

# MLS 2 Linear motor stages

## Technical Description

Repeatability of measuring system:  $\pm 0,5 \mu\text{m}$   
 Repeatability of linear unit:  $\pm 5 \mu\text{m}$   
 Maximum length without joints: up to 6000 mm <sup>4)</sup>  
 Operating voltage: 600 Vdc, max. 900 Vdc  
 Maximum speed: 9m/s  
 Maximum acceleration: 166m/s<sup>2</sup>



## Mechanical specifications

Size		3	3	3	5	5	5	5
Carriage model		0240	0480	0720	0450	0900	1125	1350
C - Carriage length	mm				186	264	310	356
B - Width	mm				206	206	206	206
H - Height	mm				96	96	96	96
G1 - Distance between profile base grooves	mm				160	160	160	160
G2 - Height of profile lateral grooves	mm				20	20	20	20
M1 - Distance between fixation clamps boreholes <sup>3)</sup>	mm				220	220	220	220
M2 - Distance between fixation clamp boreholes <sup>3)</sup>	mm				40	40	40	40
M3 - Max. distance between fixation clamps <sup>3)</sup>	mm				500	500	500	500

### Linear motor features

Maximum speed <sup>1)</sup>	m/s				3	3	3	3
Continuous force aircooled <sup>2)</sup>	N				200	400	500	600
Peak force	N				450	900	1125	1350
Nominal current	A				2,3	4,5	4,7	6,8
Peak current	A				6,5	13,1	13,5	19,6

### Guidance features (max.)

Fy	N				2000	2000	2000	2000
Fz	N				1500	1500	1500	1500
Mx	Nm				340	450	450	450
My	Nm				450	700	750	1000
Mz	Nm				450	700	750	1000

For the sum of all forces and moments:  $\frac{F_{ye}}{F_y} + \frac{F_{ze}}{F_z} + \frac{M_{xe}}{M_x} + \frac{M_{ye}}{M_y} + \frac{M_{ze}}{M_z} < 1$  (Xxe = calculated value)  
(Xx = max. catalogue value)

### Structure profile features

Geometrical moments of inertia Lx	mm <sup>4</sup>				16,3x10 <sup>5</sup>	16,3x10 <sup>5</sup>	16,3x10 <sup>5</sup>	16,3x10 <sup>5</sup>
Geometrical moments of inertia Ly	mm <sup>4</sup>				19,1x10 <sup>6</sup>	19,1x10 <sup>6</sup>	19,1x10 <sup>6</sup>	19,1x10 <sup>6</sup>
Elastic module	N/mm <sup>2</sup>				70000	70000	70000	70000

### Weight

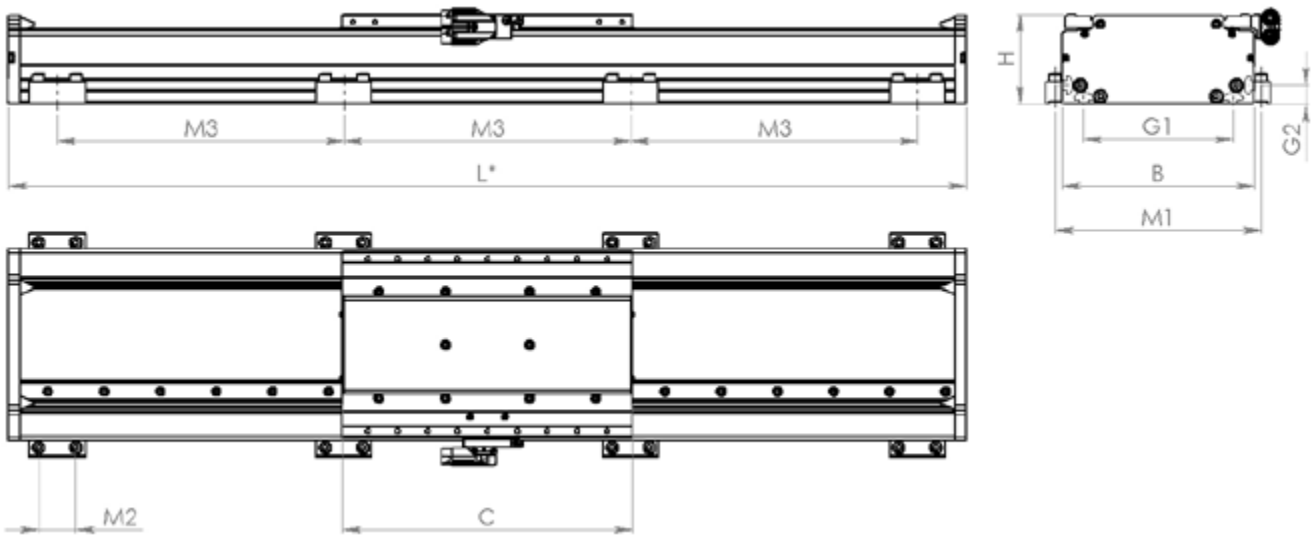
Weight of carriage	kg				4,4	6,9	7,9	9
Weight of 100mm	kg				1,75	1,95	1,95	1,95

<sup>1)</sup> For a lifetime >30000 km

<sup>2)</sup> Depending on the application and ambient temperature

<sup>3)</sup> Sinadrives accessory

## Technical Description MLS 2



Drawing available under request.

\* L: Stroke selection on page 13.

### Mechanical specifications

Size		5	5	7	7	7	7
Carriage model		1800	2700	1800	2250	4500	6750
C - Carriage length	mm	488	724				
B - Width	mm	206	206				
H - Height	mm	96	96				
G1 - Distance between profile base grooves	mm	160	160				
G2 - Height of profile lateral grooves	mm	20	20				
M1 - Distance between fixation clamps boreholes <sup>3)</sup>	mm	220	220				
M2 - Distance between fixation clamp boreholes <sup>3)</sup>	mm	40	40				
M3 - Max. distance between fixation clamps <sup>3)</sup>	mm	500	500				

### Linear motor features

Maximum speed <sup>1)</sup>	m/s	3	3				
Continuous force aircooled <sup>2)</sup>	N	800	1200				
Peak force	N	1800	2700				
Nominal current	A	9,0	13,6				
Peak current	A	26,2	39,2				

### Guidance features (max.)

Fy	N	3000	3000				
Fz	N	1750	1750				
Mx	Nm	750	750				
My	Nm	1500	2100				
Mz	Nm	1500	2100				

For the sum of all forces and moments:

$$\frac{F_{ye}}{F_y} + \frac{F_{ze}}{F_z} + \frac{M_{xe}}{M_x} + \frac{M_{ye}}{M_y} + \frac{M_{ze}}{M_z} < 1$$

(Xxe = calculated value)  
(Xx = max. catalogue value)

### Structure profile features

Geometrical moments of inertia Lx	mm <sup>4</sup>	16,3x10 <sup>5</sup>	16,3x10 <sup>5</sup>				
Geometrical moments of inertia Ly	mm <sup>4</sup>	19,1x10 <sup>6</sup>	19,1x10 <sup>6</sup>				
Elastic module	N/mm <sup>2</sup>	70000	70000				

### Weight

Weight of carriage	kg	12,4	16,2				
Weight of 100mm	kg	1,95	1,95				

<sup>1)</sup> For a lifetime >30000 km

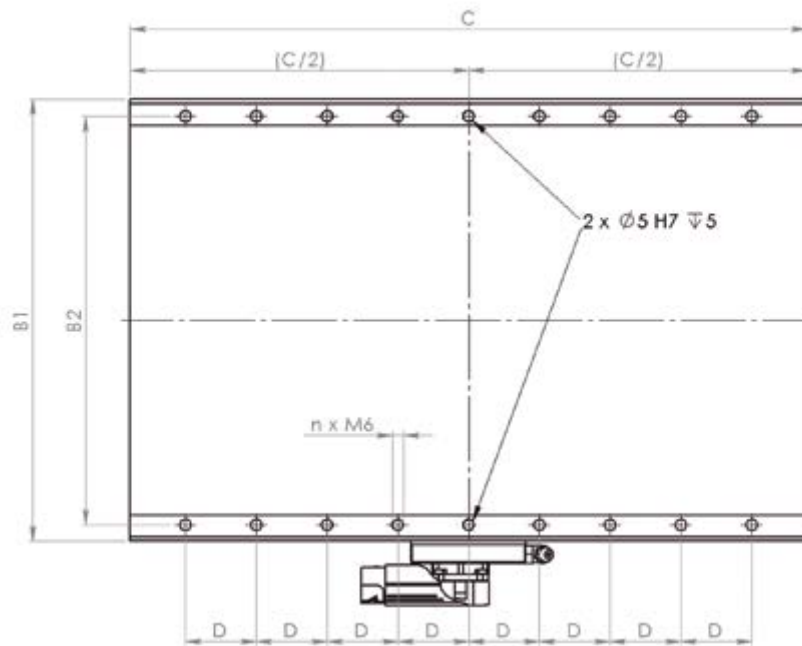
<sup>2)</sup> Depending on the application and ambient temperature

<sup>3)</sup> Sinadrives accessory

## Choice of stroke MLS 2

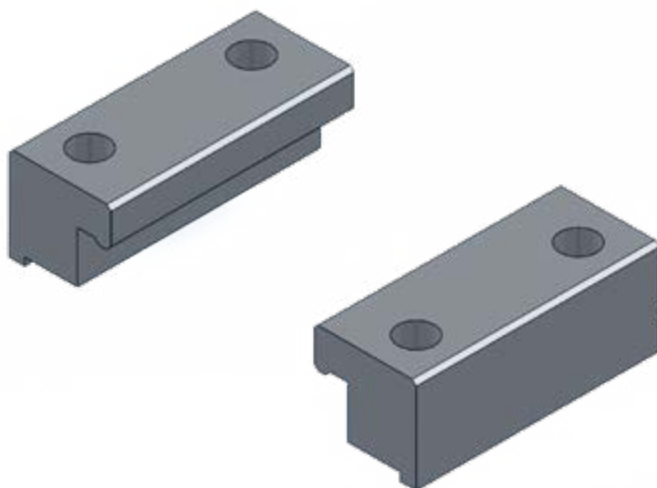
Linear motor stage		MLS25				
Carriage model	450	900	1125	1350	1800	2700
Lenght, L (mm)	Stroke					
270	30	-	-	-	-	-
366	126	48	2	-	-	-
462	222	144	98	52	-	-
558	318	240	194	148	16	-
654	414	336	290	244	112	-
750	510	432	386	340	208	-
846	606	528	482	436	304	68
942	702	624	578	532	400	164
1038	798	720	674	628	496	260
1134	894	816	770	724	592	356
1230	990	912	866	820	688	452
1326	1086	1008	962	916	784	548
1422	1182	1104	1058	1012	880	644
1518	1278	1200	1154	1108	976	740
1614	1374	1296	1250	1204	1072	836
1710	1470	1392	1346	1300	1168	932
1806	1566	1488	1442	1396	1264	1028
1902	1662	1584	1538	1492	1360	1124
1998	1758	1680	1634	1588	1456	1220
2094	1854	1776	1730	1684	1552	1316
2190	1950	1872	1826	1780	1648	1412
2286	2046	1968	1922	1876	1744	1508
2382	2142	2064	2018	1972	1840	1604
2478	2238	2160	2114	2068	1936	1700
2574	2334	2256	2210	2164	2032	1796
2670	2430	2352	2306	2260	2128	1892
2766	2526	2448	2402	2356	2224	1988
2862	2622	2544	2498	2452	2320	2084
2958	2718	2640	2594	2548	2416	2180
3054	2814	2736	2690	2644	2512	2276
3150	2910	2832	2786	2740	2608	2372
3246	3006	2928	2882	2836	2704	2468
3342	3102	3024	2978	2932	2800	2564
3438	3198	3120	3074	3028	2896	2660
3534	3294	3216	3170	3124	2992	2756
3630	3390	3312	3266	3220	3088	2852
3726	3486	3408	3362	3316	3184	2948
3822	3582	3504	3458	3412	3280	3044
3918	3678	3600	3554	3508	3376	3140
4014	3774	3696	3650	3604	3472	3236
4110	3870	3792	3746	3700	3568	3332
4206	3966	3888	3842	3796	3664	3428
4302	4062	3984	3938	3892	3760	3524
4398	4158	4080	4034	3988	3856	3620
4494	4254	4176	4130	4084	3952	3716
4590	4350	4272	4226	4180	4048	3812
4686	4446	4368	4322	4276	4144	3908
4782	4542	4464	4418	4372	4240	4004
4878	4638	4560	4514	4468	4336	4100
4974	4734	4656	4610	4564	4432	4196
5070	4830	4752	4706	4660	4528	4292
5166	4926	4848	4802	4756	4624	4388
5262	5022	4944	4898	4852	4720	4484
5358	5118	5040	4994	4948	4816	4580
5454	5214	5136	5090	5044	4912	4676
5550	5310	5232	5186	5140	5008	4772
5646	5406	5328	5282	5236	5104	4868
5742	5502	5424	5378	5332	5200	4964
5838	5598	5520	5474	5428	5296	5060
5934	5694	5616	5570	5524	5392	5156
6030	5790	5712	5666	5620	5488	5252

## MLS 2 Mounting interface



Carriage model	B1 (mm)	B2 (mm)	C (mm)	D (mm)	n / row	Borehole
0450	200	185	186	32	4	M6
0900			264		6	
1125			310		8	
1350			356		10	
1800			488		12	
2700			724		20	

### Mounting set (2 u. / set); Ref. AC03-0501



### T-slot nuts set (10 u. / set)

#### ■ KTM05



#### ■ KTM06



#### ■ KTM08



## MLS 2 Connector options

■ Side connectors YTEC hybrid, steerable  $\pm 90^\circ$  (00)



■ Side connectors M23 backwards (01)



■ Side connectors M23 downwards (02)



■ Side connectors M23 upwards (03)



■ Side connectors M23 frontwards (11)



# MLS 2 Order Code

## Axis model

MLS 2 - Linear unit with iron core linear motor, open top base model.

MLS2  S -     -     -     -   A - T     - A1S - 00  -   X - 00

## Axis model

### Size:

- 3 - MLS23
- 5 - MLS25
- 7 - MLS27

## Length (mm) <sup>5)</sup>

## Motor / Carriage model

### Motor type:

- IT - Eisenbehaftete Motor
- XX - Without motor

### Peak force, N (aircooled) <sup>1)</sup>:

<b>MLS23</b>	02 - 240N
	05 - 480N
	07 - 720N
<b>MLS25</b>	04 - 450N
	09 - 900N
	11 - 1125N
	13 - 1350N
<b>MLS27</b>	18 - 1800N
	22 - 2250N
	45 - 4500N
	67 - 6750N

### Motor winding:

- N - Standard motor
- H - High-speed motor
- I - Low voltage motor
- X - Ohne Motor

## Encoder

### Technology:

- 0 - Inductive incremental
- 1 - Optic incremental
- 2 - Magnetic incremental
- 3 - Inductive absolute
- 4 - Optic absolute
- 5 - Magnetic absolute
- XXXXX Without encoder

### Supplier <sup>2)</sup>

### Reading head output <sup>4)</sup>:

\* Incremental:

- 0 - 1 Vpp
- 4 - TTL

\* Absolut:

- E - Endat 2.2
- B - Biss/C
- D - Drivecliq
- F - Fanuc
- H - Hiperface
- L - DSL
- M - Mitsubishi
- P - Panasonic
- S - SSI

### Measurement system <sup>2)</sup>:

- 4C - 40 µm
- 1U - 1 µm
- 2M - 2 mm
- 2H - 0,25 µm
- 1H - 0,1 µm
- 1S - 0,1 µm + Safety function
- 1Y - 1 µm + Safety function

## Guiding

### Size <sup>2)</sup>:

- 15 - 15 mm
- 20 - 20 mm

### Number of blocks <sup>2)</sup>:

- 4 - 4 Blocks
- 6 - 6 Blocks

### Block type:

- A - With caged balls
- B - Without caged balls

## Lubrication

### Grease type:

- S - Standard
- C - Clean room
- F - Food grade
- L - Low temperature

## Upgrades

### Version:

- S - Standard

### Screws:

- S - Standard
- I - Stainless steel

## Connectors

### Typ:

- 00 - Side connectors YTEC hybrid, steerable ± 90° <sup>3)</sup>
- 01 - Side connectors M23 backwards
- 02 - Side connectors M23 downwards
- 03 - Side connectors M23 upwards
- 11 - Side connectors M23 frontwards
- XX - Without connector

<sup>1)</sup> Depending on the application and ambient temperature

<sup>2)</sup> Defined by previous selections

<sup>3)</sup> Not available for peak force ≥ 1800N

<sup>4)</sup> On request

<sup>5)</sup> Length on page 13