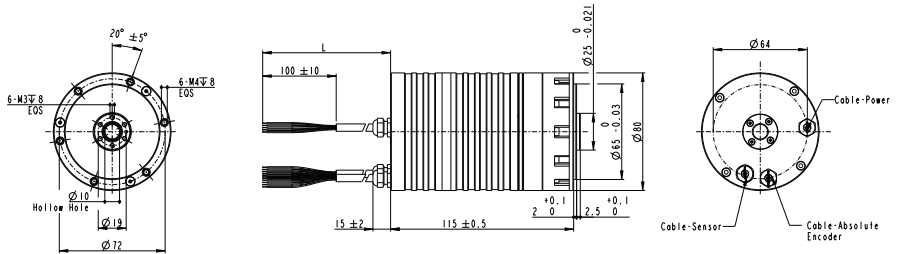


# Robot Joint 60 $\varnothing 80$ mm, 100 Watt

Modular Integrated Robotic Joint



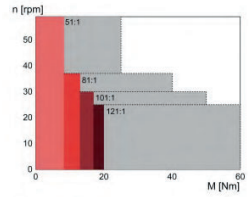
Gear-motor data										
1	Gear Ratio	X:1	51	51	81	81	101	101	121	121
2	Nominal voltage	V	24	48	24	48	24	48	24	48
3	No load speed	rpm	69	69	43	43	35	35	29	29
4	Nominal speed	rpm	59	59	37	37	30	30	25	25
5	Nominal current	A	5.5	2.8	5.5	2.8	5.5	2.8	5.5	2.8
6	Maximum current	A	16.5	8.4	16.5	8.4	16.5	8.4	16.5	8.4
7	Nominal torque	Nm	8.3	9.1	13	14	17	18	20	22
8	Maximum torque	Nm	25	27	40	43	50	54	60	65
9	Torque constant	Nm/A	1.8	3.9	2.9	6.2	3.6	7.7	4.3	9.3
10	Thermal time constant winding	s	12	12	12	12	12	12	12	12

Encoder specifications				Optional			
<b>Incremental encoder</b>				<b>Brake</b>			
12	Resolution, counts per turn	CPT	2048	Supply voltage	VDC	24±10%	
13	Number of channels		3	Duty cycle	%	100	
14	Maximum frequency	kHz	100	Resistance	$\Omega$	35	
15	Supply voltage	VDC	5±10%	Reaction time (coupling)	ms	50	
16	Typical supply current	mA	55	Reaction time (opening)	ms	20	
17	Output signal		RS422	<b>Torque sensor</b>			
<b>Absolute encoder</b>				18	Torque range	Nm	-100...+100
19	Steps per turn		524288	19	Instantaneous torque	Nm	300
20	Resolution (bit single turn)	bit	19	20	Power supply	VDC	5
21	Signal protocol		SSI	21	Output voltage	VDC	2.5±2
22	Data encoding		Binary	22	Bridge resistance nominal	$\Omega$	350
23	Clock frequency	MHz	0.5...2	23	Sensitivity	V/Nm	0.042
24	Timeout (monoflop time)	$\mu$ s	20	24	Axial force for crosstalk	N	250
25	Encoder supply voltage	VDC	5±10%	25	Radial force for crosstalk	N	250
26	Typical supply current	mA	120	<b>Controller</b>			
27	Output signal		RS422	26	Operating voltage	VDC	12... 60
28	Setup time after power on	ms	60	27	Continuous output current	A	8
29	Absolute accuracy	°	±0.06	28	Maximum output current	A	24
30	Repeated accuracy	°	±0.008	Interface			
				CANopen or EtherCAT			

Other specifications			
31	Hollow shaft	mm	10
32	Weight	kg	1.8
33	Cable length (L)	mm	1000
34	Maximum radial load (dynamic)	N	570
35	Maximum axial load (dynamic)	N	570
36	Storage temperature	°C	-10...70
37	Operating temperature	°C	-10...40
38	Non-condensing humidity	%	0...75
39	Number of Pole pairs		7

Cable			
31	Cable length (L)	mm	500, 1500, 2000

Operating Range			
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Connection			
<b>Cable-Power</b>			
40	U	Motor winding 1	AWG16 Red
41	V	Motor winding 2	AWG16 Black
42	W	Motor winding 3	AWG16 White
43	Brake+	Brake power supply+	AWG24 Red
44	Brake-	Brake power supply-	AWG24 Black
<b>Cable-Sensor</b>			
45	V_HALL	Hall sensor power	AWG24 Red/White
46	GND_HALL	Hall sensor ground	AWG24 Black/White
47	H1	Hall sensor 1	AWG24 Yellow
48	H2	Hall sensor 2	AWG24 Brown
49	H3	Hall sensor 3	AWG24 Grey
50	V_ENC	Encoder power supply	AWG24 Red
51	GND_ENC	Encoder ground	AWG24 Black
52	CH A	Channel A	AWG24 Green
53	CH A/	Channel A/	AWG24 Green/Black
54	CH B	Channel B	AWG24 Blue
55	CH B/	Channel B/	AWG24 Blue/Black
56	CH I	Channel Index	AWG24 Orange
57	CH I/	Channel Index/	AWG24 Orange/Black

Cable-Absolute encoder			
V_ABS	SSI encoder power	AWG28	Red
GND	SSI encoder ground	AWG28	Black
CL+	SSI Clock+	AWG28	Green
CL-	SSI Clock-	AWG28	Yellow
DA+	SSI Data+	AWG28	Brown
DA-	SSI Data-	AWG28	Orange