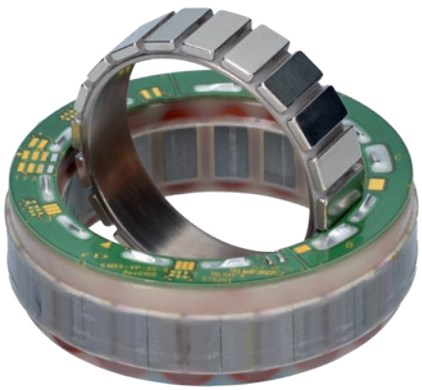
Each moment.
Perfect control.

ILM Series
Frameless servo kits

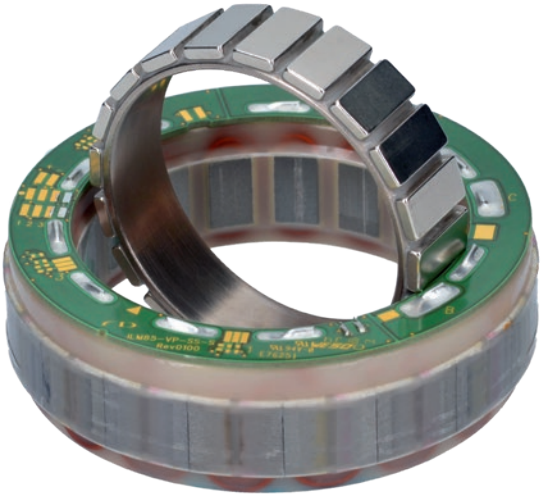


motor modeli :

ILM 25x08 – Star serial

ILM Series

Frameless servo kits



HIGHLIGHTS

- Frameless motors for highest design flexibility
- Available with integrated safety brakes and encoders
- Hollow-shaft capability
- Extra-low voltage 12 V – 48 V
- Highest torque density and dynamics due to excellent copper fill factor
- Low thermal losses due to concentrated coils
- Thermally optimized actuator design
- High control quality due to high bandwidth and lowest harmonics
- Customer-specific tailoring upon request

Frameless servo motors with maximum torque density and freedom of design.

The ILM Series of frameless, stator-rotor installation kits from TQ-RoboDrive utilize integrated drive engineering originally developed by the German Aerospace Center (DLR) for applications in extremely demanding environments. The motors deliver market-leading torque density, unsurpassed precision and excellent overload capability in an exceptionally compact design. TQ-RoboDrive offers development expertise, engineering services and detailed documentation to assist you in implementing customer-specific solutions optimized for size, thermal properties and other requirements. Alternative voltage levels and customized torque-speed characteristics can also be made available upon request.

BASIC DATA

	ILM 25×04	ILM 25×08	ILM 38×06	ILM 38×12	ILM 50×08	ILM 50×14	ILM 70×10	ILM 70×18	ILM 85×04	ILM 85×13	ILM 85×23	ILM 85×26	ILM 115×25	ILM 115×50
Max Power [W]	70	80	110	240	210	210	250	270	290	440	460	470	570	618
Rated voltage U_r* [V]	24	24	24	48	48	48	48	48	48	48	48	48	48	48
Rated torque T_r* [Nm]	0.032	0.063	0.102	0.234	0.298	0.54	0.66	1.24	0.3	1.44	2.56	2.9	3.9	9.51
Peak torque T_{max} at 20% deviation from linearity [Nm]	0.105	0.204	0.32	0.76	0.96	1.75	2.13	4.05	0.99	4.66	8.3	9.4	12.7	31.4
Max rotation speed n_{max} at U_r [rpm]**	24,000***	24,000***	15,000***	15,000***	12,000***	12,000***	10,000	7,340	7,900***	7,900***	5,900	5,400	2,400	1,070
Diameter D [mm]	25	25	38	38	50	50	69	69	85	85	85	85	115	115
Length L [mm]	10.8	15.2	15.3	22.3	16.4	22.8	22.6	30.5	17.6	27.2	37.2	40.7	39	68
Weight m [g]	16	25	53	89	87	135	220	330	210	400	620	670	1,070	2,170
Number of pole pairs	7	7	7	7	10	10	10	10	10	10	10	10	15	15
Rotor inertia J [kgcm²]	0.00147	0.00231	0.0101	0.0203	0.054	0.09	0.196	0.321	0.276	0.61	0.98	1.06	3.93	7.9

* At nominal current. Thermal behavior is strongly dependent on installation situation. Nominal operational temperature of the stator: -40°C to 125°C.
** Theoretical no-load rotation speeds at U_r. Variations can arise from operation with different inverters.
*** Max rotatation speed due to mechanical structure

STAR-SERIAL

	ILM 25×04	ILM 25×08	ILM 38×06	ILM 38×12	ILM 50×08	ILM 50×14	ILM 70×10	ILM 70×18	ILM 85×04	ILM 85×13	ILM 85×23	ILM 85×26	ILM 115×25	ILM 115×50
Rated current I_r* [A]	3.8	4.3	5.5	6.1	5.1	5.3	6.1	6.7	7.2	10.8	11.3	11.5	14.1	15.1
Copper losses $P_{L,r}$ at T_r and 20°C [W]	5.6	10.3	7.9	13.7	10.5	16	13.1	22.2	5.4	19.3	28.7	31.7	20.9	43.4
Torque constant k_T* at 20°C [mNm/A]	8.8	14.7	18.2	39	58	103	109	187	43	134	229	253	281	640
Motor constant kM at 20°C [Nm/√W]	0.0139	0.0197	0.0355	0.064	0.091	0.136	0.184	0.266	0.133	0.33	0.48	0.52	0.87	1.47
Terminal resistance R_{TT}* at 20°C [mΩ]	530	740	350	490	540	770	470	660	140	220	300	320	140	254
Terminal inductance L^{TT}* [µH]	180	330	280	520	490	850	900	1,460	200	560	930	1,040	600	1,570
No load speed [rpm]	22,650	13,530	10,470	10,190	6,850	3,870	3,650	2,120	7,900**	2,950	1,730	1,560	1,400	620

DELTA SERIAL

	ILM 50×08	ILM 50×14	ILM 70×10	ILM 70×18	ILM 85×04	ILM 85×13	ILM 85×23	ILM 85×26	ILM 115×25	ILM 115×50
Rated current I_r* [A]	8.8	9.2	10.6	11.6	12	18.7	19.6	19.9	24	30.2
Copper losses $P_{L,r}$ at T_r and 20°C [W]	10.5	16	13.1	22.2	5.4	19.3	28.7	31.7	20.9	43.4
Torque constant k_T* at 20°C [mNm/A]	33	59	63	108	25	77	132	146	162	370
Motor constant kM at 20°C [Nm/√W]	0.091	0.136	0.184	0.266	0.133	0.33	0.48	0.52	0.87	1.47
Terminal resistance R_{TT}* at 20°C [mΩ]	180	257	157	220	47	73	100	107	47	85
Terminal inductance L_{TT}* [µH]	163	283	303	487	67	187	310	347	200	523
No load speed [rpm]	11,800	6,700	6,300	3,670	7,900**	5,100	290	2,700	2,400	1,070

STAR PARALLEL

	ILM 25×04	ILM 25×08	ILM 38×06	ILM 38×12	ILM 50×08	ILM 50×14	ILM 70×10	ILM 70×18	ILM 85×04	ILM 85×13	ILM 85×23	ILM 85×26
Rated current I_r* [A]	7.5	8.6	11	12.2	10.2	10.6	12.2	13.4	14	21.6	22.6	23
Copper losses $P_{L,r}$ at T_r and 20°C [W]	5.6	10.3	7.9	13.7	10.5	16	13.1	22.2	5.4	21.6	28.7	31.7
Torque constant k_T* at 20°C [mNm/A]	4.4	7.4	9.5	20	29	52	55	94	22	67	115	127
Motor constant kM at 20°C [Nm/√W]	0.0139	0.0197	0.0355	0.064	0.091	0.136	0.184	0.266	0.133	0.33	0.48	0.52
Terminal resistance R_{TT}* at 20°C [mΩ]	133	182	88	123	135	193	118	165	35	55	75	80
Terminal inductance L_{TT}* [µH]	45	83	70	130	123	213	228	365	50	140	233	260
No load speed [rpm]	24,000**	24,000**	15,000**	15,000**	12,000**	12,000**	10,000**	7,340	7,900**	7,900**	5,900	5,400

* At nominal current. Thermal behavior is strongly dependent on installation situation. Nominal operational temperature of the stator: -40°C to 125°C.

** Theoretical no-load rotation speeds at U_r . Variations can arise from operation with different inverters.

DELTA PARALLEL

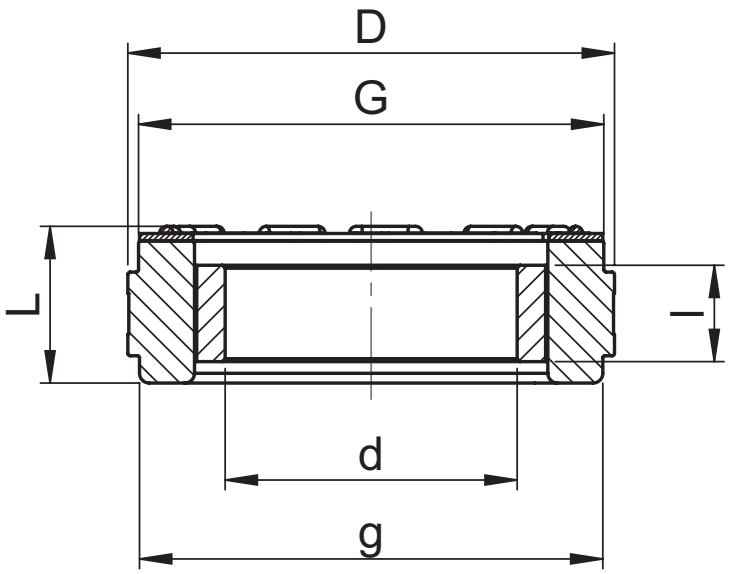
	ILM 50×08	ILM 50×14	ILM 70×10	ILM 70×18	ILM 85×04	ILM 85×13	ILM 85×23	ILM 85×26
Rated current I_r* [A]	17.7	18.4	21.1	23.2	25	37.4	39.1	39.8
Copper losses $P_{L,r}$ at T_r and 20°C [W]	10.5	16	13.1	22.2	5.4	19.3	28.7	31.7
Torque constant k_T* at 20°C [mNm/A]	17	30	31	54	12	39	66	73
Motor constant kM at 20°C [Nm/√W]	0.091	0.136	0.184	0.266	0.133	0.33	0.48	0.52
Terminal resistance R_{TT}* at 20°C [mΩ]	45	64	39	55	12	18	25	27
Terminal inductance L_{TT}* [µH]	41	71	76	122	17	47	78	87
No load speed [rpm]	12,000**	12,000**	10,000**	7,340	7,900**	7,900**	5,900	5,400

* At nominal current. Thermal behavior is strongly dependent on installation situation.
Nominal operational temperature of the stator: -40°C to 125°C.

** Theoretical no-load rotation speeds at U_r . Variations can arise from operation with different inverters.

MOUNTING DIMENSIONS

	ILM 25×04	ILM 25×08	ILM 38×06	ILM 38×12	ILM 50×08	ILM 50×14	ILM 70×10	ILM 70×18	ILM 85×04	ILM 85×13	ILM 85×23	ILM 85×26	ILM 115×25	ILM 115×50
Stator diameter D js8 [mm]	25	25	38	38	50	50	69	69	85	85	85	85	115	115
PCB diameter G [mm]	23.8	23.8	36.2	36.2	47.6	47.6	66.8	66.8	82.8	82.8	82.8	82.8	111.8	111.8
Winding head diameter g [mm]	23.8	23.8	36	36	47.6	47.6	66	66	81	81	81	81	110	110
Stator length L [mm]	10.8	15.2	15.3	22.3	16.4	22.8	22.6	30.5	17.6	27.2	37.2	40.7	39.0	68.4
Hollow-shaft diameter rotor d H7 [mm]	11.6	11.6	18	18	30	30	42	42	52	52	52	52	74	74
Rotor length l [mm]	6.3	9.7	8.1	16.2	9.9	16.1	12.7	20.7	7.1	15.7	25.1	27.2	27.1	54.2



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