inductance of motor	L	2 mH	
P-114	Amplitude BEMF of motor	U	0.177 mV/rpm	
P-115	Full step angle of motor		18 °	
P-116	Angular accuracy of step of motor		±0.9 °	
P-117	Electrical time constant of motor	t	0.15 ms	
P-118	Max. coil temperature of motor	T	130 °C	
P-119	Thermal resistance of motor between coil and housing	R _{th1}	15 K/W	
P-120	Thermal resistance of motor between housing and air	R _{th2}	96.6 K/W	
P-121	Thermal time constant of the coil of the motor	T _{w1}	3200 ms	
P-122	Thermal time constant of the housing of the motor	T _{w2}	120000 ms	

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Nr.	Parameter	Symbol	Value	Hint
P-123	Insulation voltage of motor	U	100 V	

Material information

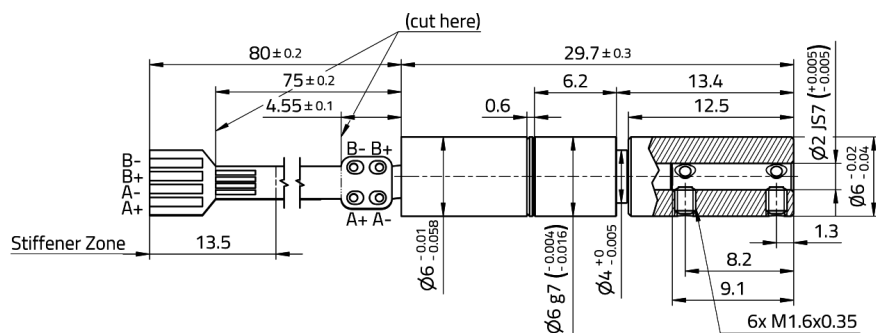
Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		Longtime PD2	
P-903	Lubrication of gear component set		Molykote BR 2 plus	
P-904	Lubrication of bearing motor		perfluorinated polyether oil, PTFE with thickener	
P-908	Material of gear component set		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		Anodized aluminum	

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Technical drawing



Flex PCB

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

Flex PCB for cables

Pads (4x) Ø1,0
Holes (4x) Ø0,6

Recommended connectors

Pitch: 1mm - FPC/FFC, 4 poles
JST 04FMN-SMT-A-TF or similar

Pitch: 0,5mm - FPC/FFC, 4 poles
Molex 52745 or similar



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