IDAM
INA Drives & Mechatronics

- **LDDM**
  Linear Direct Drive Motors

- **ULIM Series**

SCHAEFFLER GROUP

The Perfect Drive for Every Application.

INA - Drives & Mechatronics GmbH & Co. oHG, a company of the Schaeffler Group, specializes in linear and rotary direct drives. These products are supplemented by directly driven positioning systems and related controllers and mechatronics assemblies.
In addition to standard products, IDAM also develops and produces customized drive solutions.
Due to the increasing demands in terms of dynamic performance, precision and cost reduction, direct drives are becoming increasingly more popular in modern machinery and equipment.

The direct connection between motor and accelerated mass increases dynamic and static rigidity, reduces elasticity and therefore enables an extremely high level of positioning performance. Direct drives are non-wearing, as a result of which maintenance and operating costs can be reduced whilst simultaneously increasing availability.
In the industries of machine tools and production machinery, automation, productronics/semicon, measuring technology and medical technology, teams at IDAM have been developing direct drives and complex drive systems since 1990.

The development of the direct drives and the positioning systems is efficiently supported by the integration of models and simulations.

IDAM employs a state-of-the-art quality management system. At IDAM, quality management is a dynamic process which is examined on a daily basis and is thus continuously improved. IDAM is certified according to standard DIN EN ISO 9001:2008.

Specially developed software are used in the development and design of the motors, including tools for mechanical and thermal simulations. The results of these simulations are available to IDAM customers to help them optimize the assembling designs.

Table of Contents

Advantages of Linear Direct Drives

Performance

1. No conversion of motion form
The drive train is free of elasticity, backlash, friction and hysteresis caused by transmission or coupling elements.

2. Compact motor
Thanks to the large feed force with relatively low accelerated mass, very high acceleration performance is achieved. The force can be used from speed 0 right up to the limit speed.

3. Direct measurement of position
Thanks to direct position measurement and the rigid mechanical structure, positioning is performed dynamically and highly accurate.

Operating costs

1. No additional moving parts
Assembly, adjustment and maintenance work for the drive assembly is reduced.

2. No wear in the drive train
Even under high and frequently alternating loads the drive train is extremely durable.
Machine downtimes drop as a result.

3. High availability
In addition to increased service life and reduced wear, the robustness of the linear motors increases the system availability.
Mechanical overload in the drive train does not cause damage as is the case with geared motors.

Design

1. Compact installation space
The compact design results in drive modules with small space requirements.

2. Low number of components
The mature design facilitates the integration of the motor parts in the overall machine concept.
Fewer and more robust parts result in a low failure rate (high MTBF*).

3. Versatile design variants
Facilitate an optimized integration of the motor parts into the overall machine design concept.

*MTBF: Mean Time Between Failures

ULIM Linear Motors
Applications, advantages

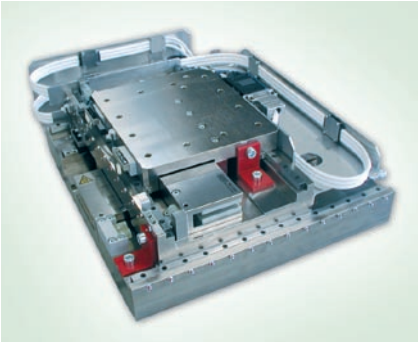
Applications

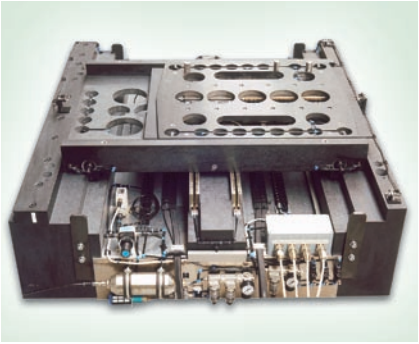
Tasks particulary in the pick and place sector with high dynamics (› 2 m/s, › 20 m/s^2) and applications, which need a highest accuracy of path or constant speed, are advantageous to resolve with this ironless, linear direct drive.
The ULIM series are predestinated for applications in:

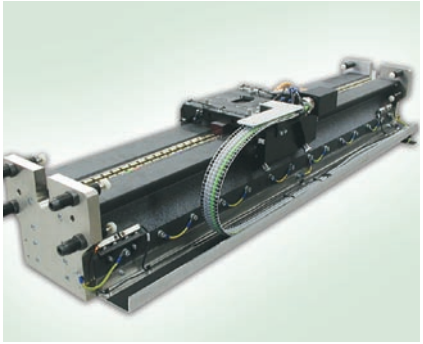
- Semiconductor production
- Electronic assembly
- Measuring and testing systems
- Precision automation
- Precision laser machining etc.

Advantages

- Excellent dynamics realized by an ironless primary part (advantageous force/mass ratio)
- High efficiency
- Very smooth motion (no cogging forces, very small force pulsation)
- High accelerating capacity
- Very high velocity
- Compact design
- Easy mounting in guiding systems
- Excellent static and dynamic load stiffness
- Tracking with high accuracy of path
- Precise positioning without backlash
- High reliability and long lifetime
- Contactless operation without wear and friction
- 2- and 3-phase variants

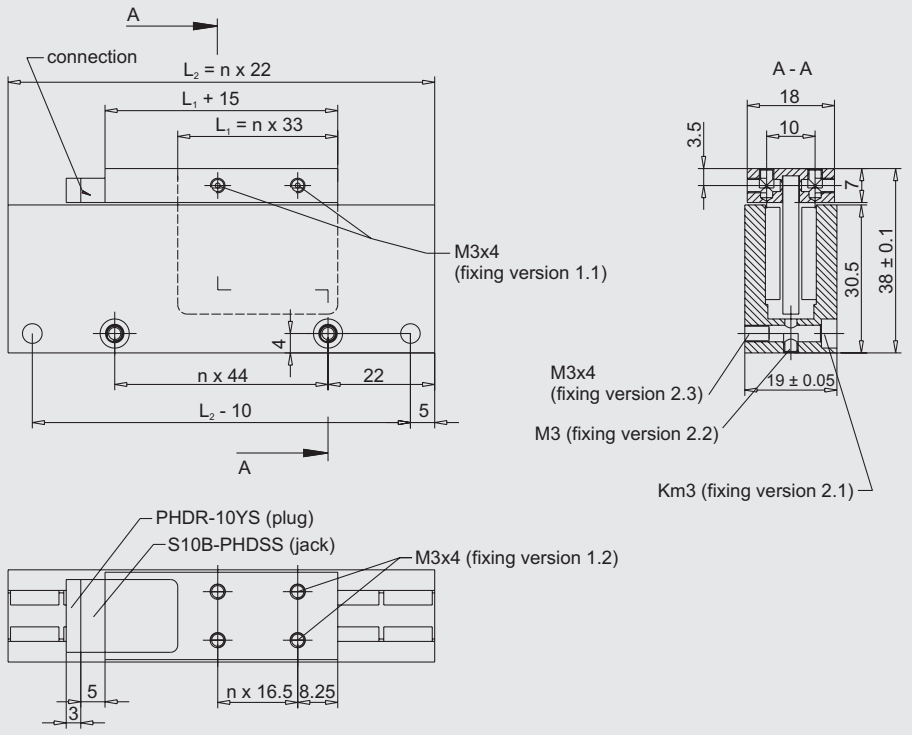

Precision-X-Y-cross stage: MDDS-002-B


2-axes precision cross stage: type 4


High dynamic air bearing precision axis: DDS 51

ULIM3-2P (2-Phase Motor)

Technical data I



Primary part	Symbol	Unit	33	66	99	132
Length coil system	L_1	mm	33	66	99	132
Total length	L_1 + 20	mm	53	86	119	152
Mass	m_1	g	28	54	75	95
Air gap	d	mm	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5
Secondary part	**Symbol**	**Unit**	**SEK**	**SEK**	**SEK**	**SEK**
Mass	m_2	kg/m	2.7	2.7	2.7	2.7
Length (with commutation sensors)	L_2	mm	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20
Length (without commutation sensors)	L_2	mm	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke
Dimensions	**Symbol**	**Unit**	**33**	**66**	**99**	**132**
Total height PRIM + SEK	H	mm	19	19	19	19
Total width PRIM + SEK	B	mm	38	38	38	38

Length of secondary part: raster n x 22 mm (standard: 44 mm / 88 mm / 220 mm / 352 mm)

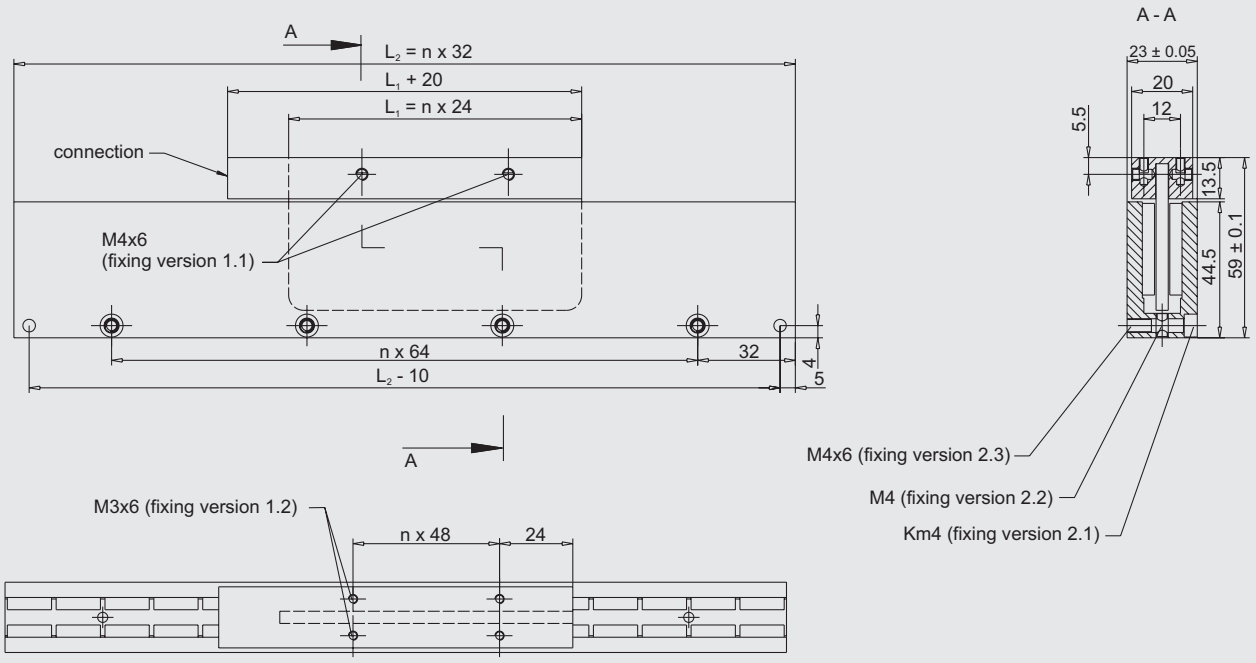
Subject to modification without previous notice. • Tolerance range for values: ±5%

ULIM3-2P (2-Phase Motor)
Technical data II

Performance data	Symbol	Unit	33	66	99	132
Max. impulse force at I_{mp}	F_{mp}	N	14	28	42	55
Peak force at I_p	F_p	N	11	23	34	46
Continuous force at I_{c6}	F_{c6}	N	3	6	8	11
Continuous force at I_{c12}	F_{c12}	N	4	8	12	16
Power loss at F_p (25 °C)	P_{lp}	W	24	48	72	96
Power loss at F_{c6} (25 °C)	P_{l6}	W	1	3	4	6
Power loss at F_{c12} (25 °C)	P_{l12}	W	3	6	9	11
Motor constant (25 °C)	k_m	N/√W	2.3	3.3	4.0	4.7
Damping constant (short circuit)	k_d	N/(m/s)	5	11	16	22
Electric time constant	τ_{el}	ms	0.22	0.22	0.22	0.22
Attraction force between PRIM and SEK	F_a	N	0	0	0	0
Reluctance force	F_r	N	0	0	0	0
Pole pair width	$2\tau_p$	mm	22	22	22	22
Winding data	**Symbol**	**Unit**	**33**	**66**	**99**	**132**
Force constant	k_f	N/A_{rms}	3.1	6.2	9.3	12.4
Back EMF constant, phase-to-phase	k_u	V/(m/s)	2.2	4.4	6.6	8.8
Dynam. force at v_{lim}	F_{lim}	N	8.6	17.2	25.7	34.3
Linear limit speed at F_{lim} and U_{DCL} = 60 V	v_{lim}	m/s	24.2	11.9	7.9	5.8
Electric resistance, ph-to-ph (25 °C)	R_{25}	Ω	0.88	1.76	2.64	3.52
Inductance, phase-to-phase	L	mH	0.19	0.38	0.57	0.76
Max. impulse current	I_{mp}	A_{rms}	4.5	4.5	4.5	4.5
Peak current	I_p	A_{rms}	3.7	3.7	3.7	3.7
Continuous current at P_{l6}	I_{c6}	A_{rms}	0.9	0.9	0.9	0.9
Continuous current at P_{l12}	I_{c12}	A_{rms}	1.3	1.3	1.3	1.3
Permissible winding temperature	ϑ	°C	110	110	110	110
DC link voltage	U_{DCL}	V	60	60	60	60

Subject to modification without previous notice. • Tolerance range for values: ±5%
Tolerance range for values „attraction force“, „reluctance force“, „resistance“ and „inductance“: ±10%

ULIM4-2P (2-Phase Motor)
Technical data I



Primary part	Symbol	Unit	48	96	144	192	240	288
Length coil system	L_1	mm	48	96	144	192	240	288
Total length	$L_1 + 20$	mm	68	116	164	212	260	308
Mass	m_1	g	90	170	250	330	410	490
Air gap	d	mm	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5
Secondary part	**Symbol**	**Unit**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**
Mass	m_2	kg/m	6	6	6	6	6	6
Length (with commutation sensors)	L_2	mm	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20
Length (without commutation sensors)	L_2	mm	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke
Dimensions	**Symbol**	**Unit**	**48**	**96**	**144**	**192**	**240**	**288**
Total height PRIM + SEK	H	mm	23	23	23	23	23	23
Total width PRIM + SEK	B	mm	59	59	59	59	59	59

Length of secondary part: raster n x 32 mm (standard: 64 mm / 128 mm / 320 mm / 512 mm)

Subject to modification without previous notice. • Tolerance range for values: ±5%

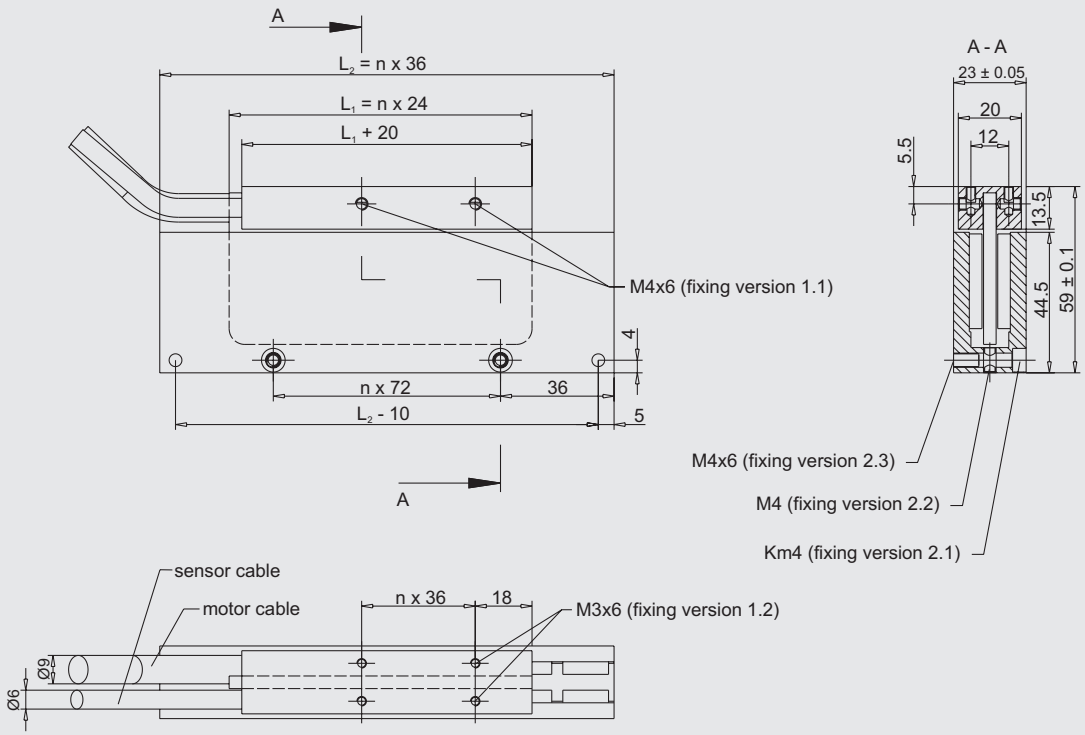
ULIM4-2P (2-Phase Motor)
Technical data II

Performance data	**Symbol**	**Unit**	**48**	**96**	**144**	**192**	**240**	**288**
Max. impulse force at I_{mp}	F_{mp}	N	54	107	161	213	268	320
Peak force at I_p	F_p	N	44	88	133	176	221	264
Continuous force at I_{c6}	F_{c6}	N	11	22	33	43	54	65
Continuous force at I_{c12}	F_{c12}	N	15	31	46	61	77	92
Power loss at F_p (25 °C)	P_{lp}	W	90	180	269	359	449	539
Power loss at F_{c6} (25 °C)	P_{l6}	W	5	11	16	22	27	32
Power loss at F_{c12} (25 °C)	P_{l12}	W	11	22	32	43	54	65
Motor constant (25 °C)	k_m	N/√W	4.7	6.6	8.1	9.3	10.4	11.4
Damping constant (short circuit)	k_d	N/(m/s)	22	43	65	87	109	130
Electric time constant	τ_{el}	ms	0.37	0.37	0.37	0.37	0.37	0.37
Attraction force between PRIM and SEK	F_a	N	0	0	0	0	0	0
Reluctance force	F_r	N	0	0	0	0	0	0
Pole pair width	$2\tau_p$	mm	32	32	32	32	32	32
Winding data	**Symbol**	**Unit**	**48**	**96**	**144**	**192**	**240**	**288**
Force constant	k_f	N/A_{rms}	12.0	24.0	23.0	30.7	38.4	46.0
Back EMF constant, phase-to-phase	k_u	V/(m/s)	8.5	17.0	16.3	21.8	27.2	32.6
Dynam. force at v_{lim}	F_{lim}	N	33.2	66.3	99.1	132.2	165.2	198.3
Linear limit speed at F_{lim} and U_{DCL} = 160 V	v_{lim}	m/s	15.7	7.2	7.5	5.3	4.0	3.1
Electric resistance, ph-to-ph (25 °C)	R_{25}	Ω	3.30	6.60	4.08	5.44	6.80	8.16
Inductance, phase-to-phase	L	mH	1.22	2.44	1.50	2.00	2.50	3.00
Max. impulse current	I_{mp}	A_{rms}	4.5	4.5	7.0	7.0	7.0	7.0
Peak current	I_p	A_{rms}	3.7	3.7	5.7	5.7	5.7	5.7
Continuous current at P_{l6}	I_{c6}	A_{rms}	0.9	0.9	1.4	1.4	1.4	1.4
Continuous current at P_{l12}	I_{c12}	A_{rms}	1.3	1.3	2.0	2.0	2.0	2.0
Permissible winding temperature	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	160	160	160	160	160	160

Subject to modification without previous notice. • Tolerance range for values: ±5%
Tolerance range for values „attraction force“, „reluctance force“, „resistance“ and „inductance“: ±10%

ULIM4-3P (3-Phase Motor)

Technical data I



Primary part	Symbol	Unit	72	144	216	288
Length coil system	L_1	mm	72	144	216	288
Total length	$L_1 + 20$	mm	92	164	236	308
Mass	m_1	g	130	250	370	490
Air gap	d	mm	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5
Secondary part	**Symbol**	**Unit**	**SEK**	**SEK**	**SEK**	**SEK**
Mass	m_2	kg/m	6	6	6	6
Length (with commutation sensors)	L_2	mm	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20
Length (without commutation sensors)	L_2	mm	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke
Dimensions	**Symbol**	**Unit**	**72**	**144**	**216**	**288**
Total height PRIM + SEK	H	mm	23	23	23	23
Total width PRIM + SEK	B	mm	59	59	59	59

Length of secondary part: raster n x 36 mm (standard: 72 mm / 144 mm / 360 mm / 576 mm)

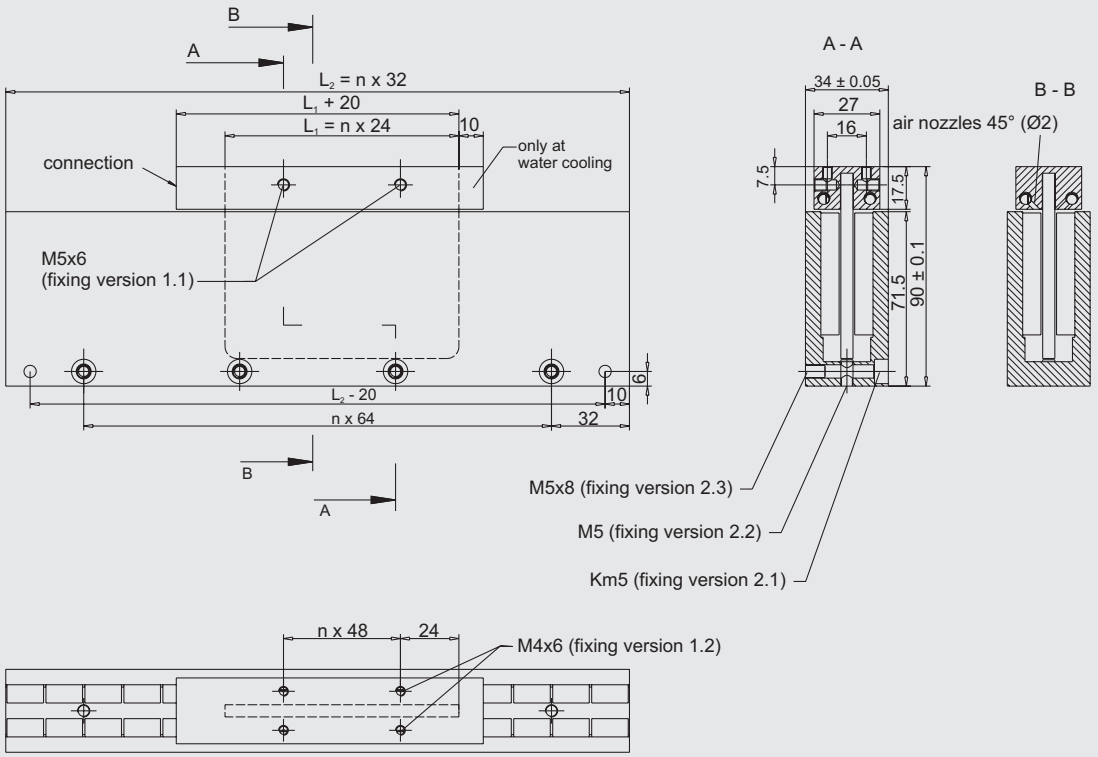
Subject to modification without previous notice. • Tolerance range for values: ±5%

ULIM4-3P (3-Phase Motor)
Technical data II

Performance data	Symbol	Unit	72	144	216	288
Max. impulse force at I_{mp}	F_{mp}	N	80	161	241	320
Peak force at I_p	F_p	N	66	133	199	264
Continuous force at I_{c6}	F_{c6}	N	16	32	49	65
Continuous force at I_{c12}	F_{c12}	N	23	46	69	92
Power loss at F_p (25 °C)	P_{lp}	W	135	269	404	539
Power loss at F_{c6} (25 °C)	P_{l6}	W	8	16	24	32
Power loss at F_{c12} (25 °C)	P_{l12}	W	16	32	48	65
Motor constant (25 °C)	k_m	N/√W	5.7	8.1	9.9	11.4
Damping constant (short circuit)	k_d	N/(m/s)	32	65	98	130
Electric time constant	τ_{el}	ms	0.53	0.53	0.53	0.53
Attraction force between PRIM and SEK	F_a	N	0	0	0	0
Reluctance force	F_r	N	0	0	0	0
Pole pair width	$2\tau_p$	mm	36	36	36	36
Winding data	**Symbol**	**Unit**	**72**	**144**	**216**	**288**
Force constant	k_f	N/A_{rms}	18.0	23.0	34.5	46.0
Back EMF constant, phase-to-phase	k_u	V/(m/s)	14.7	18.8	28.2	37.6
Dynam. force at v_{lim}	F_{lim}	N	50	99	149	198
Linear limit speed at F_{lim} and U_{DCL} = 300 V	v_{lim}	m/s	16.7	12.7	7.9	5.5
Electric resistance, ph-to-ph (25 °C)	R_{25}	Ω	6.6	5.4	8.2	10.9
Inductance, phase-to-phase	L	mH	3.5	2.9	4.3	5.8
Max. impulse current	I_{mp}	A_{rms}	4.5	7.0	7.0	7.0
Peak current	I_p	A_{rms}	3.7	5.7	5.7	5.7
Continuous current at P_{l6}	I_{c6}	A_{rms}	0.9	1.4	1.4	1.4
Continuous current at P_{l12}	I_{c12}	A_{rms}	1.3	2.0	2.0	2.0
Permissible winding temperature	ϑ	°C	110	110	110	110
DC link voltage	U_{DCL}	V	300	300	300	300

Subject to modification without previous notice. • Tolerance range for values: ±5%
Tolerance range for values „attraction force“, „reluctance force“, „resistance“ and „inductance“: ±10%

ULIM5-2P (2-Phase Motor)
Technical data I



Primary part	**Symbol**	**Unit**	**96**	**144**	**192**	**240**	**288**	**384**	**432**
Length coil system	L_1	mm	96	144	192	240	288	384	432
Total length	L_1 + 20	mm	116	164	212	260	308	404	452
Mass	m_1	g	330	490	650	810	970	1280	1440
Air gap	d	mm	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75
Secondary part	**Symbol**	**Unit**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**
Mass	m_2	kg/m	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Length (with commutation sensors)	L_2	mm	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20
Length (without commutation sensors)	L_2	mm	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke
Dimensions	**Symbol**	**Unit**	**96**	**144**	**192**	**240**	**288**	**384**	**432**
Total height PRIM + SEK	H	mm	34	34	34	34	34	34	34
Total width PRIM + SEK	B	mm	90	90	90	90	90	90	90

Length of secondary part: raster n x 32 mm (standard: 64 mm / 128 mm / 320 mm / 512 mm)

Subject to modification without previous notice. • Tolerance range for values: ±5%

ULIM5-2P (2-Phase Motor)
Technical data II

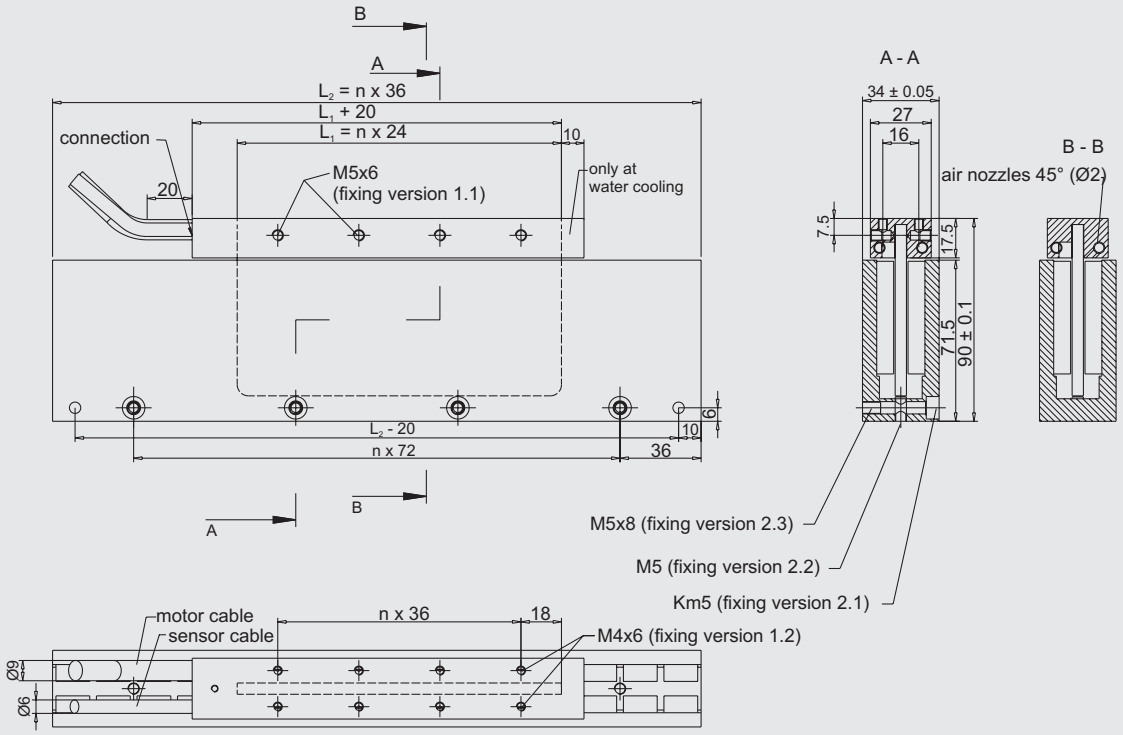
Performance data	Symbol	Unit	96	144	192	240	288	384	432
Max. impulse force at I_{mp}	F_{mp}	N	237	353	474	589	711	942	1067
Peak force at I_p	F_p	N	190	292	392	486	588	778	882
Continuous force at I_{c6}	F_{c6}	N	47	72	96	119	144	191	217
Continuous force at I_{c12}	F_{c12}	N	66	101	136	169	204	270	306
Power loss at F_p (25 °C)	P_{lp}	W	322	510	686	850	1030	1360	1544
Power loss at F_{c6} (25 °C)	P_{l6}	W	19	31	41	51	62	82	93
Power loss at F_{c12} (25 °C)	P_{l12}	W	39	61	82	102	124	163	185
Motor constant (25 °C)	k_m	N/√W	10.6	12.9	15.0	16.7	18.3	21.1	22.4
Damping constant (short circuit)	k_d	N/(m/s)	112	167	224	278	336	445	504
Electric time constant	τ_{el}	ms	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Attraction force between PRIM and SEK	F_a	N	0	0	0	0	0	0	0
Reluctance force	F_r	N	0	0	0	0	0	0	0
Pole pair width	$2\tau_p$	mm	32	32	32	32	32	32	32

Winding data	Symbol	Unit	96	144	192	240	288	384	432
Force constant	k_f	N/A_{rms}	34.1	26.4	34.1	26.4	51.2	52.7	51.2
Back EMF constant, phase-to-phase	k_u	V/(m/s)	24.2	18.7	24.2	18.7	36.3	37.4	36.3
Dynam. force at v_{lim}	F_{lim}	N	100.0	180.0	220.0	320.0	500.0	700.0	780.0
Linear limit speed at F_{lim} and U_{DCL} = 160 V	v_{lim}	m/s	5.0	4.0	5.6	3.9	2.5	2.7	2.8
Electric resistance, ph-to-ph (25 °C)	R_{25}	Ω	5.20	2.08	2.60	1.25	3.90	3.13	2.60
Inductance, phase-to-phase	L	mH	2.6	1.1	1.3	0.6	2.0	1.6	1.3
Max. impulse current	I_{mp}	A_{rms}	7.0	13.4	13.9	22.3	13.9	17.9	20.9
Peak current	I_p	A_{rms}	5.6	11.1	11.5	18.4	11.5	14.8	17.2
Continuous current at P_{l6}	I_{c6}	A_{rms}	1.4	2.7	2.8	4.5	2.8	3.6	4.2
Continuous current at P_{l12}	I_{c12}	A_{rms}	1.9	3.8	4.0	6.4	4.0	5.1	6.0
Permissible winding temperature	ϑ	°C	110	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	160	160	160	160	160	160	160

Subject to modification without previous notice. • Tolerance range for values: ±5%
Tolerance range for values „attraction force“, „reluctance force“, „resistance“ and „inductance“: ±10%

ULIM5-3P (3-Phase Motor)

Technical data I



Primary part	Symbol	Unit	72	144	216	288	360	432
Length coil system	L_1	mm	72	144	216	288	360	432
Total length	$L_1 + 20$	mm	92	164	236	308	380	452
Mass	m_1	g	260	490	730	970	1210	1440
Air gap	d	mm	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75
Secondary part	**Symbol**	**Unit**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**
Mass	m_2	kg/m	13.4	13.4	13.4	13.4	13.4	13.4
Length (with commutation sensors)	L_2	mm	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20
Length (without commutation sensors)	L_2	mm	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke
Dimensions	**Symbol**	**Unit**	**72**	**144**	**216**	**288**	**360**	**432**
Total height PRIM + SEK	H	mm	34	34	34	34	34	34
Total width PRIM + SEK	B	mm	90	90	90	90	90	90

Length of secondary part: raster n x 36 mm (standard: 72 mm / 144 mm / 360 mm / 576 mm)

Subject to modification without previous notice. • Tolerance range for values: ±5%

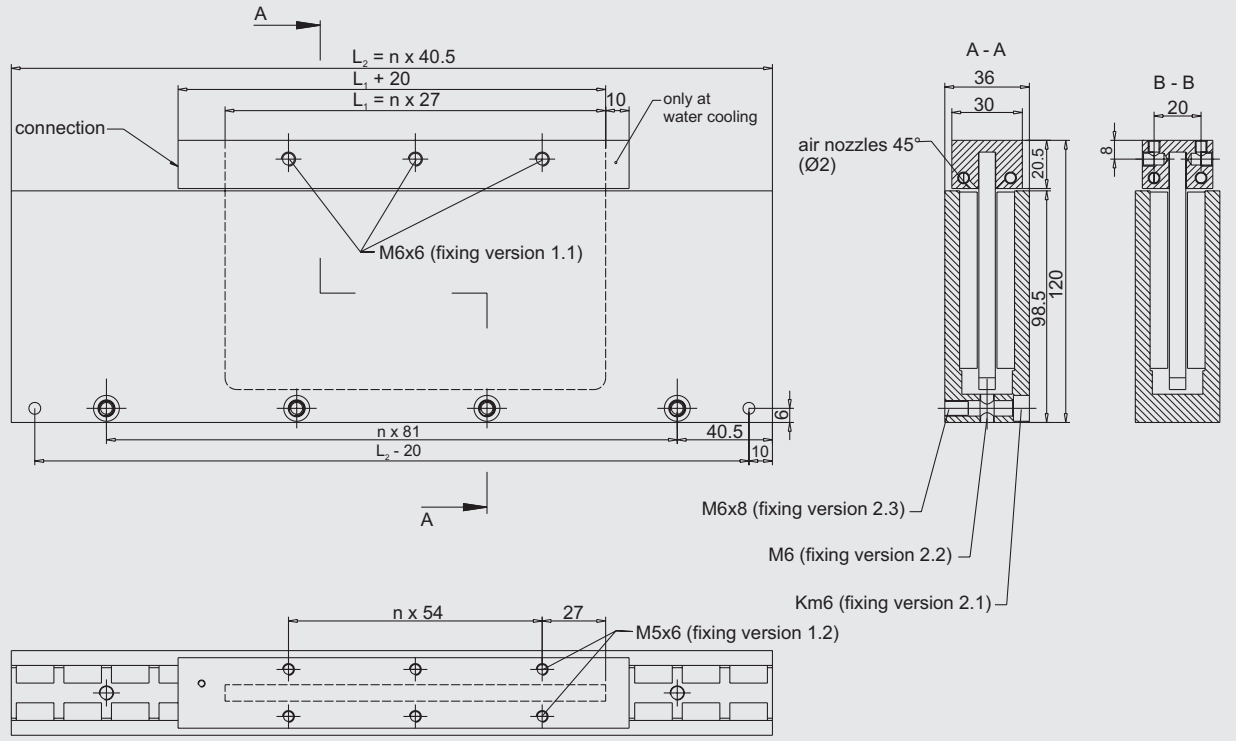
ULIM5-3P (3-Phase Motor)
Technical data II

Performance data	Symbol	Unit	72	144	216	288	360	432
Max. impulse force at I_{mp}	F_{mp}	N	182	361	541	729	902	1094
Peak force at I_p	F_p	N	151	307	460	603	766	904
Continuous force at I_{c6}	F_{c6}	N	37	75	113	148	188	221
Continuous force at I_{c12}	F_{c12}	N	52	106	159	209	265	313
Power loss at F_p (25 °C)	P_{lp}	W	257	540	810	1030	1350	1544
Power loss at F_{c6} (25 °C)	P_{l6}	W	15	32	49	62	81	93
Power loss at F_{c12} (25 °C)	P_{l12}	W	31	65	97	124	162	185
Motor constant (25 °C)	k_m	N/√W	9.4	13.2	16.2	18.8	20.9	23.0
Damping constant (short circuit)	k_d	N/(m/s)	88	174	261	353	435	529
Electric time constant	τ_{el}	ms	0.53	0.53	0.53	0.53	0.53	0.53
Attraction force between PRIM and SEK	F_a	N	0	0	0	0	0	0
Reluctance force	F_r	N	0	0	0	0	0	0
Pole pair width	$2\tau_p$	mm	36	36	36	36	36	36
Winding data	**Symbol**	**Unit**	**72**	**144**	**216**	**288**	**360**	**432**
Force constant	k_f	N/A_{rms}	26.2	40.4	40.4	52.5	40.4	52.5
Back EMF constant, phase-to-phase	k_u	V/(m/s)	21.5	33.0	33.0	42.9	33.0	42.9
Dynam. force at v_{lim} (U_{DCL} = 300 V)	F_{lim}	N	30	180	330	460	610	770
Linear limit speed at F_{lim} and U_{DCL} = 300 V	v_{lim}	m/s	8.0	6.2	6.1	4.5	6.1	4.5
Electric resistance, ph-to-ph (25 °C)	R_{25}	Ω	5.2	6.3	4.2	5.2	2.5	3.5
Inductance, phase-to-phase	L	mH	2.8	3.3	2.2	2.8	1.3	1.8
Max. impulse current at 50 A/mm^2	I_{mp}	A_{rms}	7.0	8.9	13.4	13.9	22.3	20.9
Peak current	I_p	A_{rms}	5.7	7.6	11.4	11.5	19.0	17.2
Continuous current at P_{l6}	I_{c6}	A_{rms}	1.4	1.9	2.8	2.8	4.6	4.2
Continuous current at P_{l12}	I_{c12}	A_{rms}	2.0	2.6	3.9	4.0	6.6	6.0
Permissible winding temperature	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	300	300	300	300	300	300

Subject to modification without previous notice. • Tolerance range for values: ±5%
Tolerance range for values „attraction force“, „reluctance force“, „resistance“ and „inductance“: ±10%

ULIM7-3P (3-Phase Motor)

Technical data I



Primary part	**Symbol**	**Unit**	**81**	**162**	**243**	**324**	**405**	**486**
Length coil system	L_1	mm	81	162	243	324	405	486
Total length	$L_1 + 20$	mm	101	182	263	344	425	506
Mass	m_1	g	455	930	1325	1760	2195	2630
Air gap	d	mm	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75	2 x 0.75
Secondary part	**Symbol**	**Unit**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**	**SEK**
Mass	m_2	kg/m	16	16	16	16	16	16
Length (with commutation sensors)	L_2	mm	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20	L_1+stroke+20
Length (without commutation sensors)	L_2	mm	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke	L_1+stroke
Dimensions	**Symbol**	**Unit**	**81**	**162**	**243**	**324**	**405**	**486**
Total height PRIM + SEK	H	mm	36	36	36	36	36	36
Total width PRIM + SEK	B	mm	120	120	120	120	120	120

Length of secondary part: raster n x 40.5 mm (standard: 81 mm / 162 mm / 405 mm / 648 mm)

Subject to modification without previous notice. • Tolerance range for values: ±5%

ULIM7-3P (3-Phase Motor)
Technical data II

Performance data	Symbol	Unit	81	162	243	324	405	486
Max. impulse force at I_{mp}	F_{mp}	N	390	779	1148	1558	1914	2337
Peak force at I_p	F_p	N	322	644	975	1288	1625	1932
Continuous force at I_{c6}	F_{c6}	N	79	158	239	315	398	473
Continuous force at I_{c12}	F_{c12}	N	112	223	338	446	563	669
Power loss at F_p (25 °C)	P_{lp}	W	540	1079	1639	2158	2732	3237
Power loss at F_{c6} (25 °C)	P_{l6}	W	32	65	98	129	164	194
Power loss at F_{c12} (25 °C)	P_{l12}	W	65	129	197	259	328	388
Motor constant (25 °C)	k_m	N/√W	13.9	19.6	24.1	27.7	31.1	34.0
Damping constant (short circuit)	k_d	N/(m/s)	192	384	580	769	967	1153
Electric time constant	τ_{el}	ms	0.90	0.90	0.89	0.90	0.89	0.90
Attraction force between PRIM and SEK	F_a	N	0	0	0	0	0	0
Reluctance force	F_r	N	0	0	0	0	0	0
Pole pair width	$2\tau_p$	mm	40.5	40.5	40.5	40.5	40.5	40.5
Winding data	**Symbol**	**Unit**	**81**	**162**	**243**	**324**	**405**	**486**
Force constant	k_f	N/A_{rms}	56.0	56.0	85.7	112.1	85.7	112.1
Back EMF constant, phase-to-phase	k_u	V/(m/s)	45.8	45.8	70.1	91.7	70.1	91.7
Dynam. force at v_{lim}	F_{lim}	N	241	483	731	966	1219	1449
Linear limit speed at F_{lim} and U_{DCL} = 600 V	v_{lim}	m/s	10.8	10.8	6.4	4.5	6.4	4.5
Electric resistance, ph-to-ph (25 °C)	R_{25}	Ω	10.9	5.5	8.4	10.9	5.1	7.3
Inductance, phase-to-phase	L	mH	9.8	4.9	7.5	9.8	4.5	6.5
Max. impulse current at 50 A/mm²	I_{mp}	A_{rms}	7.0	13.9	13.4	13.9	22.3	20.9
Peak current	I_p	A_{rms}	5.7	11.5	11.4	11.5	19.0	17.2
Continuous current at P_{l6}	I_{c6}	A_{rms}	1.4	2.8	2.8	2.8	4.6	4.2
Continuous current at P_{l12}	I_{c12}	A_{rms}	2.0	4.0	3.9	4.0	6.6	6.0
Permissible winding temperature	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Subject to modification without previous notice. • Tolerance range for values: ±5%
Tolerance range for values „attraction force“, „reluctance force“, „resistance“ and „inductance“: ±10%

Check List for Your Enquiry

Send by fax to: +49 3681 7574-30

This check list can also be downloaded from the download centre at www.idam.de.

Company	**Contact person**	**Industry / appellation of project**
Telephone	**Fax**	**E-mail**

Brief description

Motor ☐ **System** ☐ **Axis within a multi-axis system** ☐

Spatial position of drive axis

Type of weight compensation: _____

Installation conditions for drive

(sketch or drawing, if appropriate)

Max. installation dimensions [mm]: _____

(length/width/height)

Mechanical interface: _____

Ambient conditions

Temperature [K]: _____

Contamination: _____

Protection class (IP): _____

Motion variables

Stroke s [mm]: _____

Payload [kg]: _____

External forces [N]: _____

Maximale speed [m/s]: _____

Constant velocity fluctuations [%] at: _____

Shortest acceleration

and/or deceleration time [ms]: _____

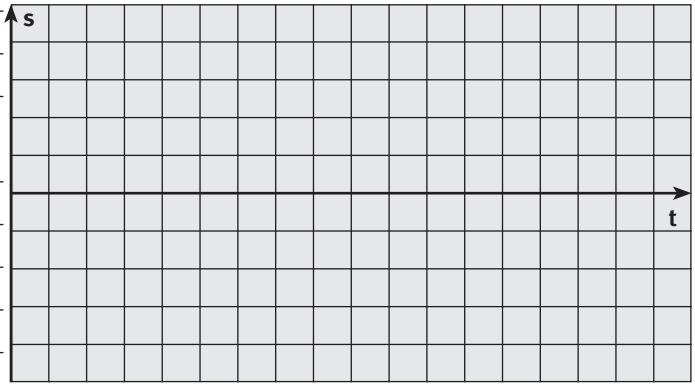
Overshoot in position [µm]: _____

Settling time [ms]: _____

Typical cycle per time (diagram): _____

Service life/operating hours [h]: _____

sketch



Required accuracies

(sketch or drawing, if appropriate)

Positioning accuracy [µm]: _____

Repeatability [µm]: _____

Cooling

Cooling permissible?

Yes ☐ No ☐

Oil ☐ Water ☐ Air ☐

Maximum permissible temperature of

primary part [K]: _____

secondary part [K]: _____

Controller

Present?

Yes ☐ No ☐

DC link voltage [V_{DC}]: _____

Controller type:

Components: Servo controller only ☐

Complete controller ☐

Positioning: Point-to-point control ☐

Continuous path control ☐

sketch

Interfaces: _____

Options: _____

General information

Accessories: _____

Single unit ☐ Series ☐ Prototype for series ☐

Anticipated yearly demand: _____

Planned series launch: _____

Price expectation or

costs for previous solution: _____

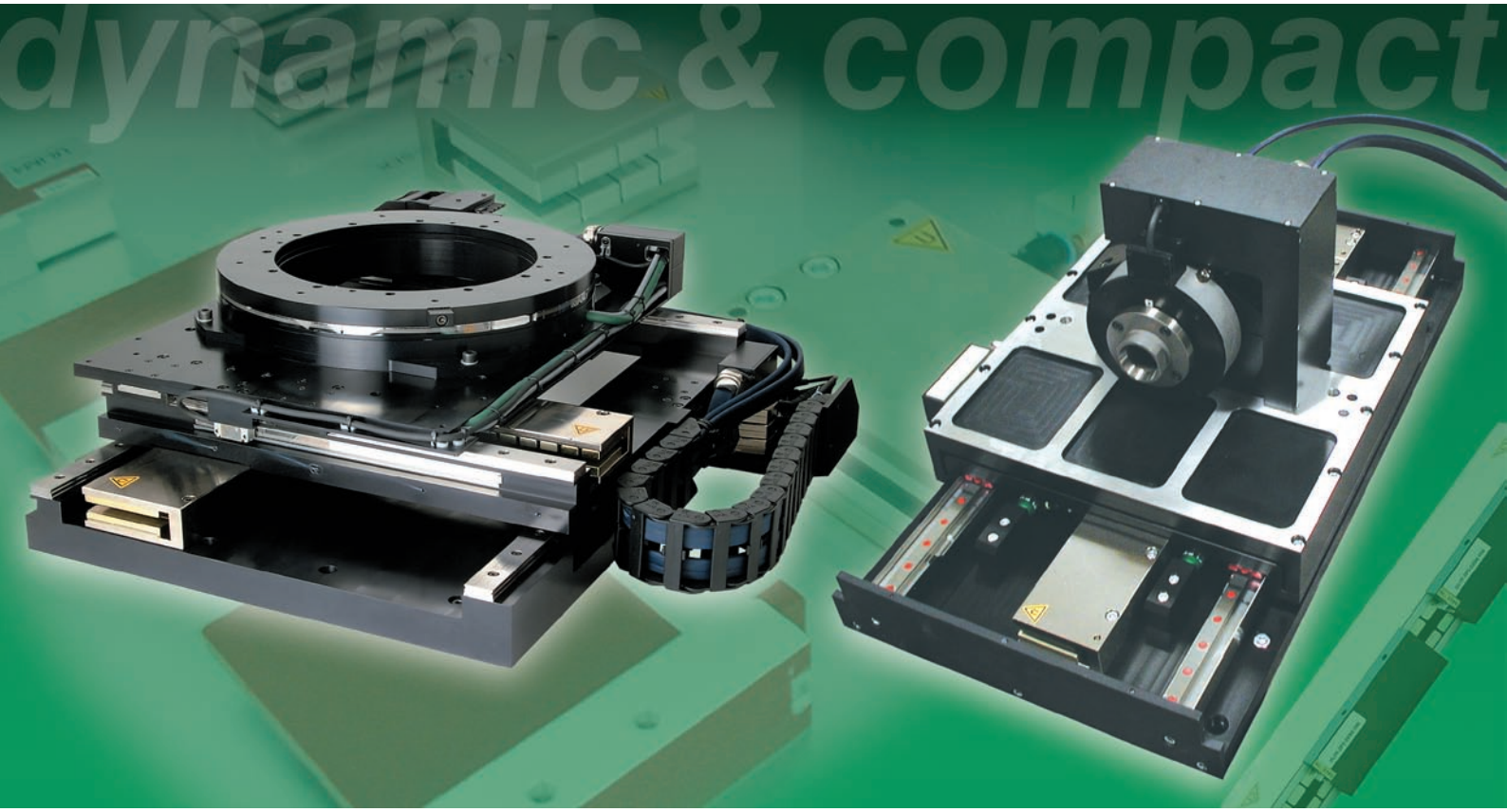
Requested date of quotation: _____

Prepared by: _____ Date: _____

Further processing by: _____ Date: _____

Feasibility verified by: _____ Date: _____

Technical Information and Consulting Services



Class-leading technology and competent consulting services are two of the major benefits of working with IDAM.
IDAM application engineers are looking forward to support you choose the perfect drive for your application.

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Notes

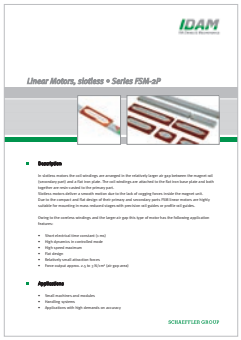
At a Glance: IDAM Brochures

Are you interested in more detailed technical information?
Then don't hesitate to contact us: info@ina-dam.de

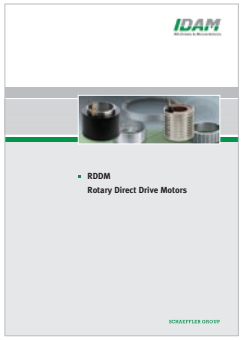
LDDM
Linear motors: L1

LDDM
Linear motors: L2U

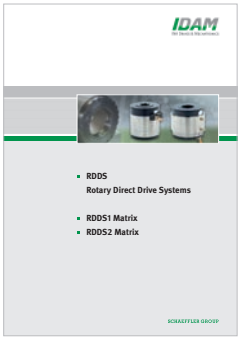
LDDM
Linear motors: ULIM



LDDM
Linear motors: FSM



RDDM
Rotary direct drive motors



RDDS
Rotary direct drive systems

Planar reluctance motors

Image brochure: Direct Drive Technology

All information about our motors and systems you can download on IDAM website: www.idam.de

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