Technical Supply Specifications:
RasuunDrive® BallScrew 10mm - Type 1

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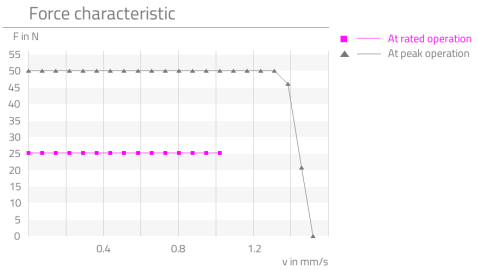
Attributes

Highlights	Description
▪ **Flexible integration** ▪ **Ball screw** ▪ **Robust control without feedback system** ▪ **Zero backlash at optimised fit between speed and resolution** ▪ **High load capacity of output bearing**	The RasuunDrive® BallScrew 10mm - type 1 combines a stepper motor, a MaalonDrive® gear and a ball screw. Connected to the stepper motor with 20 steps per rotation is an encoder with a resolution of 10 pulses per rotation. At its heart a zero-backlash MaalonDrive® gear can be found with a reduction ratio of 160:1. Directly integrated in the bearing of the gear output shaft is the ball screw with a pitch of 1 mm.

Technical parameter

P-019 Curve measured with 5x nominal voltage and load inertia 6*10E-9 kg/m² in ¼ micro steps.



Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	160 : 1	k
P-004	Self-locking		yes	

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Nr.	Parameter	Symbol	Value	Hint
P-005	Travel range	s	5 mm	
P-008	Repeatability unidirectional		0.5 µm	
P-009	Repeatability bidirectional		2 µm	
P-010	Accuracy		20 µm	
P-012	Resolution		0.3125 µm	
P-014	Lost motion		10 µm	
P-015	Backlash		5 µm	
P-016	Rated force	F	25.2527 N	
P-017	Peak force	F	50 N	
P-018	Momentary peak force	F	50 N	
P-023	Rated speed	v	1.04167 $^{mm}/_{s}$	
P-024	Maximum speed	v	2.1875 $^{mm}/_{s}$	
P-034	Lifetime for rated operation		1000 h	
P-036	Axial backlash output shaft		0 µm	
P-055	Moment of inertia	I	1823 * 10^{-4} gcm^2	
P-056	Weight	m	17 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	

Motor data: Schrittmotor AM 1020-2R-A0.25

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	140 Hz	
P-105	Holding torque of motor (unpowered)	T	0.2 mNm	
P-109	Rated current of motor	I	250 mA	
P-111	Rated voltage of motor	U	2 V	
P-112	Phase resistance of motor	R	8 ohm	
P-113	Inductance of motor	L	2.4 mH	
P-114	Amplitude BEMF of motor	U	0.6 mV/rpm	

Nr.	Parameter	Symbol	Value	Hint
P-115	Full step angle of motor		18 °	
P-116	Angular accuracy of step of motor		±1.8 °	
P-117	Electrical time constant of motor	t	0.32 ms	
P-118	Max. coil temperature of motor	T	130 °C	
P-119	Thermal resistance of motor between coil and housing	R_{th1}	3.9 $^{K}/_{W}$	
P-120	Thermal resistance of motor between housing and air	R_{th2}	53.8 $^{K}/_{W}$	
P-121	Thermal time constant of the coil of the motor	τ_{w1}	3200 ms	
P-122	Thermal time constant of the housing of the motor	τ_{w2}	200000 ms	
P-123	Insulation voltage of motor	U	200 V	

Encoder data

Nr.	Parameter	Symbol	Value	Hint
P-201	Impulses per revolution of encoder		10	
P-202	Channels of encoder		A, B	
P-203	Frequency range of encoder	f	7.2 kHz	
P-204	Operating voltage of encoder	U	5 ±0.5 V	
P-205	Rated current consumption of encoder	I	5 mA	
P-207	Signal/phase shifting of encoder		90±45 °	
P-208	Signal build-up/decay time of encoder	t	5 / 0.2	

Spindle data: Kugelgewindetrieb 1112./1.3.20.24 t5 – 5mm Verstellweg

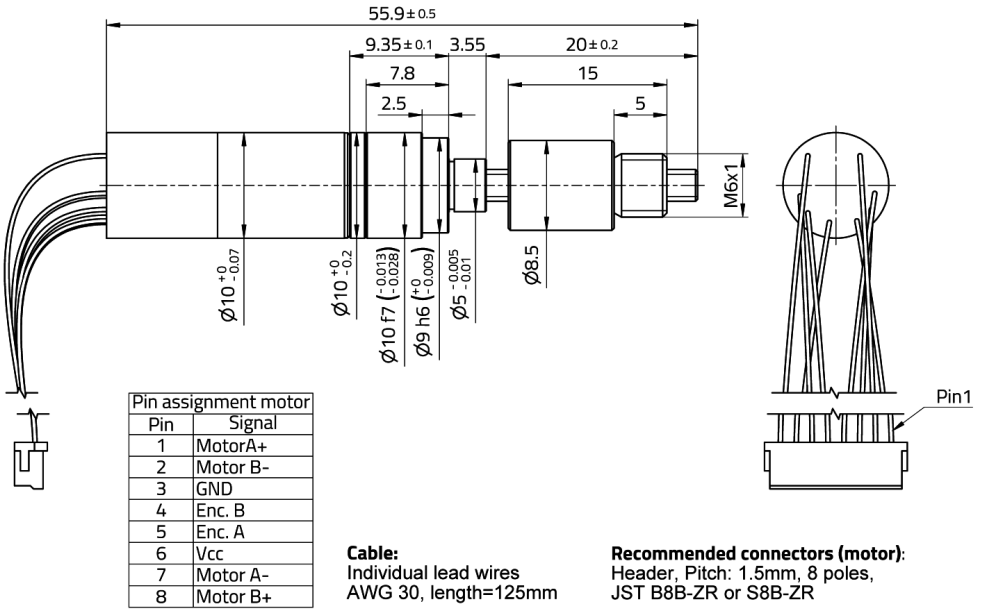
Nr.	Parameter	Symbol	Value	Hint
P-402	Pitch	R	1 mm	

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		Synthetic light ester oil	

Nr.	Parameter	Symbol	Value	Hint
P-905	Lubrication of spindel-nut-system		Isoflex LDS 18	
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	

Technical drawing



Pin assignment motor	
Pin	Signal
1	MotorA+
2	Motor B-
3	GND
4	Enc. B
5	Enc. A
6	Vcc
7	Motor A-
8	Motor B+

Cable:
Individual lead wires
AWG 30, length=125mm

Recommended connectors (motor):
Header, Pitch: 1.5mm, 8 poles,
JST B8B-ZR or S8B-ZR