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Attributes

Highlights	Description
▪ **Zero backlash at high adjustment speed** ▪ **Integrated overload clutch to prevent for demaginig** ▪ **Easy controllability** ▪ **Vacuum suitable lubrication** ▪ **Preloaded ball bearing**	The unique feature of the MaalonDrive® OverloadClutch 10mm - type 5 micro servo actuator is its integrated overload clutch by means of which external torque loads that are too large are prevented from acting on the micro gearbox. The micro positioning system, designed for applications in high-vacuum environments and lubricated with Braycote, consists of a high-reduction, zero-backlash MaalonDrive® gear with a reduction ratio of 120:1 and a EC motor with a rated voltage of 6V with integrated encoder and a resolution of 4096 pulses per rotation. The output shaft is precisely guided by preloaded ball bearings which allow the application to be directly connected.

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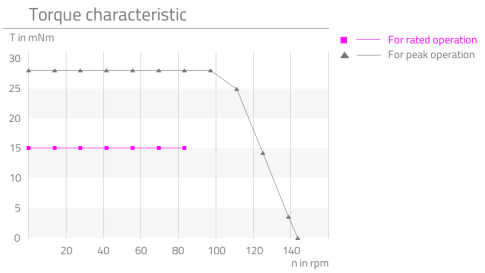
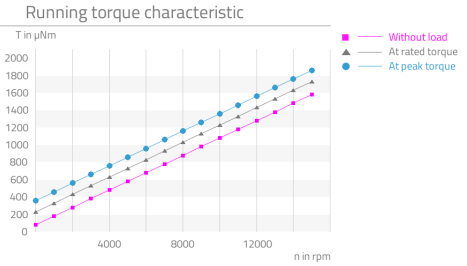
Technical parameter

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



P-029



Nr.	Parameter	Symbol	Value	Hint
P-001	Vacuum suitable		HV	
P-003	Ratio	i	120 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		15 arcsec	
P-009	Repeatability bidirectional		30 arcmin	
P-010	Accuracy		15 arcmin	
P-011	Transmission accuracy		30 arcmin	
P-012	Resolution		0.00073 °	
P-013	Torsional stiffness		2.77 $^{Nm}/_{rad}$	
P-014	Lost motion		30 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	15 mNm	
P-017	Peak torque	T	28 mNm	
P-018	Momentary peak torque	T	70 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	50000 rpm	
P-023	Rated output speed	n	83.3333 rpm	
P-024	Maximum output speed	n	416.667 rpm	
P-026	No-load starting torque	T	120 µNm	

Nr.	Parameter	Symbol	Value	Hint
P-027	No-load running torque	T	80 µNm	
P-028	Rated running torque	T	1880 µNm	
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	3.52 N/µm	
P-038	Axial stiffness	c	40 $^{N}/_{\mu m}$	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	70 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	25 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	8 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	8 N	
P-043	Max. axial load on output shaft (non-operating, constant	F	150 N	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	50 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	380 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	127 N	
P-055	Moment of inertia	I	717 * 10^{-4} gcm^2	
P-056	Weight	m	17 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-40 °C	
P-058	Min. permissible ambient temperature (operating)	T	-10 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	125 °C	
P-060	Max. permissible ambient temperature (operating)	T	100 °C	

Additional technical data:

- Integrated overload clutch to prevent the gear system for damage with release torque of 64 mNm +/- 6mNm

Motor data: EC-Motor 1028S006B
(Data are provided by the manufacturer or are based on the data sheets of the manufacturer)

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		EC	
P-102	Maximum speed of motor	n	79000 rpm	1)

Nr.	Parameter	Symbol	Value	Hint
P-104	Speed constant of motor	Kn	5426 $^{rpm}/_{V}$	
P-106	Stall torque of motor	T	9.72 mNm	
P-107	Torque constant of motor	Km	1.76 $^{mNm}/_{A}$	
P-108	No-load current of motor	I	121 mA	
P-110	Max. continuous current of motor	I	1160 mA	2)
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	1.08 ohm	
P-113	Inductance of motor	L	0.024 mH	
P-114	Amplitude BEMF of motor	U	0.184 mV/rpm	
P-118	Max. coil temperature of motor	T	125 °C	
P-119	Thermal resistance of motor between coil and housing	R_{th1}	6.6 $^{K}/_{W}$	1)
P-120	Thermal resistance of motor between housing and air	R_{th2}	42.4 $^{K}/_{W}$	
P-121	Thermal time constant of the coil of the motor	τ_{w1}	4200 ms	1)
P-122	Thermal time constant of the housing of the motor	τ_{w2}	152000 ms	

Encoder data

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

Nr.	Parameter	Symbol	Value	Hint
P-201	Impulses per revolution of encoder		4096	
P-202	Channels of encoder		SSI	
P-203	Frequency range of encoder	f	2000 kHz	
P-204	Operating voltage of encoder	U	5 ±0.5 V	
P-205	Rated current consumption of encoder	I	Max. 23	
P-206	Output current of encoder	I	4 mA	
P-207	Signal/phase shifting of encoder		90±45 °	

Material information

Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		Braycote601EF	

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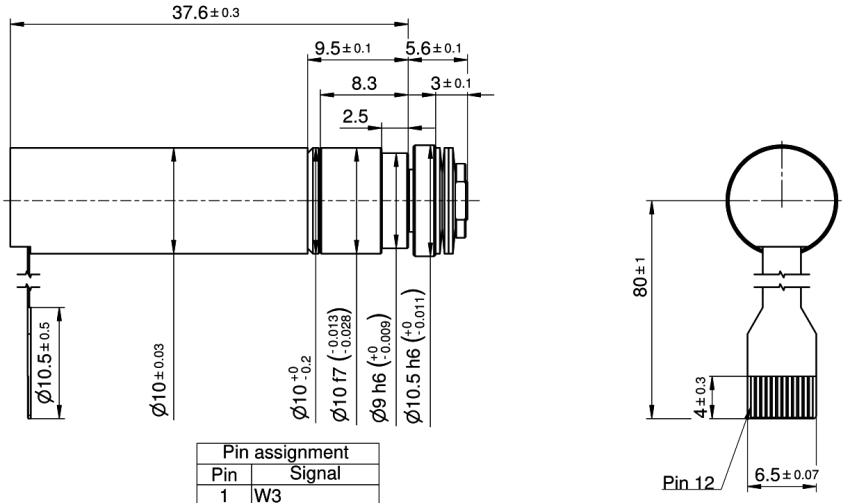
Nr.	Parameter	Symbol	Value	Hint
P-903	Lubrication of gear component set		Braycote601EF	
P-908	Material of gear component set		NiFe	
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-914	Material of motor housing		Aluminium	

2) Curve measured with nominal voltage and load inertia 6*10E-9 kg/m² in ½ micro steps.

Technical drawing



Pin assignment	
Pin	Signal
1	W3
2	W2
3	W1
4	GND
5	Vcc
6	Hall 3
7	Hall 2
8	Hall 1
9	Enc. B
10	Enc. A
11	Enc. I
12	n.c.

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

Recommended connectors
Pitch: 0.5mm - FPC/FFC, 12 poles,
Molex 52745-1297