DC-Gearmotors

Precious Metal Commutation with integrated Encoder

100 mNm

For combination with
Drive Electronics:
SC 1801

Series 2619 ... SR ... IE2-16

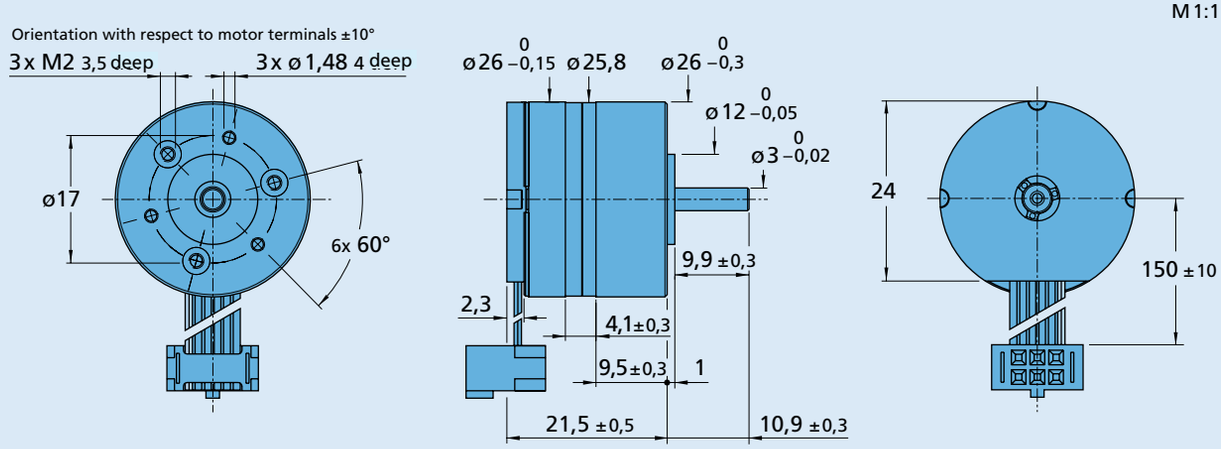
	2619 S		006 SR	012 SR	024 SR	IE2-16
Nominal voltage	U_N		6	12	24	Volt
Terminal resistance	R		8	31,2	118,6	Ω
Output power	$P_{2\ max.}$		1,11	1,14	1,22	W
No-load speed (motor)	n_o		6 700	6 900	7 200	rpm
Speed constant	k_n		1 130	582	304	rpm/V
Back-EMF constant	k_E		0,884	1,72	3,29	mV/rpm
Torque constant	k_M		8,44	16,4	31,4	mNm/A
Current constant	k_I		0,118	0,061	0,032	A/mNm
Slope of n-M curve	Δn/ΔM		1 060	1 090	1 110	rpm/mNm
Rotor inductance	L		420	1 600	5 800	µH
Rotor inertia	J		0,68	0,68	0,68	gcm^2

Housing material		plastic		
Geartrain material		metal		
Backlash, at no-load	≤	4		°
Bearings on output shaft		brass / ceramic bearings	ball bearings	
Shaft load max.:		(standard)	(optional)	N
– radial (5 mm from mounting face)	≤	3,5	10,5	N
– axial	≤	2	5	N
Shaft press fit force, max.	≤	10	10	N
Shaft play:				
– radial (5 mm from mounting face)	≤	0,07	0,03	mm
– axial	≤	0,25	0,25	mm
Operating temperature range		0 ... + 70		°C

Specifications

reduction ratio (rounded)	output speed up to n_{max} rpm	weight with motor g	output torque continuous operation M_{max} mNm	output torque intermittent operation M_{max} mNm	direction of rotation (reversible)	efficiency %
8 : 1	635	25	9	30	=	81
22 : 1	223	26	23	75	≠	73
33 : 1	151	26	30	100	=	60
112 : 1	44	27	93	180	≠	59
207 : 1	24	27	100	180	=	53
361 : 1	14	27	100	180	=	53
814 : 1	6	28	100	180	=	43
1 257 : 1	4	29	100	180	=	43

M 1:1



2619S ... SR ... IE2-16

Integrated optical Encoder		IE2-16	
Lines per revolution	N	16	
Signal output, square wave		2	channels
Supply voltage	U_{DD}	3,2 ... 5,5	V DC
Current consumption, typical (U_{DD} = 5 V DC)	I_{DD}	typ. 8, max. 15	mA
Output current, max. allowable (at U_{out} < 1,5V)	I_{OUT}	5	mA
Pulse width [1]	P	180 ± 45	°e
Phase shift, channal A to B [1]	Φ	90 ± 45	°e
Signal rise/fall time, max. (C_{LOAD} = 50 pF)	tr/tf	2,5 / 0,3	µs
Frequency range [2], up to	f	4,5	kHz

[1] Ambient temperature 22°C (tested at 1kHz)
[2] Velocity (rpm) = f (Hz) x 60/N

Features

In this version, the DC-Micromotors have an optical encoder with two output channels. A code wheel on the shaft is optically captured and further processed. At the encoder outputs, two 90° phase-shifted rectangular signals are available with 16 impulses per motor revolution.

The encoder is suitable for the monitoring and regulation of the speed and direction of rotation and for positioning the drive shaft.

The supply voltage for the encoder and the DC-Micromotor as well as the two channel output signals are interfaced through a ribbon cable with connector.

Full product description

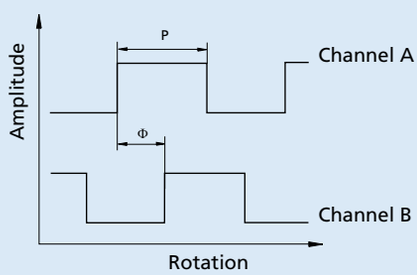
Examples:

2619S006SR 8:1 IE2-16

2619S024SR 1257:1 IE2-16

Output signals / Circuit diagram / Connector information

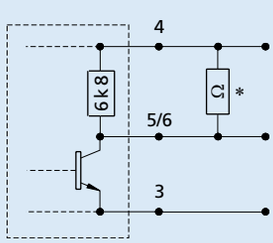
Output signals
with clockwise rotation as seen from the shaft end



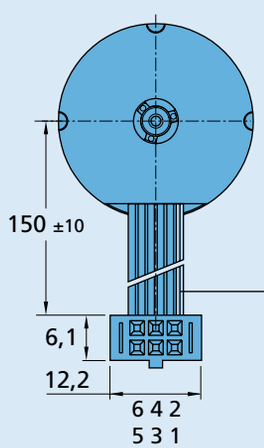
Admissible deviation of phase shift:

$$\Delta\Phi = \left| 90° - \frac{\Phi}{P} * 180° \right| \leq 45°$$

Output circuit



* An additional external pull-up resistor can be added to improve the rise time. Caution: I_{OUT} max. 5 mA must not be exceeded!



Pin Function

1 Motor –
2 Motor +
3 GND
4 U_{DD}
5 channel B
6 channel A

PVC ribbon cable
6-conductors – 0,09 mm²

Connector
DIN-41651
grid 2,54 mm