maxon X drives

Configure online.

EDITION 11/2012

dcx.maxonmotor.com

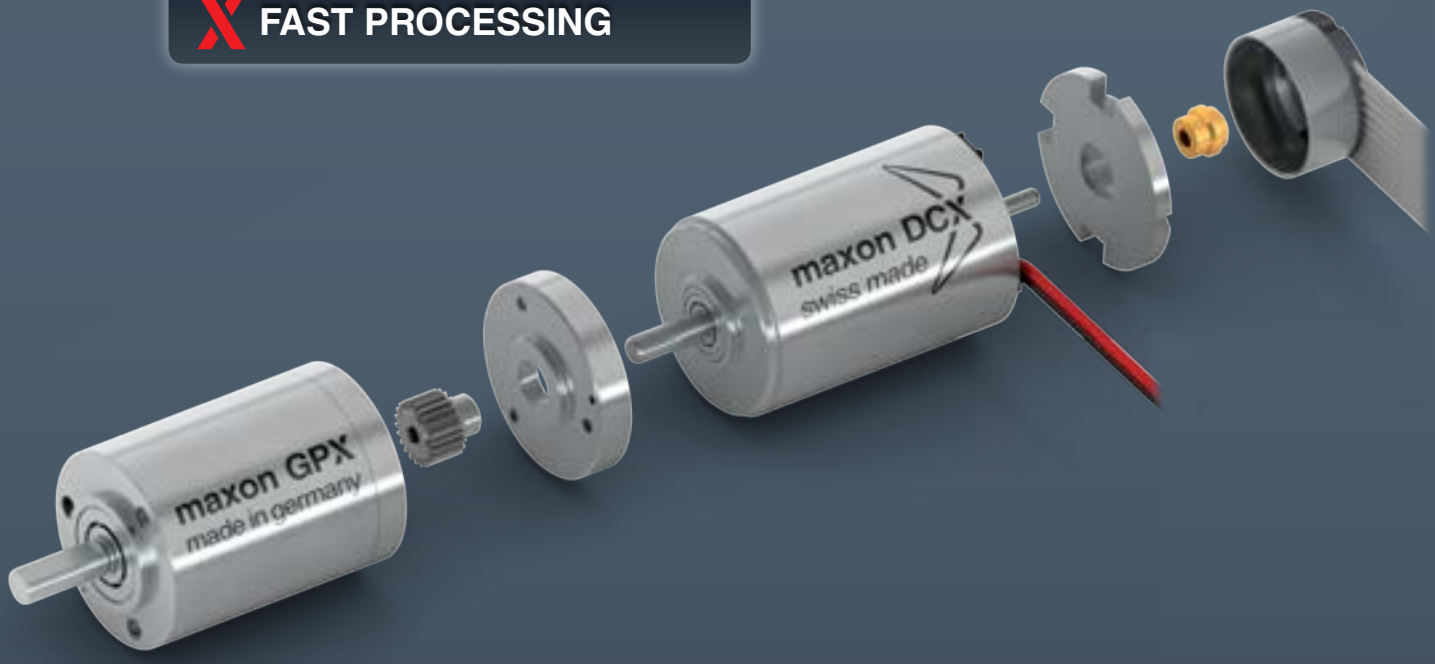
maxon motor

driven by precision

maxon X drives

Configure online.

- X DYNAMIC
- X HIGH PERFORMANCE
- X LOW NOISE
- X FAST PROCESSING



maxon GPX GEAR

– Modular
– High power density
– High efficiency
– Configurable

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maxon DCX MOTOR

– High performance
– Dynamic
– High efficiency
– Configurable

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maxon ENX ENCODER

– Compact
– Robust
– Differential signals
– Configurable

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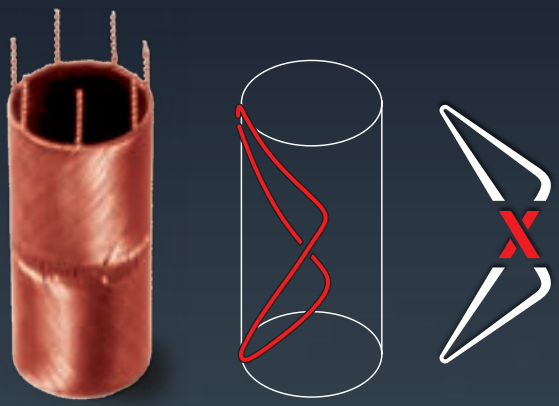
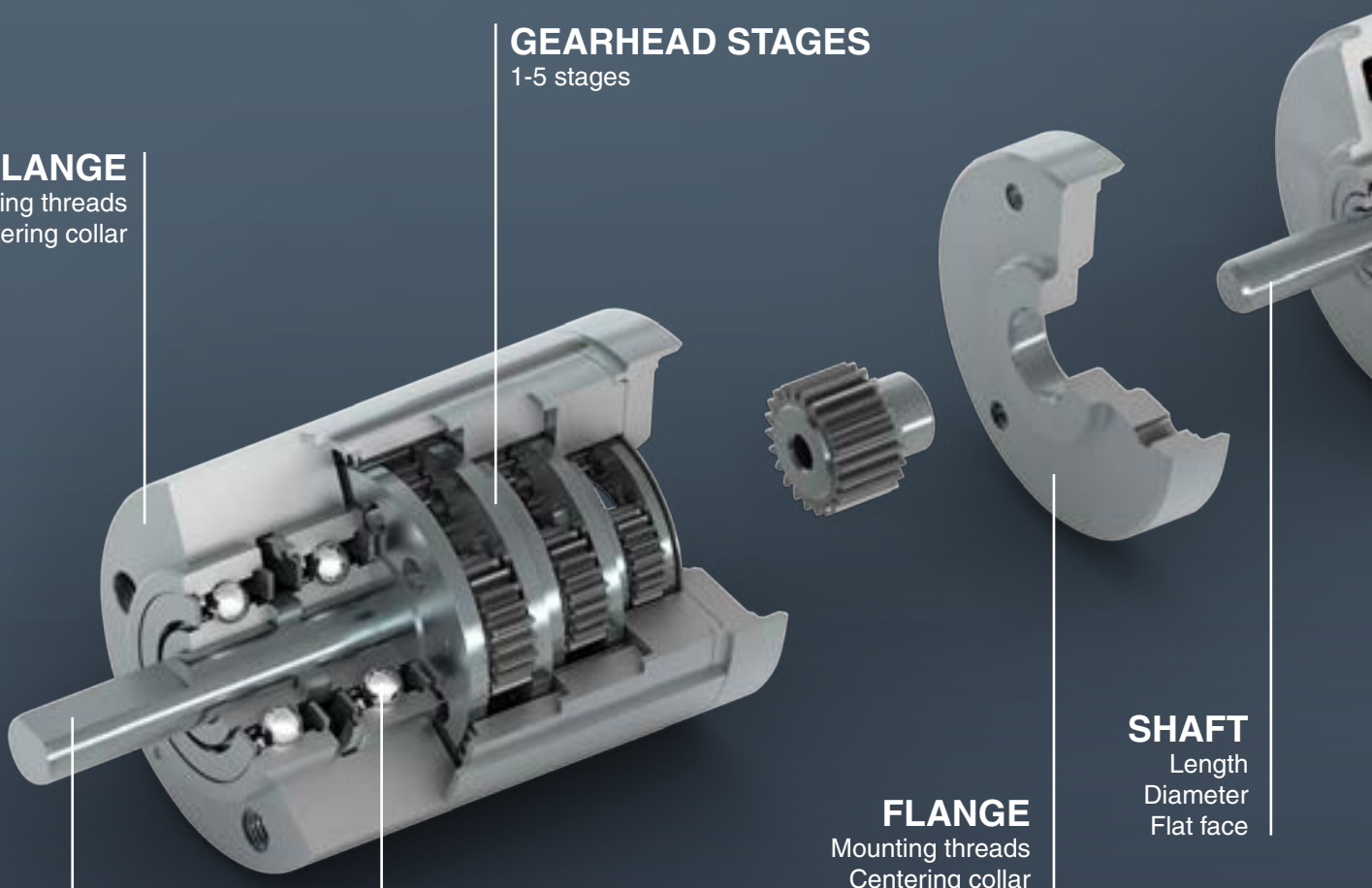
IRONLESS WINDING – THE ADVANTAGES

No eddy current losses in the iron core › high efficiency
Low vibration › low noise
– Noise-tested design
No cogging › precise control
– Smooth running, even at low speeds
– Rotor position easily controlled
– Linear relationship between torque and current, as well as between speed and voltage
Low inductance
– Low electromagnetic interference
– High service life





WINDING

Low nominal voltage
Low resistance
High current
High speed constant:
speed per volt

High nominal voltage
High resistance
Low current
High torque constant:
torque per ampere

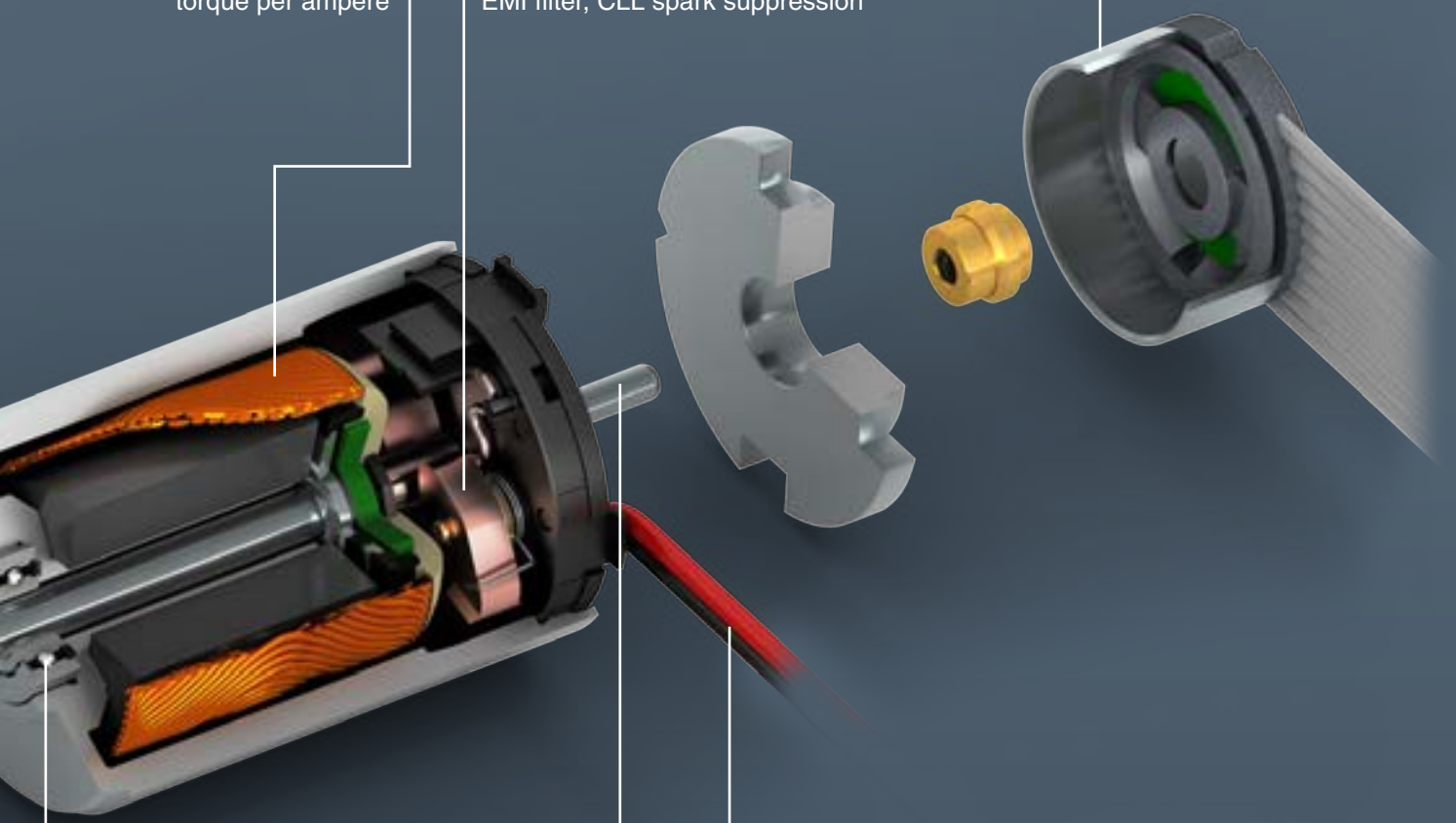
COMMUTATION

Graphite brushes
High current and current peaks
Start/stop and reverse operation
Large motors (from approx. 5 W)
EMI filter

Precious metal brushes
Low current and voltage
Continuous operation
Cost-effective
EMI filter, CLL spark suppression

ENCODER

Counts per turn
Cable outlet angle with
strain relief
Cable length



SHAFT

Length

CONNECTIONS

Terminals
Cable
Connector

BEARING

Ball bearing
All operating modes
Higher radial and axial load

Sleeve bearing
For continuous operation at high speeds
Cost-effective

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WHAT CAN BE CONFIGURED ONLINE?

Fold this page and learn more.

dcx.maxonmotor.com

maxon motor

driven by precision

COMBINE ONLINE

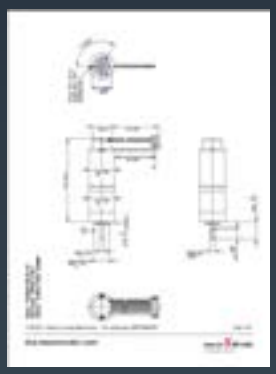
The DCX motor can be combined with a predefined selection of additional X-drive components such as gearheads and encoders.

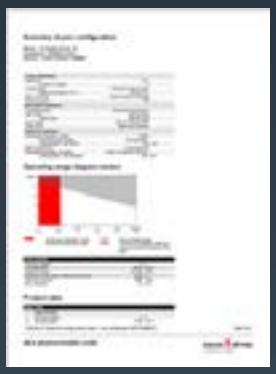
CONFIGURE ONLINE

The selected basic product can be configured using the available options. The result is your own unique version with corresponding article number.

ORDER ONLINE

After all configurations have been completed, full specifications and documentation for the configured products are generated. 2D and 3D dimensional drawings can be downloaded. A complete, ready-to-print specification document describes your drive. Up to 49 units can be ordered directly online.





FAST PREOCESSING – WORLDWIDE NETWORK

Configure and order your drive online. dcx.maxonmotor.com

HEADQUARTERS

maxon motor ag
Brünigstrasse 220
P.O. Box 263
6072 Sachseln
Switzerland

+41 (41) 666 15 00
contact.maxonmotor.com

maxon DCX SELECTION

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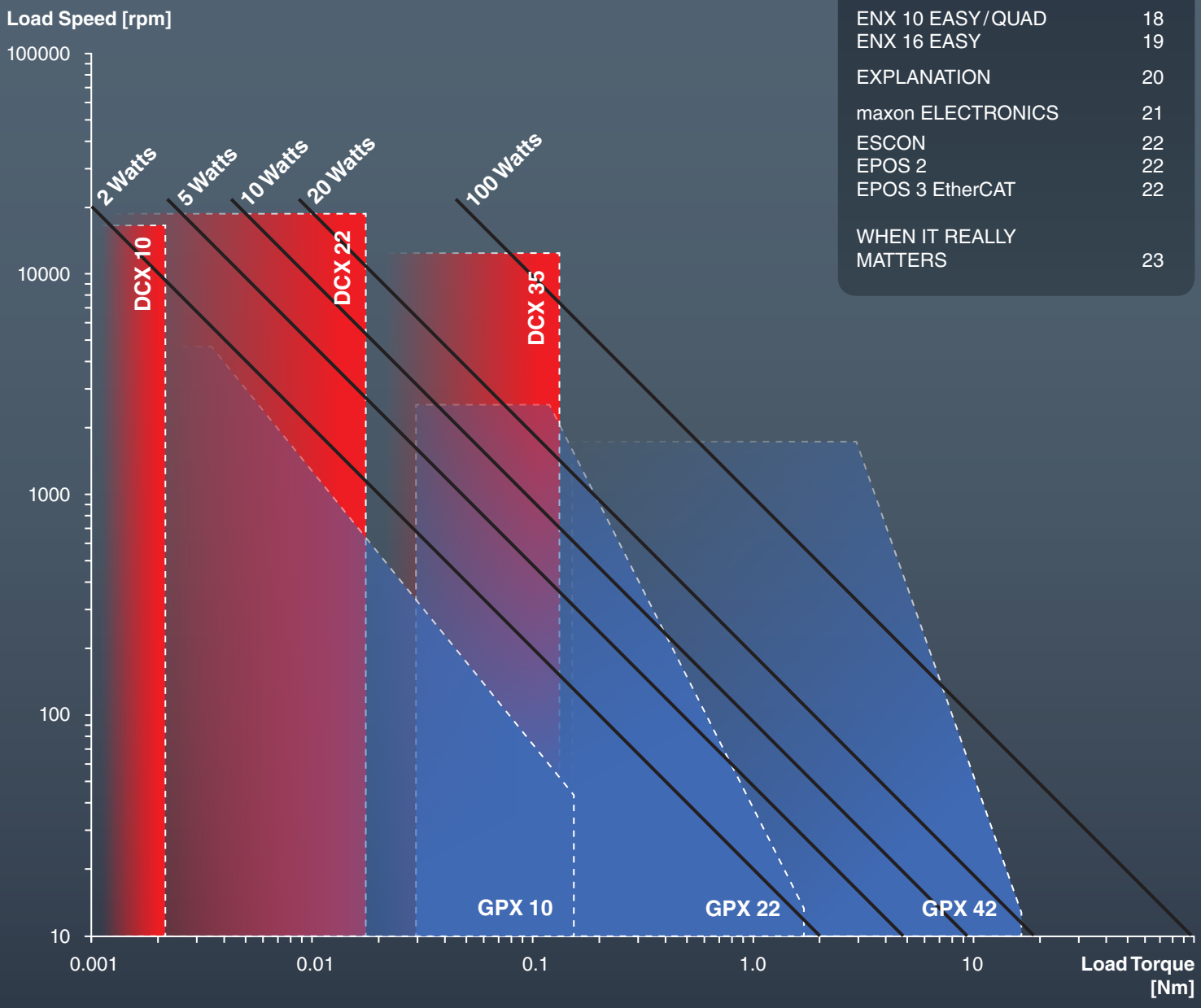

maxon DCX

maxon DCX MOTOR

maxon DCX motors make an impression with their unsurpassed power density (torque / motor volume ratio) and their absolute quiet running. The robust construction together with the worldwide patented ironless rotor make the DCX motors a highly dynamic drive in almost any situation.

DCX maxon motors can be configured and ordered online. dcx.maxonmotor.com

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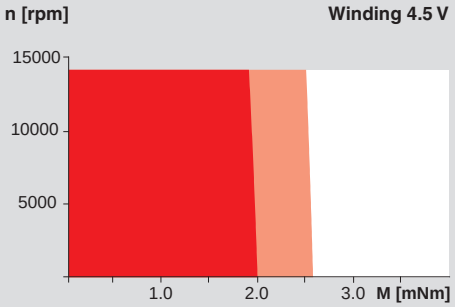
DCX 10 L brushed DC motor Ø10 mm

Configurable

Key Data		Precious Metal Brushes
Typical Speed / torque gradient	rpm / mNm	2555
Max. nominal torque	mNm	2.22
Max. permissible speed	rpm	14300
Max. continuous output power	W	3
Max. efficiency	%	77
Ambient temperature	°C	-30 … +85
Typical noise level	dBA	37
Weight	g	10.4

Operating Range — **Precious Metal Brushes**

- Continuous operation
- Continuous operation with reduced thermal resistance Rth_2 50%
- Intermittent operation



Winding		Precious Metal Brushes					
Nominal voltage	V	1.5	3	4.5	6	9	12
No load speed	rpm	11600	12100	11900	12100	11900	11200
No load current	mA	75.1	40.4	26.3	20.2	13.1	9.04
Nominal current	A	0.924	0.924	0.648	0.436	0.303	0.211
Torque constant	mNm / A	1.22	2.32	3.54	4.63	7.07	10.0
Speed constant	rpm / V	7830	4120	2700	2060	1350	955
Terminal resistance	Ω	0.385	1.47	2.93	6.43	13.2	27.4

Configuration	dcx.maxonmotor.com
Bearing	Sleeve bearings / ball bearings preloaded
Commutation	Precious metal brushes with or without CLL
Flange front / back	Standard flange / no flange
Shaft front / back	Length
Electric connection	Terminals or cable / cable length / connector type

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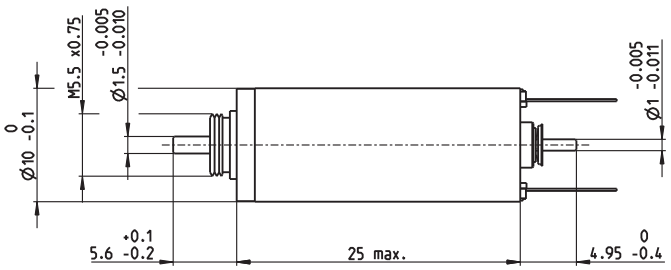
Dimensions Standard Configuration — **M 1.5:1**



Shortest configuration possible: 24.4 mm

Edition November 2012 / provisional data / subject to change

Configure and order your drive online.
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DCX 22 S brushed DC motor Ø22 mm

Configurable

Key data		Precious Metal Brushes	Graphite Brushes
Typical Speed / torque gradient	rpm / mNm	116	114
Max. nominal torque	mNm	14.7	15.3
Max. permissible speed	rpm	7160	18000
Max. continuous output power	W	10	20
Max. efficiency	%	85	86
Ambient temperature	°C	-30 … +85	-40 … +100
Typical noise level	dBA	48	41
Weight	g	66	66

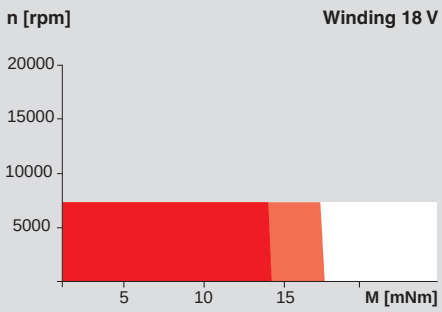
Operating Range

Continuous operation

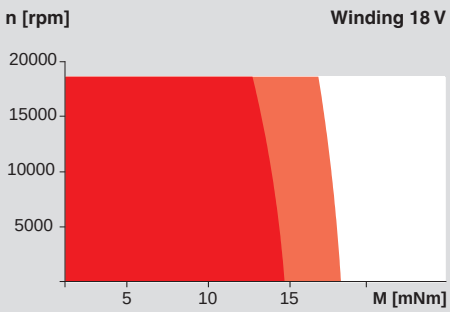
Continuous operation with reduced thermal resistance Rth_2 50%

Intermittent operation

Precious Metal Brushes



Graphite Brushes



Winding		Precious Metal Brushes						Graphite Brushes					
Nominal voltage	V	6	12	18	24	36	48	6	12	18	24	36	48
No load speed	rpm	6200	6200	6110	6340	6550	5890	11400	12400	12400	12400	12200	12700
No load current	mA	39.2	19.6	12.8	10.1	7.09	4.55	126	71.7	47.8	35.9	23.4	18.6
Nominal current	A	1.20	0.818	0.531	0.381	0.272	0.180	3.00	1.65	1.12	0.869	0.556	0.402
Torque constant	mNm / A	9.18	18.4	28.0	35.9	52.2	77.2	5.01	9.18	13.8	18.4	28.0	35.9
Speed constant	rpm / V	1040	520	342	266	183	124	1910	1040	693	520	342	266
Terminal resistance	Ω	1.06	3.72	8.78	17.0	33.3	76.3	0.297	1.02	2.21	3.69	8.94	17.2

Configuration	dcx.maxonmotor.com
Bearing	Ball bearings preloaded / sleeve bearings
Commutation	Precious metal brushes with or without CLL / graphite brushes / EMI filter
Flange front / back	Standard flange / configurable flange / no flange
Shaft front / back	Length / diameter / flat face
Electric connection	Terminals or cable / alignment of connection / cable length / connector type

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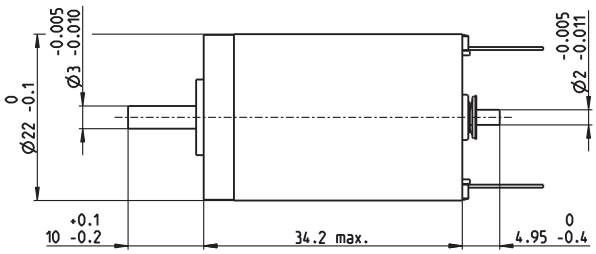
Dimensions Standard Configuration **M 1:1**



Shortest configuration possible: 31.7 mm

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Configure and order your drive online.
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DCX 35 L brushed DC motor Ø35 mm

Configurable

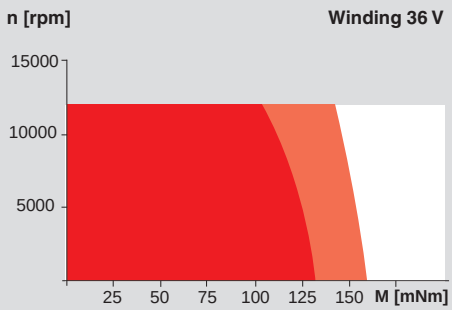
Key Data		Graphite Brushes
Typical Speed / torque gradient	rpm / mNm	4
Max. nominal torque	mNm	138
Max. permissible speed	rpm	12300
Max. continuous output power	W	120
Max. efficiency	%	90
Ambient temperature	°C	-40 ... +100
Typical noise level	dBA	48
Weight	g	385

Operating Range — **Graphite Brushes**

Continuous operation

Continuous operation with reduced thermal resistance Rth_2 50%

Intermittent operation



Winding		Graphite Brushes					
Nominal voltage	V	12	18	24	36	48	60
No load speed	rpm	8140	7210	7730	7940	6670	7690
No load current	mA	321	177	146	101	58.6	57.5
Nominal current	A	6.00	5.31	4.26	3.07	2.08	1.84
Torque constant	mNm / A	13.7	23.4	29.3	42.9	68.3	74.1
Speed constant	rpm / V	699	408	326	223	140	129
Terminal resistance	Ω	0.079	0.212	0.346	0.716	1.76	2.16

Configuration	dcx.maxonmotor.com
Bearing	Ball bearings preloaded
Commutation	Graphite brushes
Flange front / back	Standard flange / configurable flange / no flange
Shaft front / back	Length / diameter/ flat face
Electric connection	Terminals or cable / alignment of connection / cable length / connector type

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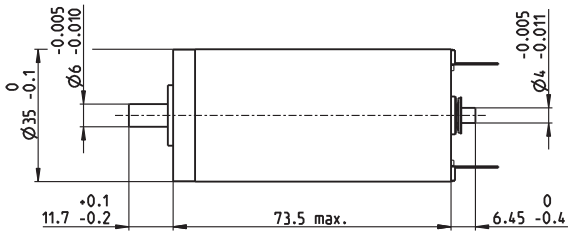
Dimensions Standard Configuration — **M 1:2**



Shortest configuration possible: 66.9 mm

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maxon GPX

maxon GPX GEAR

maxon GPX gearheads make an impression with the highest power transmission in a very short compact design. The modular construction and the scaled stages form the basis for a custom made drive solution. High torque, high speed, low noise, low backlash; maxon GPX gearheads fulfill practically all requirements.

maxon GPX gearheads can be configured and ordered online. dcx.maxonmotor.com

GPX 10 Planetary Gearhead Ø10 mm

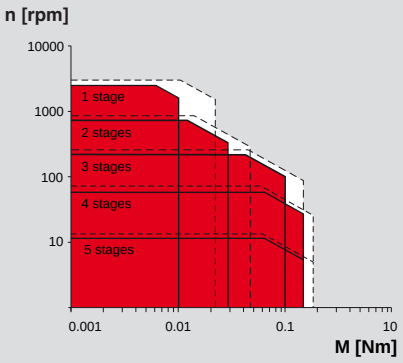
Configurable

Key Data		Standard Configuration
Max. transmittable power	W	1.6
Max. continuous torque	Nm	0.15
Max. continuous input speed	rpm	12000
Ambient temperature	°C	-15 ... +85

Operating Range (output shaft) — **Standard Configuration**

Continuous operation

Intermittent operation



Gearhead Data		Standard Configuration				
Number of stages		1	2	3	4	5
Max. transmittable continuous power	W	1.6	1.2	1.0	0.4	0.10
Max. transmittable intermittent power	W	2.0	1.5	1.3	0.5	0.13
Max. continuous torque	Nm	0.010	0.030	0.10	0.15	0.15
Max. intermittent torque	Nm	0.020	0.050	0.15	0.20	0.20
Max. continuous intput speed	rpm	12000	12000	12000	12000	12000
Max. intermittent intput speed	rpm	15000	15000	15000	15000	15000
Max. efficiency	%	90	81	73	65	59
Average backlash no load	°	1.5	1.8	2	2.2	2.5
Gearhead length L1	mm	10.4	14.1	17.2	20.4	23.5
Weight	g	6.7	7.2	7.7	8.2	8.7

Configuration	Standard Configuration				
Number of stages	1	2	3	4	5
Reduction	4	16	64	256	1024
Version	Standard				
Flange	Standard flange				
Shaft	Length / flat face				

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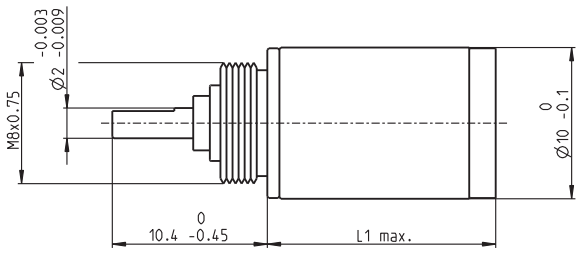
Dimensions Standard Configuration — **M 2:1**



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GPX 22 Planetary Gearhead Ø22 mm

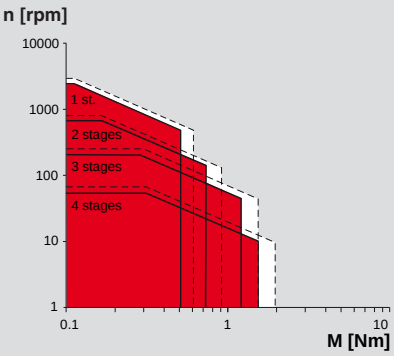
Configurable

Key Data		Standard Configuration
Max. transmittable power	W	24
Max. continuous torque	Nm	1.5
Max. continuous input speed	rpm	12000
Ambient temperature	°C	-40 ... +100

Operating Range (output shaft) — **Standard Configuration**

Continuous operation

Intermittent operation



Gearhead Data		Standard Configuration			
Number of stages		1	2	3	4
Max. transmittable continuous power	W	24.0	12.0	6.0	1.6
Max. transmittable intermittent power	W	30.0	15.0	7.5	2.0
Max. continuous torque	Nm	0.50	0.70	1.20	1.50
Max. intermittent torque	Nm	0.60	0.90	1.50	1.90
Max. continuous input speed	rpm	8'000	10'000	12'000	12'000
Max. intermittent input speed	rpm	10'000	12'500	15'000	15'000
Max. efficiency	%	90	81	74	66
Average backlash no load	°	1.4	1.6	1.75	1.9
Gearhead length L1	mm	18.5	25.0	29.6	33.9
Weight	g	42	52	57	63

Configuration	Standard Configuration			
Number of stages	1	2	3	4
Reduction	3.9 ... 6.6	16 ... 44	61 ... 287	243 ... 1897
Version	Standard			
Flange	Standard flange / configurable flange			
Shaft	Length / flat face / cross hole			

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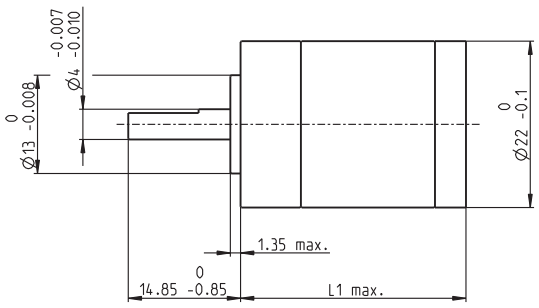
Dimensions Standard Configuration — **M 1:1**



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GPX 42 Planetary Gearhead Ø42 mm

Configurable

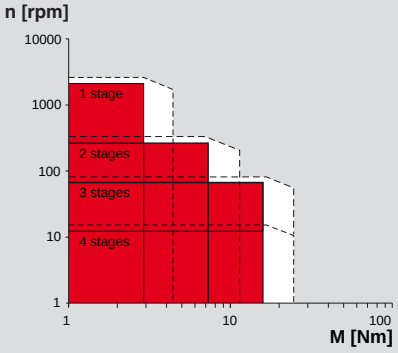
Key Data		Standard Configuration
Max. transmittable power	W	580
Max. continuous torque	Nm	15.0
Max. continuous input speed	rpm	8000
Ambient temperature	°C	-40 ... +100

Operating Range (output shaft)

Continuous operation

Intermittent operation

Standard Configuration



Gearhead Data		Standard Configuration			
Number of stages		1	2	3	4
Max. transmittable continuous power	W	580	240	100	20.0
Max. transmittable intermittent power	W	725	300	125	25
Max. continuous torque	Nm	3.0	7.5	15.0	15.0
Max. intermittent torque	Nm	4.5	11.3	22.5	22.5
Max. continuous input speed	rpm	8'000	8'000	8'000	8'000
Max. intermittent input speed	rpm	10'000	10'000	10'000	10'000
Max. efficiency	%	90	81	72	64
Average backlash no load	°	0.6	0.8	1.0	1.0
Gearhead length L1	mm	41	55.5	70.0	84.5
Weight	g	260	360	460	560

Configuration	Standard Configuration			
Number of stages	1	2	3	4
Reduction	3.5 .. 4.3	12 .. 26	43 .. 156	150 .. 936
Version	Standard			
Flange	Standard flange / configurable flange			
Shaft	Length / feather key			

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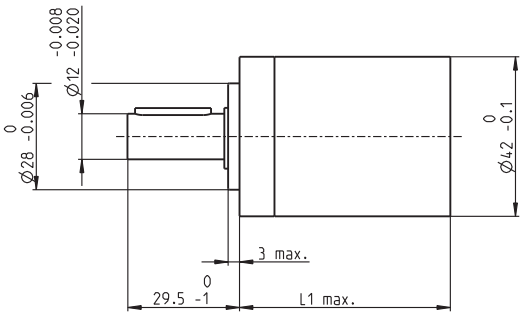
DCX 35 L	12

Dimensions Standard Configuration **M 1:2**

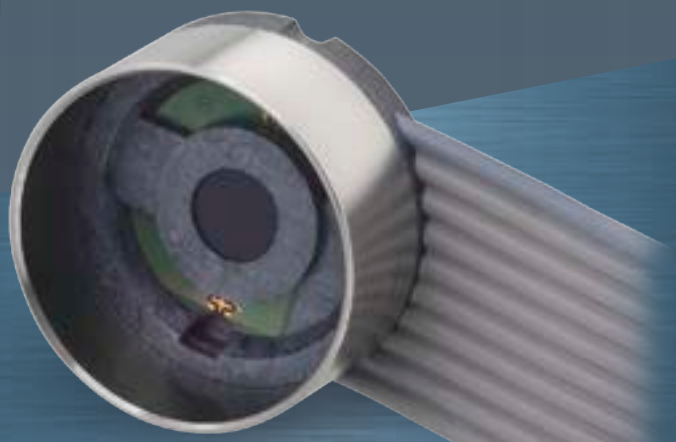


maxon ENX

maxon ENX ENCODER

maxon ENX encoders make an impression with their robust design and high signal quality. The 3-channel encoder with differential signals guarantees interference-free function even under the highest loads. The resolution can be factory-set. EASY is an incremental encoder based on the Hall effect. With the QUAD you get a 1-count encoder for rotation direction and speed recognition.

maxon ENX encoders can be configured and ordered online. dcx.maxonmotor.com



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ENX 10 Encoder Ø10 mm

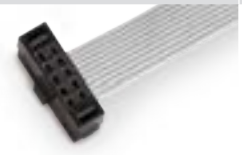
Configurable

Key Data		EASY	QUAD
Number of channels		3	2
Max. counts per turn		1024	1
Encoder length L max.	mm	8.5	8.5
Ambient temperature	°C	-40 ... +100	-30 ... +100
Weight	g	<5	<5

Selection criteria	EASY	QUAD
Speed and rotation direction detection	■	■
Speed and position control	■	▲
Compact and robust design	■	■
High resolution	■	●
Connection to maxon controllers	■	▲
Connection to customer's own electronics	■	■
Cost effective	■	■

■ suitable ▲ suitable to a limited extent ● not suitable

Specifications		EASY	QUAD
Supply voltage Vcc	V	5 ±0.5	5 ±0.5
Max. operating frequency	kHz	500	2
Max. Speed	rpm	20000	20000
Pitch connector	mm	1.27	2.54
Connector		2 x 5 pin	2 x 5 pin



Configuration		EASY	QUAD
Counts per turn		1 ... 128, 256, 512, 1024	1
Cable length	mm	50, 100, 150, 200, 300, 500, 1000	50, 100, 150, 200, 300, 500, 1000
Alignment of cable outlet in relation to motor (pitch)	°	15	15

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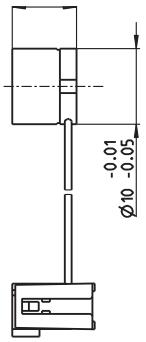
Dimensions Standard Configuration **M 1:1**



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dcx.maxonmotor.com

ENX 16 Encoder Ø16 mm

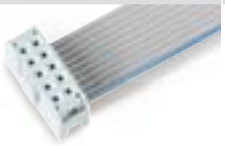
Configurable

Key Data		EASY
Number of channels		3
Max. counts per turn		1024
Encoder length L max.	mm	8.5
Ambient temperature	°C	-40 ... +100
Weight	g	7

Selection criteria	EASY
Speed and rotation direction detection	■
Speed and position control	■
Compact and robust design	■
High resolution	■
Connection to maxon controllers	■
Connection to customer's own electronics	■
Cost effective	■

■ suitable ▲ suitable to a limited extent ● not suitable

Specifications		EASY
Supply voltage Vcc	V	5 ±0.5
Max. operating frequency	kHz	500
Max. Speed	rpm	20000
Pitch connector	mm	2.54
Connector		2 x 5 pin



Configuration		EASY
Counts per turn		1 ... 128, 256, 512, 1024
Cable length	mm	50, 100, 150, 200, 300, 500, 1000
Alignment of cable outlet in relation to motor (pitch)	°	15

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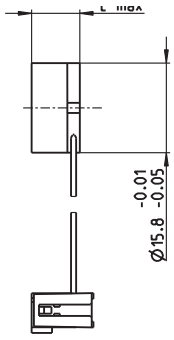
Dimensions Standard Configuration **M 3:4**



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Explanation for Terminology maxon X drives

Alignment of cable outlet in relation to motor (pitch) [°]
is the pitch in which angle distances of the cable output from the encoder to the cable output of the motor can be aligned (configured).

Ambient temperature [°C]
is the temperature range in which the drive may be operated. It results from the temperature resistance of the materials used and the viscosity of the bearing lubrication. At extremely low temperatures, significantly higher frictional torque is to be expected.

Average backlash no load [°]
is the angle of rotation that the gearhead output shaft rotates with the input shaft blocked when it is rotated from a stop position in the opposite direction. The stop position depends on the torque applied to the output shaft. It should be noted that with the output shaft blocked, due to the inverted reduction ratio, the motor shaft rotates through a much larger angle from stop to stop.

Cable length [mm]
is the configurable cable length including plug measured from the drive housing.

Continuous operation
is the operation area in which the drive may be continuously operated. The Indeicated area corresponds to maxon testing conditions where the drive is mounted on a plastic plate. If the thermal resistance between drive and air can be reduced (example 50%) then the drive may also be operated in a wider range.

Counts per turn
is the configurable number of pulses which, per revolution, are output on a channel.

Encoder length Lmax [mm]
is the maximum length of the encoder up to the axial mounting surface of the motor. The necessary encoder flange between motor and encoder is not contained in the encoder length.

Gearhead length L1 [mm]
is the maximum length of the gearhead up to the axial mounting surface of the motor. The necessary gearhead flange between motor and gearhead is contained in the gearhead length.

Intermittent operation
is the operation area in which the drive may be operated for a short time. The maximum winding temperature must not be exceeded.

Max. continuous input speed [rpm]
is the maximum recommended input speed which may apply continuously at the output shaft. It is based on life span considerations. If this value is greatly exceeded, the life span can be shortened, the gear heats up more and more noise is generated.

Max. continuous output power [W]
is the maximum mechanical power that the motor can output continuously without overheating.

Max. continuous torque [Nm]
is the maximum torque that can be applied permanently to the output shaft. If it is exceeded, the life span is significantly shortened.

Max. counts per turn
is the maximum possible number of counts per turn. For EASY encoders, the counts per turn can be configured.

Max. efficiency [%]
is the optimal ratio between power input and power output. The specified efficiency for motors applies for loads above approx. half the continuous torque.

Max. intermittent input speed [rpm]
is the maximum input speed that may be applied for a short-time* at the input. It is based on life span considerations. Significantly exceeding this value can shorten the life span, the gearhead will heat up rapidly and the noise level will increase.

Max. intermittent torque [Nm]
is the maximum torque that can be applied for short time to the output shaft. If it is exceeded, the life span is significantly shortened.

Max. nominal torque [mNm]
is the maximum continuous torque that can be generated when operating with nominal voltage and nominal current at a motor temperature of 25 °C. It is at the limit of the continuous operating range of the motor. Higher torques will lead to impermissible heating of the winding.

Max. operating frequency [kHz]
is the maximum, electrical output frequency with which the encoder can be properly operated.

Max. permissible speed [rpm]
is the maximum recommended speed based on the commutation. For higher speeds, a reduction in the life span can be expected.

Max. transmittable continuous power [W]
is the maximum continuous output available at the output shaft without shortening the life span. When it is exceeded the life span is greatly reduced.

Max. transmittable intermittent power [W]
is the maximum output available for a short-time* at the output shaft. When it is exceeded the life span is greatly reduced.

No load speed [rpm] ±10%
is the speed at which the motor turns at nominal voltage and without load. It is approximately proportional to the applied voltage.

No load current [mA] ±50%
is the typical current that the unloaded motor draws when operating at nominal voltage. It depends on brush friction and friction in the bearings, and also increases with rising speed. No-load friction depends heavily on temperature, particularly with precious metal commutation. In extended operation, no-load friction decreases and increases at lower temperatures.

Nominal current [A]
is the current which, at an ambient temperature of 25° C and with continuous operation, heats the winding up to the maximum permissible temperature (= maximum permissible continuous current). As a result of additional frictional losses Indecreases slightly when the speed increases.

Nominal voltage [V]
is the DC voltage on the motor connections on which all nominal data are based. Higher and lower voltages are permissible as long as they do not exceed the limit values.

Number of channels
is the number of available output channels (A, B, I).

Number of stages
is the number of gearhead stages connected in series.

Output stage
is designed for high torques. It can be configured to fit the specific application.

Plug pitch [mm]
is the distance between pins of the plug in mm.

Reduction
is the factor by which the speed of the gearhead output shaft is smaller than the motor speed (rounded value).

Speed constant kn [rpm/V]
is the ideal no-load speed per 1 volt of applied voltage.

Supply voltage [V]
is the voltage range that may be applied to the encoder as DC voltage.

Terminal resistance R [Ω]
is the resistance measured at 25°C at the terminals (without cables) and determines the starting current at a given voltage. For graphite brushes it should be noted that resistance is load-dependent and the value only applies to large currents.

Torque constant kM [mNm/A]
is the quotient from generated torque and applicable current. Also known as “specific torque”.

Typical noise level [dBA]
is that statistical average of the noise level measured according to maxon standard (10 cm distance radially to the drive, no-load operation at a speed of 6000 rpm. The drive lies freely on a plastic foam mat in the noise chamber).

The acoustic noise level depends on a number of factors, such as component tolerances, and it is greatly influenced by the overall system in which the drive is installed. When the drive is installed in an unfavorable constellation, the noise level may be significantly higher than the noise level of the drive alone.

The acoustic noise level is measured and determined during product qualification. In manufacturing, a structure-borne noise test is performed with defined limits. Impermissible deviations can thus be identified.

Typical speed/torque gradient [rpm/mNm]
provides information on the strength of the motor. The smaller this value is, the stronger the motor is and the less the speed changes when the load fluctuates. It is calculated from the quotient of ideal no-load speed and ideal stall torque.

Weight [g]
is the weight of the drive component.

*) short-time

duration of max. 1 second

duration of max. 10% of the operating cycle

maxon Standard Specification
All product-specific information is based on maxon standard specification no. 100 and no. 102. These specifications can be found at www.maxonmotor.com, in the general terms and conditions.

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maxon motor control

maxon ELECTRONICS

These control electronics have been designed for optimum compatibility with maxon motors. A range of 4-quadrant servo amplifiers and position controllers cover all requirements related to power, speed precision, positioning accuracy and controlled rotary motion. More information on maxon motor control can be found in our main catalog “maxon Program”, as well as at www.maxonmotor.com

Configure and order your drive online.
dcx.maxonmotor.com

ESCON Servo Controller

The ESCON servo controllers are compact, powerful 4-quadrant PWM servo controllers for efficient control of permanent magnet-activated DC motors. The available operating modes – speed controller (closed loop), speed controller (open loop) and current controller – satisfy the most demanding requirements. The ESCON servo controllers are designed to be controlled using an analog set value.

ESCON Servocontroller	Description
ESCON 36/2 DC	For DC motors up to 72 W
ESCON 50/5	For DC and EC motors up to 250 W

EPOS2 Positioning Control Units

If a drive system's control requirements go beyond just speed and torque controls and if repeated positioning processes are required in complex paths of motion, positioning controls can be used. The EPOS2 (Easy to use Positioning System) provides a modular product range for DC and EC motors.

EPOS2 Positioning Control Units	Description
EPOS2 24/2	For DC and EC motors up to 48 W
EPOS2 Module 36/2	For DC and EC motors up to 72 W
EPOS2 24/5	For DC and EC motors up to 120 W
EPOS2 50/5	For DC and EC motors up to 250 W
EPOS2 70/10	For DC and EC motors up to 700 W

EPOS2 P Programmable Positioning Controller

EPOS2 P is a freely programmable positioning controller with an integrated power stage, based on the EPOS2 slave version. It is suitable for brushless and brush DC motors with incremental encoder and up to 120 watt output.

EPOS2 P Programmable Positioning Controller	Description
EPOS2 P 24/5	For DC and EC motors bis 120 W

EPOS3 EtherCAT Positioning Control Unit

The position controller EPOS3 70/10 EtherCAT receives motion and I/O commands from a superior EtherCAT master, which handles process flow control. The EPOS3 70/10 EtherCAT supports CoE (CAN application layer over EtherCAT).

EPOS3 EtherCAT Slave	Description
EPOS3 70/10 EtherCAT	For DC and EC motors up to 700 W

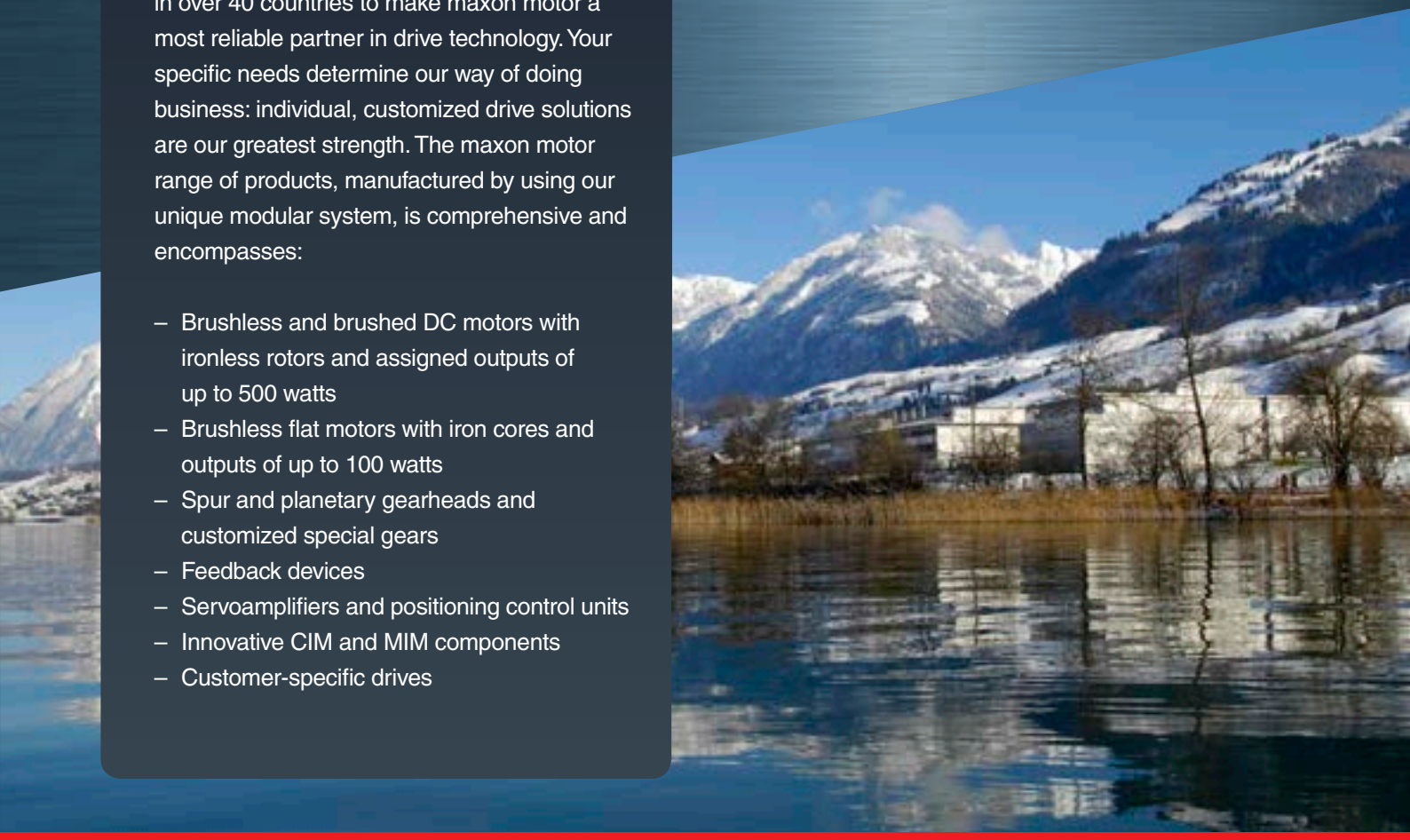
More information:
www.maxonmotor.com

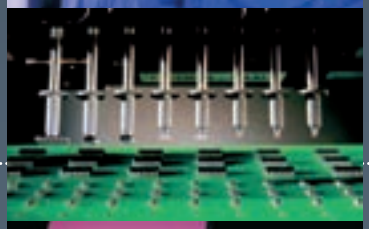
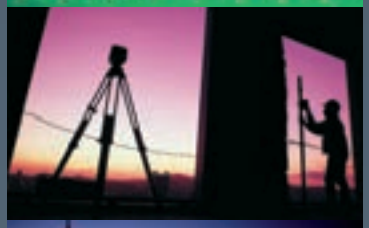
When it really matters.

maxon motor – PRECISE DRIVES SINCE 1961.

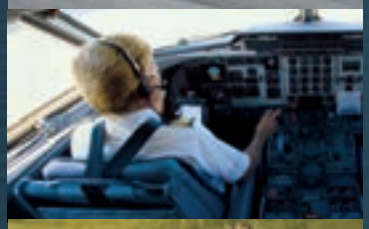
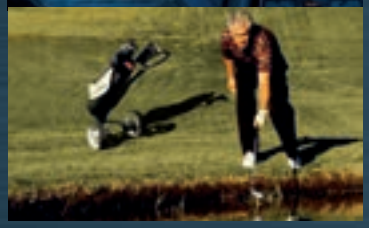
50 years of experience, nonstop innovation and superior product quality combine with outstanding customer service and sales offices in over 40 countries to make maxon motor a most reliable partner in drive technology. Your specific needs determine our way of doing business: individual, customized drive solutions are our greatest strength. The maxon motor range of products, manufactured by using our unique modular system, is comprehensive and encompasses:

- Brushless and brushed DC motors with ironless rotors and assigned outputs of up to 500 watts
- Brushless flat motors with iron cores and outputs of up to 100 watts
- Spur and planetary gearheads and customized special gears
- Feedback devices
- Servoamplifiers and positioning control units
- Innovative CIM and MIM components
- Customer-specific drives





maxon MARKETS

- Medical science
- Industrial automation
- Instrumentation and Inspection
- Communication
- Robotics
- Security
- Automotive
- Aerospace
- Consumer applications

maxon drives set the world in motion.

Precision drives from maxon motor are used in numerous applications. The most famous comes from the world of space travel: the NASA Mars Rovers demonstrate that our drives perform with absolute reliability even under the most extreme conditions. It comes as no surprise then, that they are in such wide use here on earth.

They are applied, for instance, in mobile radio, ship and aircraft antenna, enabling smooth communication. They assist eye surgeons in correcting visual disorders, are used in catalyzers where they help to lower environmental pollution or in modern assembly robots where they advance automation in industrial manufacture. maxon drives are as diverse as their uses.

maxon Quality Assurance

maxon motor has received SN EN ISO 9001, SN EN ISO 13485 and SN EN ISO 14001 certification.

Comprehensive solutions optimized through a diverse product range.

The maxon motor product range is quite diverse. The drive components are assembled and designed within our modular system according to your individual needs. You can combine, according to your requirements, motors with diameters from 4 to 90 mm with planetary, standard or special gearheads, feedback devices, brakes and control electronics.

To ensure that you receive the best possible drive solution for your needs, you can count on our sales engineers to provide you with expert advice. And our commitment doesn't end with delivery. We offer you complete customer care during the entire service life of your maxon motor products. See what we can do for you: www.maxonmotor.com

DISCOVER THE NEXT GENERATION OF HIGH PRECISION DRIVES

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maxon PRODUCTS

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– Dynamic
– Precise

maxon PROCESSING

– Fast
– Flexibel
– Documented

maxon CONSULTING

– Competent
– Local
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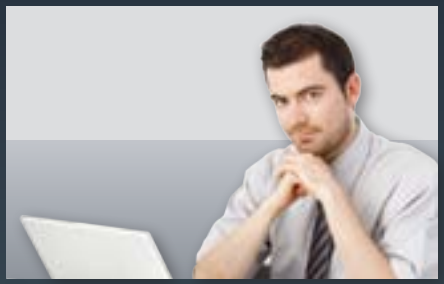

maxon motor

driven by precision