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

Attributes

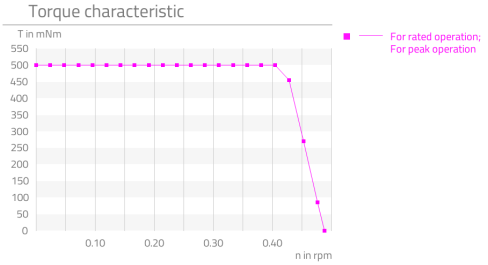
Highlights	Description
▪ **Worm gear integrated on output shaft with custom designed worm wheel** ▪ **Custom designed housing** ▪ **Robust control without feedback system** ▪ **High torque capacity** ▪ **Use of high quality materials**	With the MaalonDrive® WormGear 8mm - type 1 micro positioning system, a worm gear is directly integrated, thereby allowing the drive to be arranged in a space-saving manner tangential to the movement axis. The system is driven by a stepper motor with 20 steps per rotation in an open loop control combined with a zero-backlash MaalonDrive® gear with a reduction ratio of 120:1. Thanks to the subsequent worm gear, a total reduction ratio of 25,200:1 is achieved. In addition, a hollow shaft with diameter of 40mm can be realised.

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

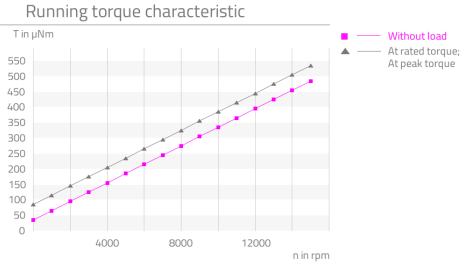
Technical parameter

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.

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



P-029 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	25200 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		15.1286 arcsec	
P-009	Repeatability bidirectional		20.0043 arcmin	
P-010	Accuracy		20.0086 arcmin	
P-011	Transmission accuracy		30.0171 arcmin	
P-012	Resolution		0.00071 °	
P-013	Torsional stiffness		2.67 $^{Nm}/_{rad}$	
P-014	Lost motion		20 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	500 mNm	
P-017	Peak torque	T	500 mNm	
P-018	Momentary peak torque	T	500 mNm	
P-020	Torque constant gear	Km	0.1 µNm/mNm	
P-021	Rated input speed	n	15000 rpm	
P-022	Maximum input speed	n	21000 rpm	
P-023	Rated output speed	n	0.59524 rpm	

Nr.	Parameter	Symbol	Value	Hint
P-024	Maximum output speed	n	0.83333 rpm	
P-026	No-load starting torque	T	52.5 µNm	
P-027	No-load running torque	T	35 µNm	
P-028	Rated running torque	T	575 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	0.87 N/µm	
P-038	Axial stiffness	c	18.5 $^{N}/_{\mu m}$	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	20 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	3 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	3 N	
P-043	Max. axial load on output shaft (non-operating, constant	F	64 N	
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	185 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	66 N	
P-055	Moment of inertia	I	282 * 10^{-4} gcm^2	
P-056	Weight	m	18 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-30 °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-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	
P-071	Kind of gear wheel output shaft		worm wheel	

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

Nr.	Parameter	Symbol	Value	Hint
P-072	Module gear wheel output shaft		0.25	
P-073	Number of teeth gear wheel output shaft		210	
P-076	Quality gear wheel output shaft		6	
P-077	Material gear wheel output shaft		CC483-K	

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

(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	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 $^{K}/_{W}$	
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	

Material information

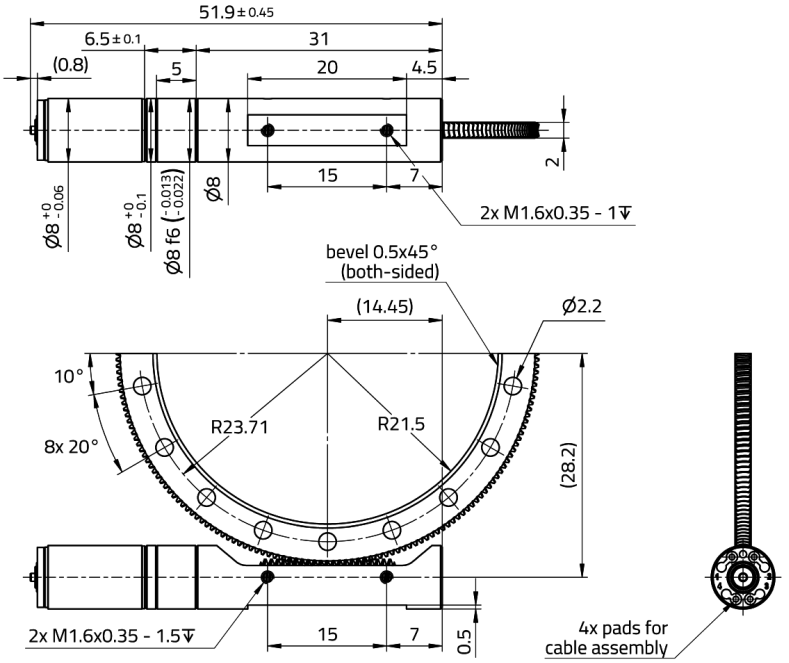
Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		Longtime PD2	

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

Nr.	Parameter	Symbol	Value	Hint
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	

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

Technical drawing



Micromotion GmbH | Hoenbergstraße 14 | 65555 Limburg
+49(0)6431-59618-25 | sales@micromotion.de | www.micromotion-drives.com