

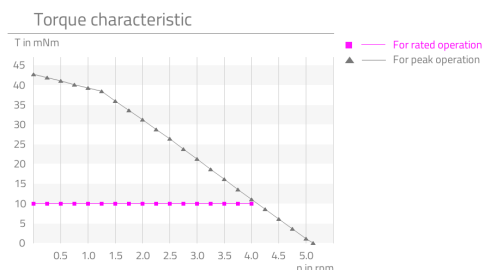


Attributes

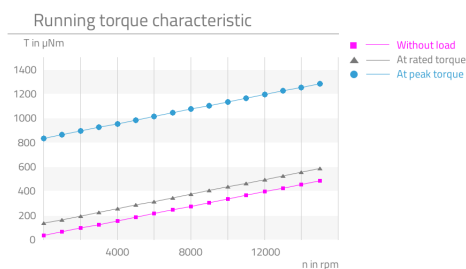
Highlights	Description
<ul style="list-style-type: none">▪ 2 rotational degrees of freedom▪ Compact build up▪ Extreme low mass▪ Extreme power density▪ Wide travel range	<p>The BryleeDrive® HighRes 26mm - Type 1, a multi-axis micro system ideal to serve in optical applications. The system has two degrees of freedom and offers therefore a joint virtual pivot point. Precise mirror orientation about the theta-phi-axis with maximum repeatability can easily be realised and is conditional i.e. for exact pointer applications. Robust stepper motor technology enables both axes to be operated in an open loop control. A high-stressable CoograDrive® gear with adjacent worm gear actuates the second axis which works with a zero-backlash MaalonDrive® gear and a reduction ratio of 500:1. This setup saves space and, more importantly, weight and can easily be integrated in the application.</p>

Technical parameter

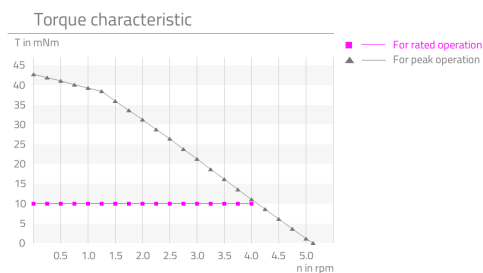
P-019 Achse 1



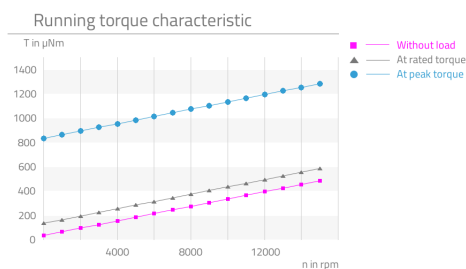
P-029 Achse 1



P-019 Achse 2



P-029 Achse 2



Global system

Nr.	Parameter	Symbol	Value	Hint
P-004	Self-locking		yes	
P-005	Travel range	s	100°	
P-034	Lifetime for rated operation		500 h	
P-035	Radial backlash output shaft		0 μm	
P-036	Axial backlash output shaft		0 μm	
P-037	Radial stiffness	c	1.1 N/μm	
P-038	Axial stiffness	c	9.1 N/m	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	25 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	20 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	43 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	43 N	
P-043	Max. axial load on output shaft (non-operating, constant load)	F	64 N	

Technical Supply Specifications: BryleeDrive® HighRes 26mm - Type 1



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Nr.	Parameter	Symbol	Value	Hint
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	20 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	74 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	25 N	
P-057	Min. permissible ambient temperature (non-operating)	T	-20 °C	
P-058	Min. permissible ambient temperature (operating)	T	0 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	80 °C	
P-060	Max. permissible ambient temperature (operating)	T	60 °C	

Material information

Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	

Axis 1: rotational axis

Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	2400 : 1	
P-008	Repeatability unidirectional		10.03 arcmin	
P-009	Repeatability bidirectional		30.045 arcmin	
P-010	Accuracy		30.09 arcmin	
P-011	Transmission accuracy		60.18 arcmin	
P-012	Resolution		0.0075 °	
P-013	Torsional stiffness		3.90 ^{Nm} /rad	
P-014	Lost motion		30 arcmin	
P-015	Backlash		20 arcmin	
P-016	Rated torque	T	10 mNm	
P-017	Peak torque	T	80 mNm	
P-018	Momentary peak torque	T	100 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	21000 rpm	
P-023	Rated output speed	n	4.16667 rpm	
P-024	Maximum output speed	n	8.75 rpm	
P-026	No-load starting torque	T	52.5 µNm	

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Nr.	Parameter	Symbol	Value	Hint
P-027	No-load running torque	T	35 µNm	
P-028	Rated running torque	T	685 µNm	
P-055	Moment of inertia	I	300 * 10 ⁻⁴ gcm ²	
P-063	Kind of gear wheel input shaft		Worm	
P-064	Module gear wheel input shaft		0.25	
P-065	Number of teeth gear wheel input shaft		1	
P-068	Quality gear wheel input shaft		5	
P-069	Material gear wheel input shaft		1.4028 Fomblin GRM60	
P-086	Hardness mating gear wheel input shaft		worm gear	
P-088	Module mating gear wheel output shaft		0.25	
P-089	Number of teeth mating gear wheel output shaft		30	
P-090	Pitch diameter mating gear wheel output shaft		7.5	
P-093	Material mating gear wheel output shaft		CuBe2 (2.2147)	
P-095	Hardness mating gear wheel output shaft		hardened	

Motor data: Stepper AM 0820-2R-A0.225

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	170 Hz	
P-105	Holding torque of motor (unpowered)	T	0.17 mNm	
P-109	Rated current of motor	I	225 mA	
P-111	Rated voltage of motor	U	2 V	
P-112	Phase resistance of motor	R	7.3 ohm	
P-113	Inductance of motor	L	1.4 mH	
P-114	Amplitude BEMF of motor	U	0.267 mV/rpm	
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	0.21 ms	
P-118	Max. coil temperature of motor	T	130 °C	
P-119	Thermal resistance of motor between coil and housing	R _{th1}	4.1 °/W	

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Nr.	Parameter	Symbol	Value	Hint
P-120	Thermal resistance of motor between housing and air	R_{th2}	65.3 $^{\circ}C/W$	
P-121	Thermal time constant of the coil of the motor	τ_{w1}	3500 ms	
P-122	Thermal time constant of the housing of the motor	τ_{w2}	160000 ms	
P-123	Insulation voltage of motor	U	200 V	

Material information

Nr.	Parameter	Symbol	Value	Hint
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	
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	

Axis 2: rotational axis

Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	500 : 1	
P-008	Repeatability unidirectional		18.48 arcsec	
P-009	Repeatability bidirectional		15.216 arcmin	
P-010	Accuracy		12.432 arcmin	
P-011	Transmission accuracy		24.864 arcmin	
P-012	Resolution		0.036 °	
P-013	Torsional stiffness		2.86 Nm/rad	
P-014	Lost motion		15 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	10 mNm	
P-017	Peak torque	T	20 mNm	

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Nr.	Parameter	Symbol	Value	Hint
P-018	Momentary peak torque	T	46 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	21000 rpm	
P-023	Rated output speed	n	20 rpm	
P-024	Maximum output speed	n	42 rpm	
P-026	No-load starting torque	T	52.5 μ Nm	
P-027	No-load running torque	T	35 μ Nm	
P-028	Rated running torque	T	385 μ Nm	
P-055	Moment of inertia	I	283 * 10 ⁻⁴ gcm ²	

Motor data: Stepper AM 0820-2R-A0.225

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	170 Hz	
P-105	Holding torque of motor (unpowered)	T	0.17 mNm	
P-109	Rated current of motor	I	225 mA	
P-111	Rated voltage of motor	U	2 V	
P-112	Phase resistance of motor	R	7.3 ohm	
P-113	Inductance of motor	L	1.4 mH	
P-114	Amplitude BEMF of motor	U	0.267 mV/rpm	
P-115	Full step angle of motor		18 °	
P-116	Angular accuracy of step of motor		\pm 1.8 °	
P-117	Electrical time constant of motor	t	0.21 ms	
P-118	Max. coil temperature of motor	T	130 °C	
P-119	Thermal resistance of motor between coil and housing	R _{th1}	4.1 ^k /W	
P-120	Thermal resistance of motor between housing and air	R _{th2}	65.3 ^k /W	
P-121	Thermal time constant of the coil of the motor	τ_{w1}	3500 ms	
P-122	Thermal time constant of the housing of the motor	τ_{w2}	160000 ms	
P-123	Insulation voltage of motor	U	200 V	

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Material information

Nr.	Parameter	Symbol	Value	Hint
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	
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

