

DC-Gearmotors

100 mNm

Precious Metal Commutation
with integrated Encoder

For combination with
Drive Electronics:
Speed Controller

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

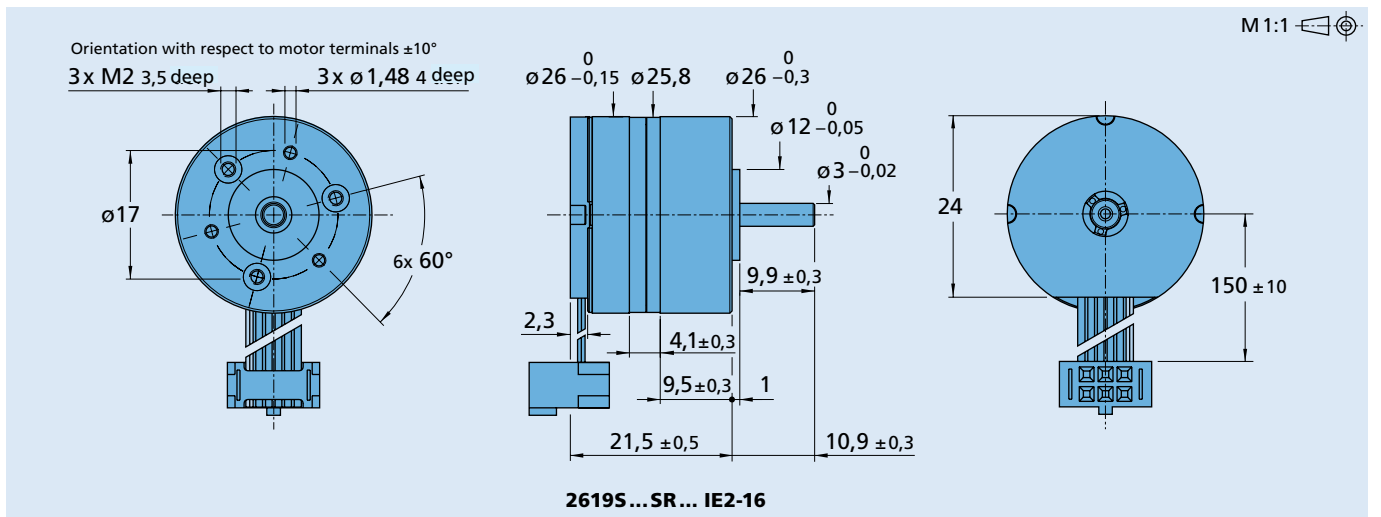
Values at 22°C and nominal voltage	2619 S	006 SR	012 SR	024 SR	IE2-16
Nominal voltage	U_N	6	12	24	Volt
Terminal resistance	R	8	31,2	118,6	Ω
No-load speed (motor)	n_o	6 700	6 900	7 200	min^{-1}
Speed constant	k_n	1 130	582	304	min^{-1}/V
Back-EMF constant	k_E	0,884	1,72	3,29	$\text{mV}/\text{min}^{-1}$
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	$\Delta n/\Delta M$	1 060	1 090	1 110	$\text{min}^{-1}/\text{mNm}$
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	\leq	4			$^\circ$
Bearings on output shaft		brass / ceramic bearings	ball bearings, preloaded		
Shaft load max.:		(standard)	(optional)		
– radial (5 mm from mounting face)	\leq	3,5	10,5		N
– axial	\leq	2	5		N
Shaft press fit force, max.	\leq	10	10		N
Shaft play:					
– radial (5 mm from mounting face)	\leq	0,07	0,03		mm
– axial	\leq	0,25	0		mm
Operating temperature range		0 ... + 70			$^\circ\text{C}$

Specifications

reduction ratio (rounded)	output speed up to n_{max} min^{-1}	weight with motor g	output torque		direction of rotation (reversible)	efficiency %
			continuous operation M_{max} mNm	intermittent operation M_{max} mNm		
8 : 1	635	25	9	30	=	81
22 : 1	223	26	23	75	\neq	73
33 : 1	151	26	30	100	=	66
112 : 1	44	27	93	180	\neq	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

Note: output speed at 5000 min^{-1} input speed. Based on motor 2607 ... SR.



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

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

¹⁾ Ambient temperature 22°C (tested at 1kHz)

²⁾ Velocity (min⁻¹) = *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:

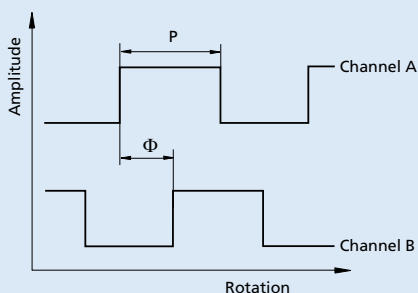
2619S006SR 8:1 IE2-16

2619S024SR 1257:1 IE2-16

Output signals / Circuit diagram / Connector information

Output signals

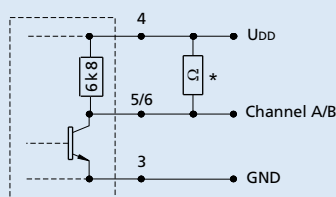
with clockwise rotation as seen from the shaft end



Admissible deviation of phase shift:

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

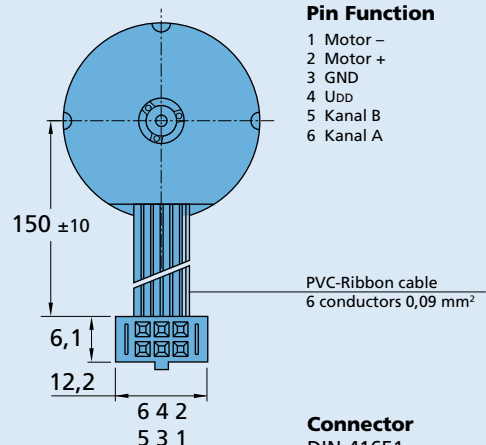
Output circuit



* 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 Kanal B
- 6 Kanal A



Connector

DIN-41651
grid 2,54 mm