

# Torque motor data for ERS170 for not Schunk supported controller

Type of motor: ERS170

Date of creation: 31.03.2022

Description	Symbol	Unit	Value
<b>Data</b>			
Nominal motor torque	$F_{nenn}$ [1]	Nm	5
Motor peak torque	$F_{max}$ [1]	Nm	17
Motor idle current (eff.)	$I_{nenn}$ [1,2,9]	A eff	1,6
Motor peak current (eff.)	$I_{max}$ [1,2,9]	A eff	5,7
max. motor speed	$n_{max}$	U/min	1600
Power loss	$P$ [1]	W	84,9
Torque / Force constant	$k_{Kraft}$	Nm/A	3,1
Motor constant	$k_{Motor}$	Nm/ $\sqrt{W}$	0,5
Thermal time constant	$k_{therm.}$	s	1200
Resistance	$R_{(Phase\ Phase)}$	Ohm	17,1
Inductance	$L_{(Phase\ Phase)}$	mH	24,9
Number of pol pairs			15
Mass of motor	$m$	kg	4,7
Max. intermediate circuit voltage	$U_{max}$ [2]	V	560
Max. coil temperature	$T_{max}$	°C	95
Type of temperature sensor			PTC

## Control parameters

Current loop propotional gain		V/A	11
Current loop integral action time		ms	0,5
Position loop KV-Factor	$k_v$	1000/min	1
Velocity loop smoothing time const.		us	900
Velocity loop propotional gain	$k_p$	N/(mm/min)	0,5
Velocity loop integral action time	$T_N$	ms	16

## Encoder Feedback

Motor	ERS	MRDS	ERD	ERI
Sensor designation	LE100	Encoder Kit R	SKM36	SKS90
Manufactor	SIKO	Numerik	Sick	Sick
Supply voltage	5 V	5V	7-12V	7-12V
Waveform	sin/cos	sin/cos	sin/cos / Hiperface	sin/cos / Hiperface
Reference mark	1	1	--	--
Signal amplitude	1 Vss	1 Vss	1 Vss	1Vss
Feedback revolution	216	2048	128	64

**Motor connection**

Connector	Connector	Contact
Interconnectron Typ: LEAB08AN	U	thick 1
	V	thick 4
	W	thick 3
PTC	GND	thick 2
		thin C
	PTC	thin D

**Motor feedback**

	ERS Sub D pin	MRDS Sub D pin	ERD Sub D pin	ERI Sub D pin
Signal	Pin	Pin	Pin	Pin
0V Sense				
Ref - / EncData-	6	6	6	6
Ref + / EncData+	5	5	5	5
/B (COS-)	4	4	3	3
B(COS+)	3	3	4	4
A(SIN+)	1	1	2	2
/A(SIN-)	2	2	1	1
N.C.				
GND (0V)	7	7	7	7
N.C.				
Ucc	8	8	8	8
N.C.				
GND (Schirm)				
N.C.				

**Anmerkungen**

- [1] Individual values are given at 65°C rise above an ambient temperature of 25°C.
- [2] The individual values are effective values.
- [3] With measuring system with 1 mm resolution.
- [4] With measuring system with 0.02 mm resolution.
- [5] 15 pin Sub-D 2 rows
- [6] 15-pin D-SUB
- [7] adapter cable
- [8] Adapter cable: Hall sensor cable -> control unit
- [9] The peak current/peak torque may be present for a maximum of 4s. Danger of damaging the winding

