

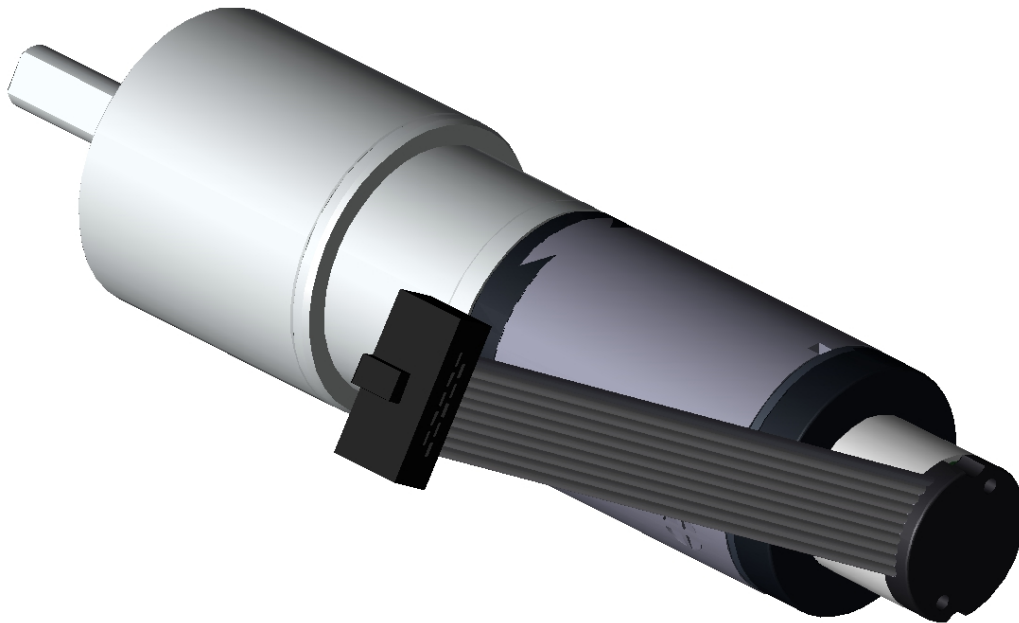
Configured drive

Motor - DC-max16S EB KL 12V
Gearhead - GPX19 LN 138:1
Sensor - ENX10 EASY 1024IMP

Part number: B7A35027B343 Revision number 1

Orders are processed and shipped from Switzerland within 11 working days.

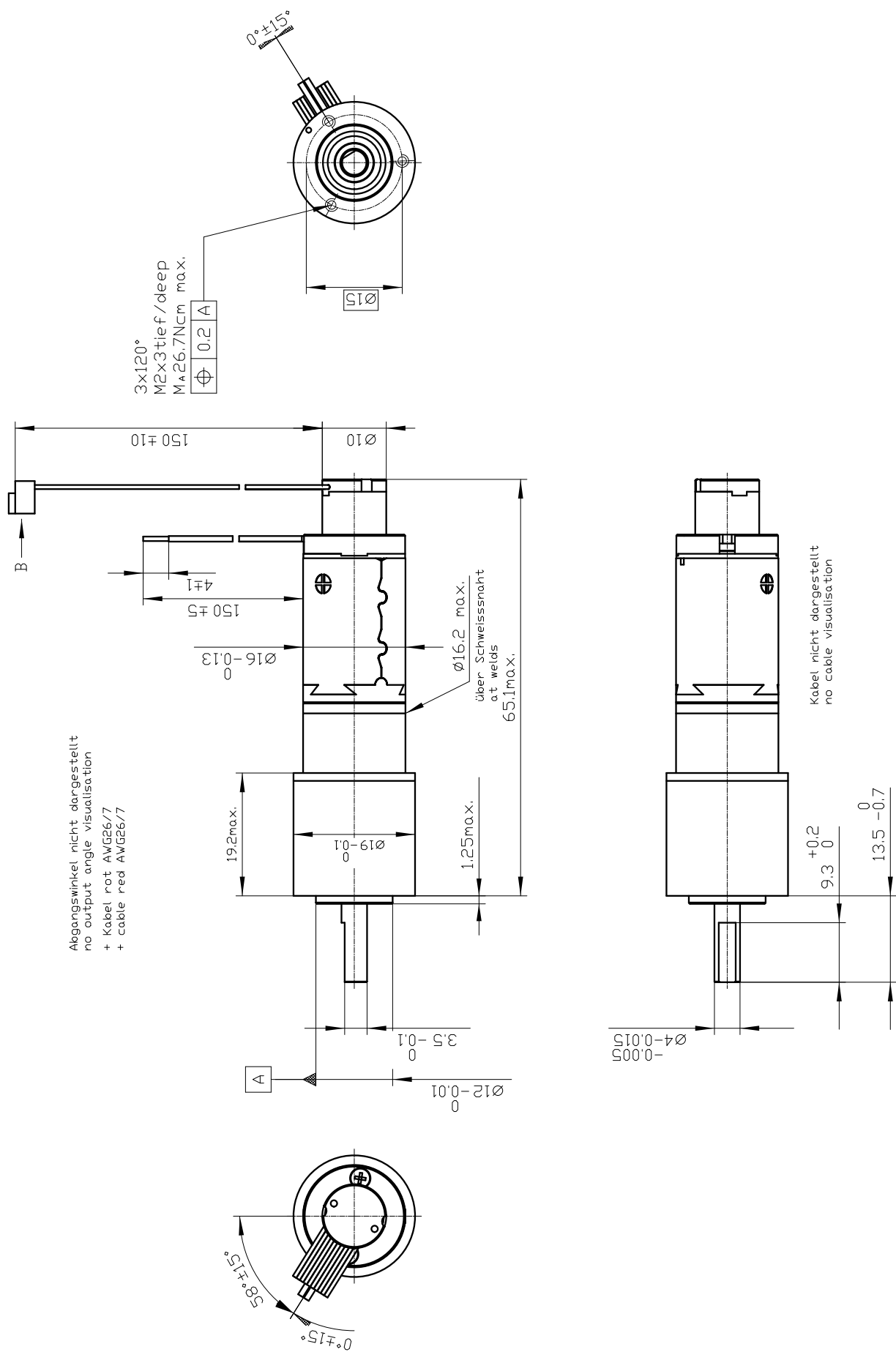
General Terms and Conditions: https://www.maxongroup.ch/maxon/view/content/terms_and_conditions_page

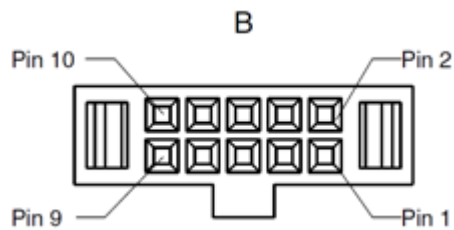


To open the integrated CAD file, please save this document and open it in Acrobat Reader. The STEP file is available after a double-click on the pin icon.

B7A35027B343.stp (STP AP 214)

Open configuration: <https://www.maxongroup.com/maxon/view/configurator/?ConfigID=B7A35027B343>





Connector type, encoder

1.27mm 10-pol

Pin 1 Do not connect

Pin 2 VCC

Pin 3 GND

Pin 4 Do not connect

Pin 5 Channel A \

Pin 6 Channel A

Pin 7 Channel B \

Pin 8 Channel B

Pin 9 Channel I \

Pin 10 Channel I

Summary of your selected configuration

Total weight of the drive: 65 g

DC-max16S EB KL 12V

Product detail

Commutation	Precious metal brushes
Nominal voltage	12 V
Motor bearings	Ball bearings
Spark suppression (CLL)	with CLL

Elec. connection, motor

Elec. connection, motor	Cable
Cable length	150 mm

GPX19 LN 138:1

Product detail

Gearhead type	Reduced noise level
Reduction	138:1
Number of stages	3

ENX10 EASY 1024IMP

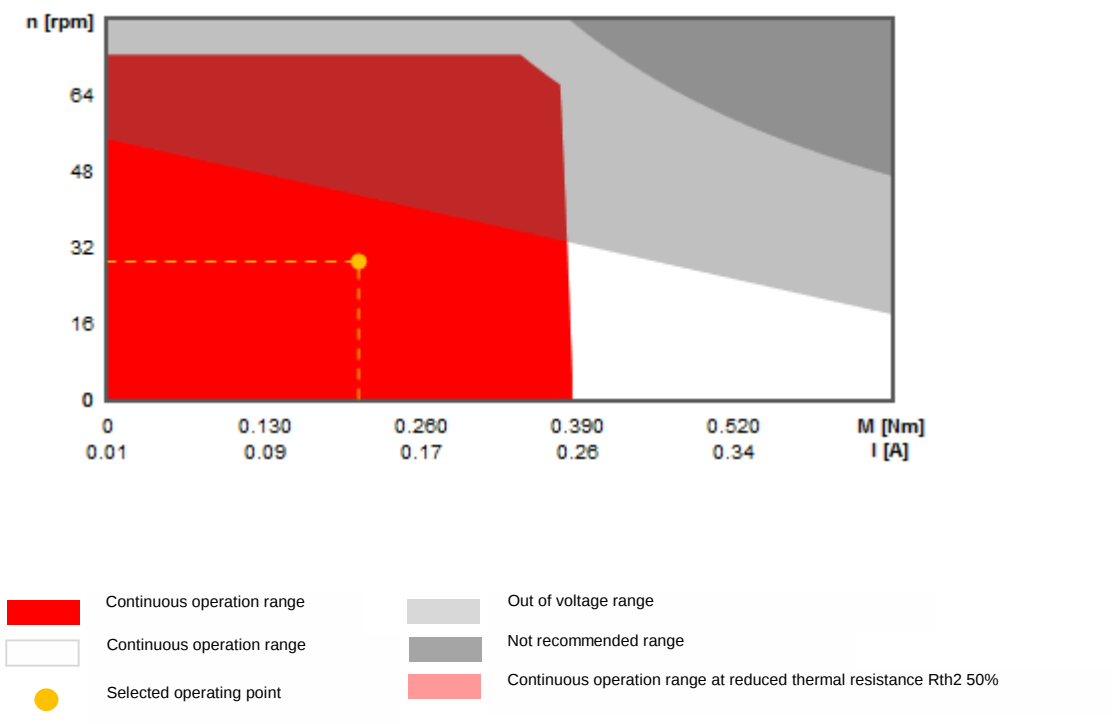
Product detail

Counts per turn	1024
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Legend for part designation

EB	Precious metal brushes	GB	Graphite brushes	CLL	Spark suppression	BL	Brushless
A	Hall sensors	B	Sensorless	KL	Ball bearings	SL	Sintered bearings
GPX	Planetary gearhead	ENX	Encoder	ENC	Encoder	IMP	Pulses
ST	Number of stages	HP	High Power	S/M/L	Short/medium/long	HS	High Speed
STE	Sterilizable	INT	Integ.	STD	Standard	SP	Speed
ABS	Absolute	LN	Reduced noise level	A	Standard	LZ	Reduced backlash
C	Ceramic bearing			STEC	Sterilizable, Ceramic bearing		

Selected operating point



DC-max16S EB KL 12V



Product specification

Values at nominal voltage

Nominal voltage	12 V
No load speed	7550 min ⁻¹
No load current	7.01mA
Nominal speed	4400 min ⁻¹
Nominal torque (max. continuous torque)	3.91 mNm
Nominal current (max. continuous current)	0.267 A
Stall torque	9.44 mNm
Stall current	0.629 A
Max. efficiency	80.3 %

Characteristics

Max. output power continuous	4.15 W
Terminal resistance	19.1 Ω
Terminal inductance	0.61 mH
Torque constant	15 mNm A ⁻¹
Speed constant	637 min ⁻¹ V ⁻¹
Speed/torque gradient	809 min ⁻¹ mNm ⁻¹
Mechanical time constant	8.92ms
Rotor inertia	1.05 gcm ²

Thermal data

Thermal resistance housing-ambient	29.8 KW ⁻¹
Thermal resistance winding-housing	5.5 KW ⁻¹
Thermal time constant of the winding	5.12 s
Thermal time constant of the motor	288 s
Ambient temperature	-30...65 °C
Max. winding temperature	85 °C

Mechanical data

Max. permissible speed	11000 min ⁻¹
Axial play	0.05...0.15 mm
Preload	N
Radial backlash	0.025 mm
Max. axial load (dynamic)	2.2 N
Max. force for press fits (static)	30 N

Static, supported shaft	200 N
Max. radial load 5 mm from flange	7.8 N
Measurement from the flange	5 mm

Further specifications

Number of pole pairs	1
Number of commutator segments	7
Motor weight	19.8 g
Motor length	26.4 mm
Typical noise level	36 dBA (6000 min ⁻¹)

Information about motor data: https://www.maxongroup.com/medias/CMS_Downloads/DIVERSES/12_049_EN.pdf

GPX19 LN 138:1



Product specification

Gearhead data

Reduction	138:1
Absolute reduction	341550/2470
Number of stages	3
Max. continuous torque	0.52 Nm
Max. intermittent torque	0.65 Nm
Direction of rotation, drive to output	=
Max. efficiency	75 %
Average backlash no-load	1.3 °
Mass inertia	0.161 gmc ²
Max. transmittable power (continuous)	2.6 W
Max. short-time transferable output	3.2 W

Technical data

Output shaft bearing	Wälzlager
Max. radial play, 10 mm from flange	max. 0.1 mm
Axial play	0...0.1 mm
Max. permissible radial load, 5 mm from flange	90 N
Max. permissible axial load	40 N
Max. permissible force for press fits	100 N
Max. continuous input speed	10000 min ⁻¹
Max. intermittent input speed	12500 min ⁻¹
Recommended temperature range	-40..85 °C

Information about gearhead data: https://www.maxongroup.com/medias/CMS_Downloads/DIVERSES/12_203_EN.pdf

ENX10 EASY 1024IMP



Product specification

Sensor data

Counts per turn	1024
Number of channels	3
Line Driver	RS422
Max. electrical speed	90000 min ⁻¹
Max. mechanical speed	30000 min ⁻¹

Technical data

Supply voltage Vcc	5 V ±10 %
Output signal	INC
Output signal driver	Differential / EIA RS 422
Output current per channel	-20...20 mA
State length	20...160 °el
Signal rise time/Signal fall time	20/20 ns
Min. state duration	125 ns
Direction of rotation	A before B CW
Index position	A low & B low
Index synchronously to AB	Yes
Index pulse width	90 °el
Typical current draw at standstill	22 mA
Max. moment of inertia of code wheel	0.05 gcm ²
Operating temperature range	-40...100 C°
Number of autoclave cycles	0

Datasheet: https://www.maxongroup.com/medias/CMS_Downloads/DIVERSES/ENXEASY_EN.pdf

ESCON Module 24/2



Product specification

Motor

DC motors up to	48 W
EC motors up to	48 W

Sensor

Without sensor (DC motors)	Yes
Sensorless (EC motors)	
Digital incremental encoder (2-channel, single-ended)	Yes
Digital incremental encoder (2-channel, differential)	Yes
Digital incremental encoder (3-channel, differential)	Yes
Digital Hall sensors (EC motors)	Yes
SSI absolute encoder	
Analog incremental encoder (2-channel, differential)	

Operating modes

Current controller	Yes
Speed controller (open loop)	Yes
Speed controller (closed loop)	Yes
Positioning controller	

Electrical data

Operating voltage VCC	10..24 VDC
Logic supply voltage VC optional	.. VDC
Max. output voltage (factor * VCC)	0.98 *
Max. output current I _{max}	6 A
Max. duration of peak output current I _{max}	4 s
Continuous output current I _{cont}	2 A
Switching frequency of the power stage	53.6 kHz
Sampling rate, PI current controller	53.6 kHz
Sampling rate, PI speed controller (closed loop)	5.36 kHz
Sampling rate, PID positioning controller	kHz
Max. efficiency	92 %
Max. speed (DC motors)	150000 min-1
Max. speed (1 pole pair), block commutation	150000 min-1
Max. speed (1 pole pair), sinusoidal commutation	min-1
Built-in motor choke per phase	uH

Inputs

Hall sensor signals	H1, H2, H3
Encoder signals	A, A\, B, B\
Max. encoder input frequency	1 MHz
Digitale Eingänge	2

Functionality of digital inputs	Enable, enable CW, enable CCW, enable CW+CCW, enable + direction of rotation, stop, PWM set value, RC Servo set value, fixed set value
Analog inputs	2
Resolution, range, circuit	12-bit, -10...+10V, differential
Functionality of inputs	Set value, current limit, offset, speed ramp
Potentiometers	
Functionality of the potentiometers	
DIP switch	
Functionality of the DIP switch	
Outputs	
Digital outputs	2
Functionality of digital outputs	ready, speed comparator, current comparator, commutation frequency
Analog outputs	2
Resolution, range	12-bit, -4...+4V
Functionality of analog outputs	current monitor, speed monitor, temperature, fixed value
Voltage outputs	
Hall sensor supply voltage	+5 VDC, max. 30 mA
Encoder supply voltage	+5 VDC, max. 70 mA
Auxiliary output voltage	+5 VDC, max. 10 mA
Output voltage (reference)	
Ambient conditions	
Temperature – operation	-30.. 60 °C
Temperature – storage	-40 .. 85 °C
Temperature – extended range	+60...+80 °C, Derating: -0.1 A/°C
Humidity (non-condensing)	5 .. %
Mechanical data	
Weight	7 g
Dimensions (L x W x H)	35.6 x 26.7 x 12.7 mm
Mounting	mountable on socket terminal strips pitch 2.54 mm