



Attributes

Highlights	Description
▪ 2 linear degrees of freedom ▪ Robust control without feedback system ▪ Compact build up ▪ Zero backlash at high speed ▪ Preloaded ball bearing	Two degrees of freedom in the x- and y-direction, and this with an outer diameter of just 6.5 mm - the ultra-compact BryleeDrive® HighAcc 6mm - type 1. Both axes of the micro positioning system can easily be operated in an open loop control, as each is driven by stepper motors with 20 steps per rotation. At the core of this multi-axis micro system are zero-backlash MaalonDrive® gears with a reduction ratio of 120:1.

Technical parameter

The stated values are based on calculations and measurements by Micromotion GmbH, carried out according to the current state of the art. You can find our definitions at www.micromotion-drives.com.

For further information please contact sales@micromotion.de.

Global system

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



Micromotion GmbH, Phone: +49 (0) 6431 – 569 18 – 25, E-mail: sales@micromotion.de

Nr.	Parameter	Symbol	Value	Hint
P-004	Self-locking		yes	
P-005	Travel range	s	Ø6.5	
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	1 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	0.2 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	1 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	0.2 N	
P-043	Max. axial load on output shaft (non-operating, constant load)	F	1 N	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	1 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	2 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	2 N	
P-056	Weight	m	7 g	
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	

Additional technical data:

- Fibre holder Ø1.5 – length 5

Material information

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

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Axis 1: rotational axis

Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	120 : 1	
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-055	Moment of inertia	I	52.5 * 10 ⁻⁴ gcm ²	

Motor data: Stepper FDM 0620-2R-V3-31

(Data are provided by the manufacturer or are based on the data sheets of the manufacturer)

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	80 mA	
P-111	Rated voltage of motor	U	3 V	

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Nr.	Parameter	Symbol	Value	Hint
P-112	Phase resistance of motor	R	30 ohm	
P-113	Inductance of motor	L	4.5 mH	
P-114	Amplitude BEMF of motor	U	0.277 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 [°] /W	
P-120	Thermal resistance of motor between housing and air	R _{th2}	96.6 [°] /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	
P-123	Insulation voltage of motor	U	100 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		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	

Axis 2: rotational axis

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Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	120 : 1	
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-055	Moment of inertia	I	52.5 * 10 ⁻⁶ gcm ²	

Motor data: Stepper FDM 0620-2R-V3-31

(Data are provided by the manufacturer or are based on the data sheets of the manufacturer)

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	80 mA	
P-111	Rated voltage of motor	U	3 V	
P-112	Phase resistance of motor	R	30 ohm	
P-113	Inductance of motor	L	4.5 mH	
P-114	Amplitude BEMF of motor	U	0.277 mV/rpm	

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Nr.	Parameter	Symbol	Value	Hint
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	τ _{w1}	3200 ms	
P-122	Thermal time constant of the housing of the motor	τ _{w2}	120000 ms	
P-123	Insulation voltage of motor	U	100 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		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	

Technical drawing



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