

NEW

Industrial Actuator

with multi-turn Absolute Encoder

3 Nm

Serie 6091

	6091 Q	024 DC01	
Nominal voltage	U _N	24	Volt
Terminal resistance, phase-phase	R	4,1	Ω
Output power, max.	P _{2 max.}	32,6	W
No-load speed	n ₀	10 400	rpm
No-load current	I ₀	0,093	A
Stall torque	M _H	120,1	mNm
Friction torque	M _R	1,99	mNm
Speed constant	k _n	448	rpm/V
Back-EMF constant	k _E	2,23	mV/rpm
Torque constant	k _M	21,3	mNm/A
Current constant	k _i	0,05	A/mNm
Slope of n-M curve	Δn/ΔM	86,3	rpm/mNm
Terminal inductance, phase-phase	L	180	μH

Shaft bearings		sintered bearings (standard)	ball bearings (optional)	
Shaft load max.:				
– radial (15 mm from mounting flange)	≤	200	400	N
– axial at standstill	≤	150	150	N
Shaft play:				
– radial	≤	0,1	0,1	mm
– axial	≤	0,4	0,4	mm
Protection classification		IP65		
Housing material		zinc		
Geartrain material		plastic		
Weight		678		g
Operating temperature range		0 ... +60		°C

Specifications

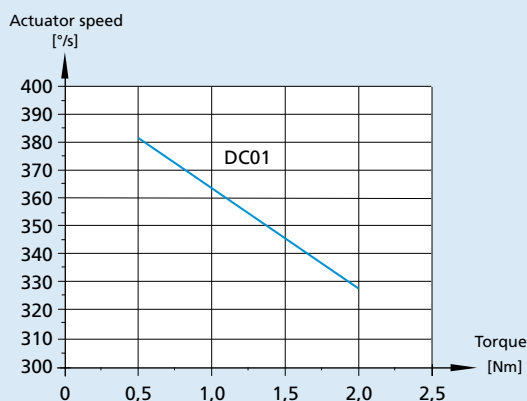
Reduction ratio ¹⁾ (rounded)	output torque		direction of rotation ¹⁾
	continuous operation	intermittent operation	
	M _{max} Nm	M _{max} Nm	
156 : 1	1,5	2,0	CCW
302 : 1	3,0	4,5	CCW

¹⁾ The reduction ratios are rounded, the exact values are available on request or at www.faulhaber.com.

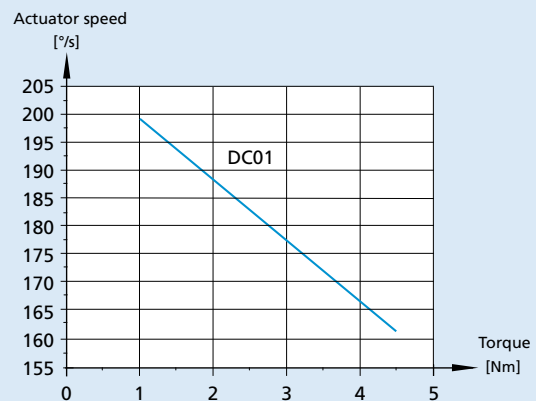
²⁾ CCW = Counter clockwise when viewed from the front of the drive.

Note: The gearhead specifications are given independently from the motor specifications.

Actuator with Gearhead 156:1



Actuator with Gearhead 302:1



The diagram indicates the recommended actuator speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

Features

The encoder is based on a magnetic hall sensor principle and is maintenance free.

The encoder saves and recognizes the actual position after a power supply switch-off or a twisted output shaft in idle condition.


Option **MA** (Multiturn analog): An analog ratiometric output signal is provided over more revolutions depending of the position of the output shaft.

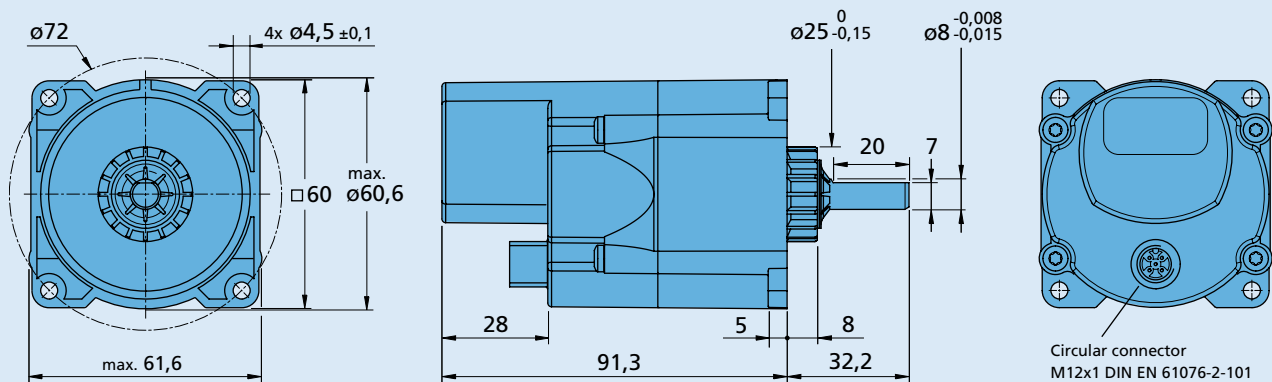
Option **MD** (Multiturn digital): The position of the output shaft can be detected over more revolutions via a RS485 interface. There is only the alternative of a point-to-point connection, no Network availability.

The electrical connection of the Industrial Actuator is carried out by a circular plug-in connector.

Further product modifications, differing to the standard, are available by request. For more information please contact your local sales representative.

Dimensional drawing

scale reduced 



6091Q024DC01 ...

Integrated Absolute Encoder analog		MA-47/75	MA-40/75	
Number of turns	N	46,8	39,6	
Output signal		analog, ratiometric		
Operating voltage	V _{CC}	4,5 ... 5,5		V DC
Current consumption	I _{CC}	typ. 14, max. 17,5		mA
Output resistance	R _{OUT}	100		Ω
Electrical angle	Φ _{el}	16 848	14 256	°
Total number of increments	N _{inc}	3 523	2 981	Inc.
Angular resolution	Φ _{res}	4,8		°
Linearity deviation, max.		± 0,25		%
Lower limit of the linear range	V _{lin, min}	0,05 · V _{CC}		V DC
Upper limit of the linear range	V _{lin, max}	0,95 · V _{CC}		V DC

Features / Connector information

Options

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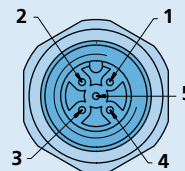
Full product description

- Examples:

6091Q024DC01 MA47/75 K302:1

6091Q024DC01 MA40/75 S156:1

Connector



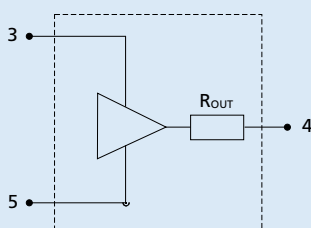
Connection

No.	Function
1	Motor +
2	Motor -
3	Encoder V _{CC} 5V
4	Encoder V _{OUT}
5	Encoder GND

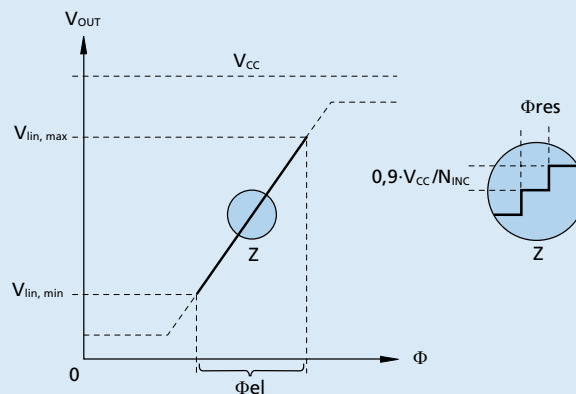
Caution:
Incorrect lead connection will damage the motor electronics!

Output signals / Circuit diagram

Circuit diagram of the output stage



Output signals



Integrated Absolute Encoder digital		MD-81/1053	
Number of turns	N	81	
Supply voltage ($\pm 10\%$)	V _{CC}	24	V DC
Current consumption at 24V, max.	I _{CC}	80	mA
Electrical angle	Φ_{el}	29 160	°
Total number of increments	N _{inc}	85 313	Inc.
Angular resolution	Φ_{res}	0,35	°
Linearity deviation, max.		$\pm 0,25$	%

Connection interface			
Physical interface		RS485, half-duplex	
Topology		Point to point connection	
Termination resistor, integrated		120	Ω
Transfer speed rate		115 200	baud
Scanning rate, max.		2	ms

Features / Connector information

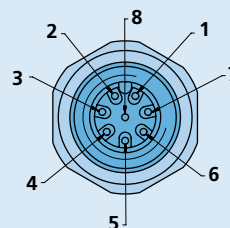
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6091Q024DC01 MD81/1053 K302:1

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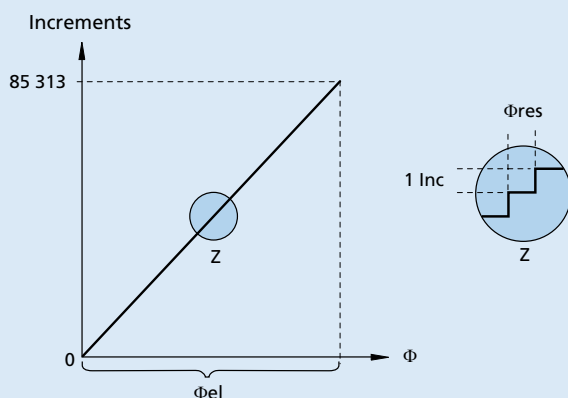
Connection

No.	Function
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2	Motor -
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4	Encoder GND
5	RS485 A
6	RS485 B
7	n.c.
8	n.c.

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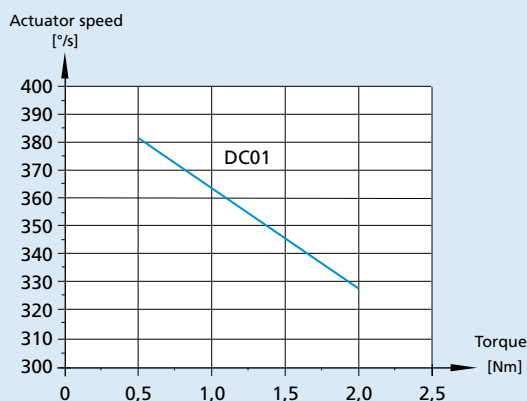
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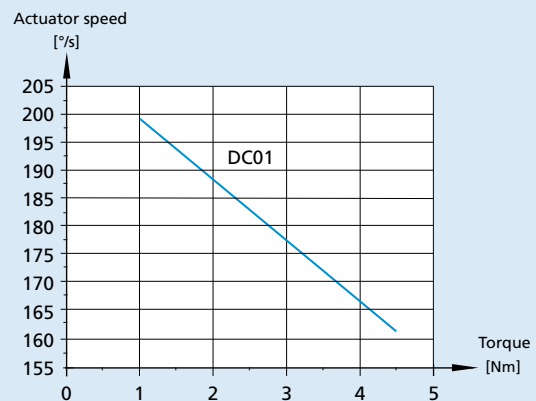
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
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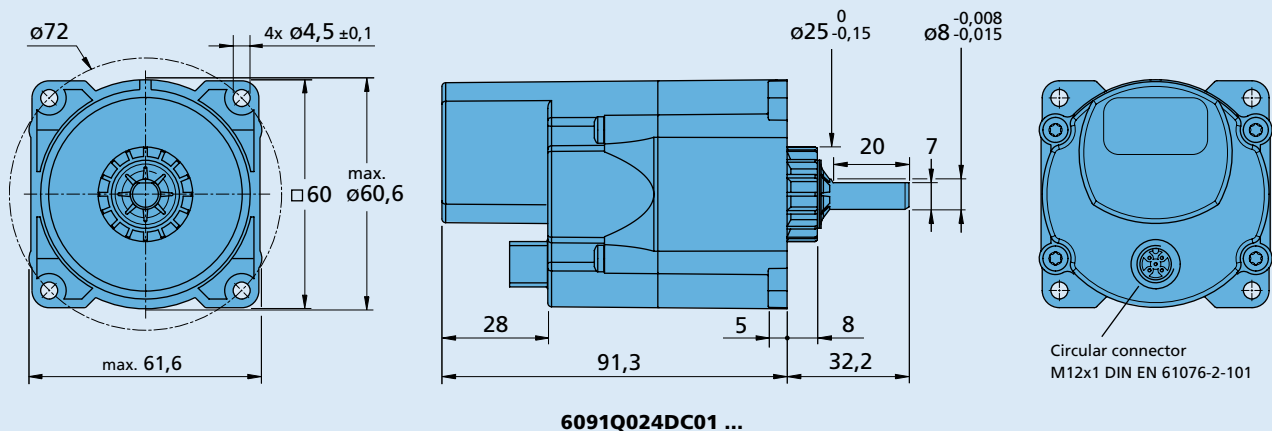
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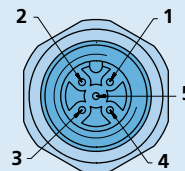
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Connector



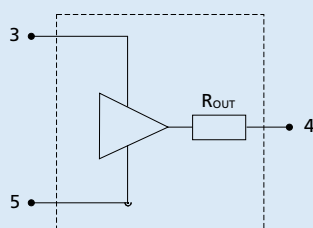
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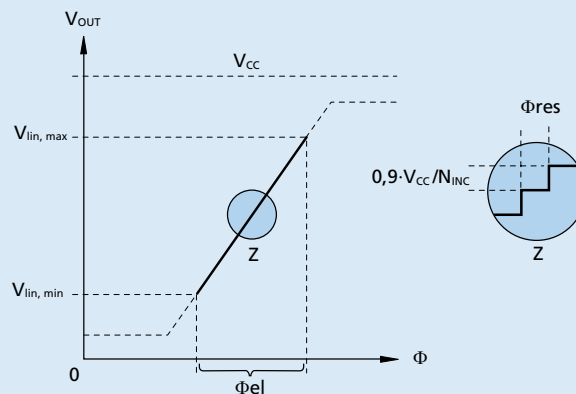
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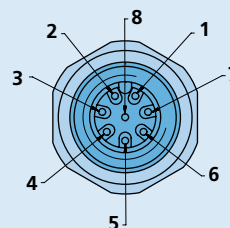
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