

# ECI motor.

ECI-42.XX-K1



- Highly dynamic 3-phase internal rotor motor with EC technology
- Low cogging torque
- Robust, noise-optimized ball bearing system for a long service life
- High efficiency and high power density realized in a compact design
- Basic motor with electronic module K1 for operation with external control electronics
- Mechanical design and interfaces designed for modular flexibility
- Protection class IP 40 (higher on request) and connection by wires

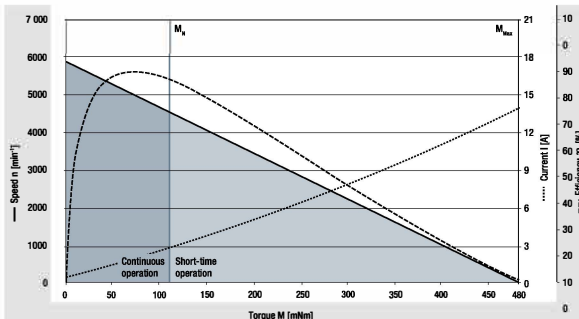
Nominal data					
Type		ECI-42.20-K1-B00	ECI-42.20-K1-D00	ECI-42.40-K1-B00	ECI-42.40-K1-D00
Nominal voltage ( $U_n$ )	V DC	24	48	24	48
Nominal speed ( $n_n$ )**	rpm	4 000			
Nominal torque ( $M_n$ )**	mNm	110	110	220	220
Nominal current ( $I_n$ )**	A	2.50	1.30	5.10	2.60
Nominal output power ( $P_n$ )**	W	46	46	92	92
Starting torque ( $M_{max}$ )	mNm	480	480	960	960
Permissible peak current ( $I_{max}$ )***	A	14	7	21	11
Speed at no-load operation ( $n_0$ )	rpm	5 900	5 900	5 700	5 700
No-load current ( $I_0$ )	A	0.33	0.10	0.40	0.20
Permanent stall torque ( $M_{st}$ )	mNm	100	100	200	200
Recommended speed control range	rpm	0 ... 5 000			
Rotor moment of inertia ( $J_r$ )	kgm <sup>2</sup> x10 <sup>-6</sup>	3.42	3.42	6.70	6.70
Motor constant ( $K_E$ )	mVs/rad	40.9	84.2	42.8	83.9
Connection resistance ( $R_v$ )	$\Omega$	0.85	3.20	0.39	1.50
Connection inductance ( $L_v$ )	mH	1.10	4.50	0.50	1.84
Overload protection		To be implemented via the control electronics			
Permissible ambient temperature range ( $T_U$ )	$^{\circ}\text{C}$	0 ... +40			
Weight	kg	0.33	0.33	0.48	0.48
Order no. (wire interface)*	IP 40	932 4220 122	932 4220 123	932 4240 122	932 4240 123

Subject to alterations

\* Classification of protection class refers to installed state with sealing on the flange side  
 \*\* At  $T_U$  max. 40 $^{\circ}\text{C}$   
 \*\*\* Permissible time for peak current: max. 1 sec. – to be repeated only after complete cool down

## Characteristic curve

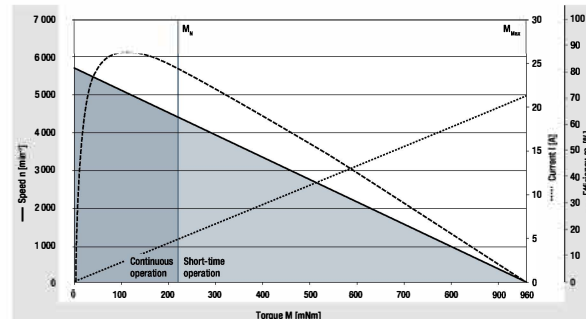
ECI-42.20, 24 V (at 25 $^{\circ}\text{C}$ )



<sup>1)</sup> Nominal data, see table

Characteristic curve 48 V on request

ECI-42.40, 24 V (at 25 $^{\circ}\text{C}$ )

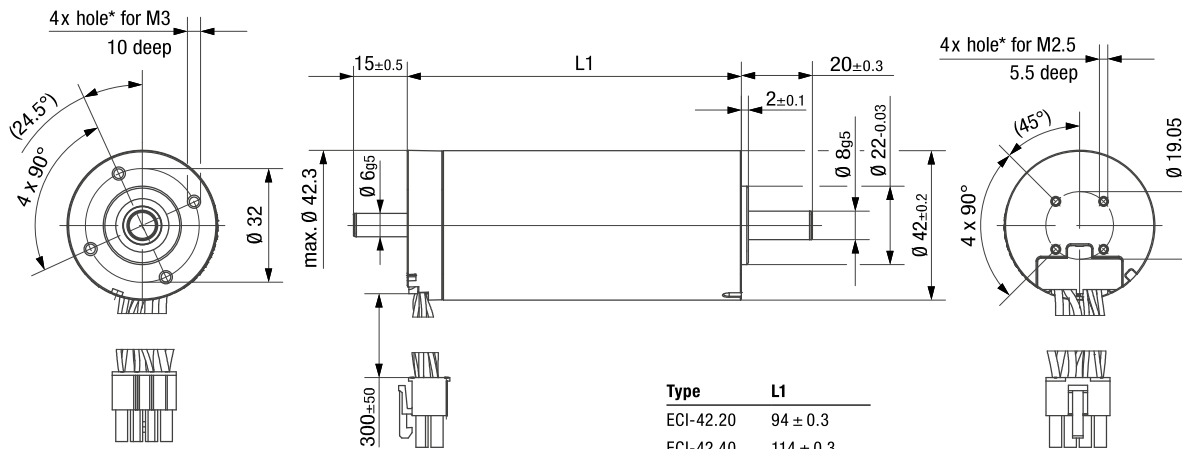


<sup>1)</sup> Nominal data, see table

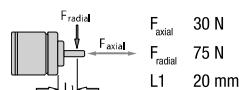
Characteristic curve 48 V on request

**Technical drawing**

All dimensions in mm



Type	L1
ECI-42.20	94 ± 0.3
ECI-42.40	114 ± 0.3



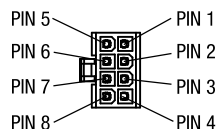
30 N  
75 N  
20 mm  
Permissible shaft load at nominal speed and life expectancy  $L_{10}$  (nominal operation) of 20 000 h (at  $T_v$  max. 40°C)

\* For thread-rolling screws according to DIN 7500

**Electrical connection**

**Supply wire**

No.	Color	Function
1	yellow	Phase W
5	violet	Phase V
6	brown	Phase U



Molex pin no. 39-01-2085

**Signal wire**

No.	Color	Function
4	green	Hall A
3	white	Hall B
8	gray	Hall C
2	red	$U_b$
7	black	GND

**Modular construction kit**

**Brake system**

Spring-applied brake  
BFK 457-01 (page 76)



**Basic motor**



**Planetary gearheads**

NoiselessPlus 42 (page 50)  
Performax® 42 (page 54)  
Performax®Plus 42 (page 58)



**Encoder system**

Optical incremental encoder  
HEDS 5500 (page 78)



**Recommended external control electronics**

VTD-XX.XX-K3	Speed (page 38)
VTD-XX.XX-K4S	Position (page 40)
VTD-60.13-K5SB	Position (page 42)



**Crown gearheads**

EtaCrown® 52 (page 64)  
EtaCrown®Plus 42 (page 68)



For motor-gearbox combinations, depending on the choice of the single components, the maximum allowable torque (gearbox) can be exceeded or respectively not reached.

# Planetary gearheads.

Performax®Plus 42



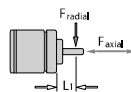
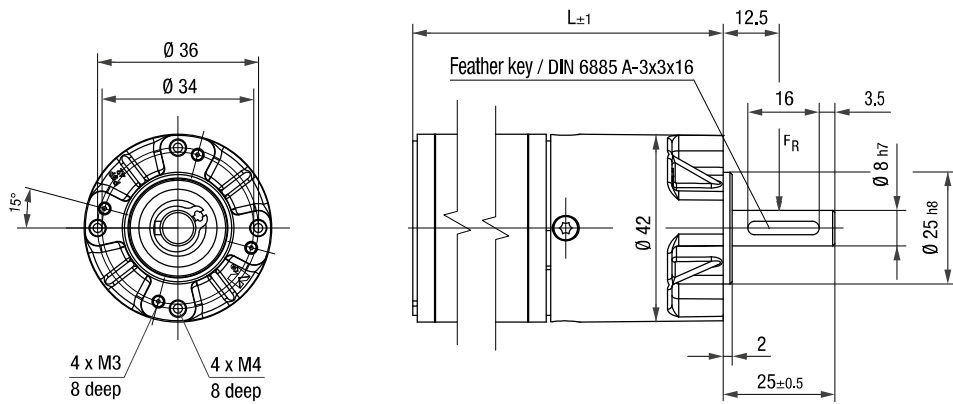
Image of 2-stage gearhead

- High torques thanks to large gearing width in the first gear stage
- Good shock resistance due to housing made of case-hardened steel with linear tooth profile in the output stage
- Very quiet operation due to helical teeth in the first gear stage
- Planetary wheels made of plastic with optimized sliding properties in the first stage ensure smooth operation
- Large effective diameter thanks to radial screw connection

Nominal data		Performax®Plus 42.1	Performax®Plus 42.2
<b>Gearheads</b>			
Reduction ratio		5.00	30.0
No. of stages		1	2
Efficiency		0.90	0.81
Max. input speed ( $n_i$ )	rpm	6 000	6 000
Rated output torque ( $M_{ab}$ )	Nm	2.00	4.48
Short-term torque ( $M_{max}$ )	Nm	5.00	11.2
Gear play	°	0.7 ... 1.2	0.7 ... 1.2
Permissible operating temperature ( $T_U$ )	°C	-20 ... +80	-20 ... +80
Operating mode		S1	S1
Protection class		IP 50	IP 50
Weight	kg	0.22	0.33
Shaft load radial / axial	N	250 / 150	250 / 150
Service life	h	5 000	5 000
Lubrication		Maintenance-free grease lubrication for life	
Installation position		any	
Subject to alterations			

**Technical drawing**

Image of 1-stage gearhead / 2-stage design completely cylindrical / All dimensions in mm



$F_{axial}$  150 N  
 $F_{radial}$  250 N  
 $L1$  12.5 mm

Permissible shaft load at nominal speed and life expectancy  $L_{10}$  (nominal operation) and operating factor  $C_b = 1$  (see page 82) of 5 000 h (at  $T_u$  40°C).

**Length of the possible motor / gearhead combinations**

Motor / gearhead		L - 1-stage	L - 2-stage
ECI-42.20-K1-PP42	mm	133	149
ECI-42.40-K1-PP42	mm	153	169

Subject to alterations

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