Technical Supply Specifications:
CoograDrive® HighVac 8mm - Type 1

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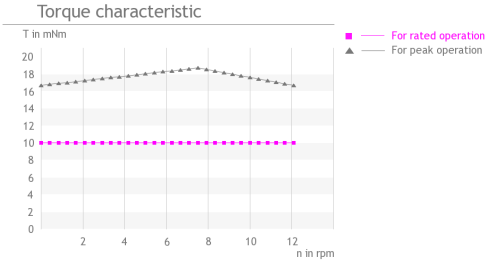
Attributes

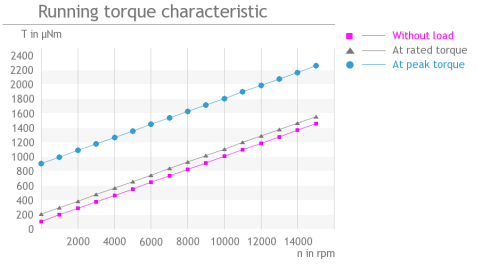
Highlights	Description
▪ **Compact build up** ▪ **Connecting cable assembled** ▪ **Custom designed output shaft** ▪ **Custom designed housing** ▪ **Dry lubrication due to coatings**	The CoograDrive® HighVac 8mm - type 1 is a very compact positioning drive designed for use in high-vacuum environments. Thanks to the dry lubrication in the bearing and the gear component set, the micro positioning system has an excellent outgassing behaviour. The system is driven by a stepper motor with 20 steps per rotation in an open loop control. Directly connected to the motor is a low-backlash CoograDrive® gear with a reduction ratio of 80:1. Thanks to the preloaded ball bearing for the output shaft of the gear, the customer application can be directly connected.

Technical parameter

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.



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Nr.	Parameter	Symbol	Value	Hint
P-001	Vacuum suitable		UHV	
P-003	Ratio	i	80 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		21.8 arcmin	
P-009	Repeatability bidirectional		62.7 arcmin	
P-010	Accuracy		32.7 arcmin	
P-011	Transmission accuracy		65.4 arcmin	
P-012	Resolution		0.225 °	
P-013	Torsional stiffness		3.90 $^{Nm}/_{rad}$	
P-014	Lost motion		60 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	1000 rpm	
P-022	Maximum input speed	n	1000 rpm	
P-023	Rated output speed	n	12.5 rpm	
P-024	Maximum output speed	n	12.5 rpm	
P-026	No-load starting torque	T	157.5 µNm	
P-027	No-load running torque	T	105 µNm	
P-028	Rated running torque	T	2055 µNm	
P-034	Lifetime for rated operation		200 h	
P-035	Radial backlash output shaft		0 µm	
P-036	Axial backlash output shaft		0 µm	
P-037	Radial stiffness	c	0.62 N/µm	
P-038	Axial stiffness	c	14.75 N/µm	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	15 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	2 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	2 N	
P-043	Max. axial load on output shaft (non-operating, constant	F	49 N	

Nr.	Parameter	Symbol	Value	Hint
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	15 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	147.5 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	61 N	
P-055	Moment of inertia	I	300.01 * 10^{-4} gcm^2	
P-056	Weight	m	6 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-30 °C	
P-058	Min. permissible ambient temperature (operating)	T	-30 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	130 °C	
P-060	Max. permissible ambient temperature (operating)	T	70 °C	

Additional technical data:

- Cable AWG30 with Kaptopn insolation, 4 leads, length 0.15 m
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Motor data: Stepper AM 0820-2R-A0.225-7 dry lubrication

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	0.225 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 $^K/_W$	

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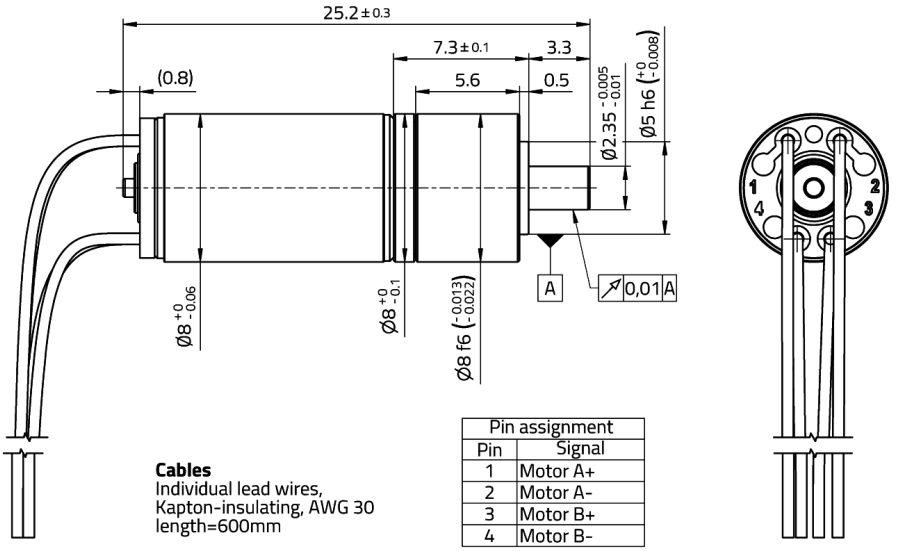
Nr.	Parameter	Symbol	Value	Hint
P-121	Thermal time constant of the coil of the motor	τ_{w1}	3500 ms	
P-122	Thermal time constant of the housing of the motor	τ_{w2}	160000 ms	
P-123	Insulation voltage of motor	U	200 V	

Material information

Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		MoS_2(drylubrication)	
P-903	Lubrication of gear component set		DICRONITE®/MoS_2(drylubrication)	
P-904	Lubrication of bearing motor		MoS_2(drylubrication)	
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



Cables
Individual lead wires,
Kapton-insulating, AWG 30
length=600mm

Pin assignment	
Pin	Signal
1	Motor A+
2	Motor A-
3	Motor B+
4	Motor B-

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