

Linear Stage LS



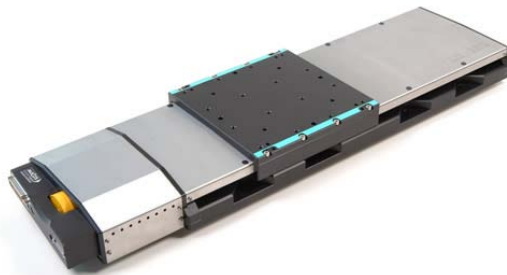
Linear Stage LS-270



Linear Stage LS-120



Linear Stage LS-65



Linear Stage LS-180



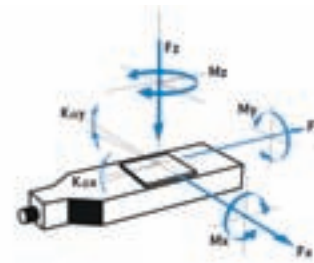
Linear Stage LS-110



Linear Stage LS-40

FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$
DC-B-010	20	20	30	0.4	0.6	0.4
2Phase-019	20	10	30	0.4	0.6	0.4
2Phase-010	20	20	30	0.6	0.8	0.6



equipped with re-circulating ball guides and a finepitch screw with 0,5 mm pitch (optionally a ball screw with 1 mm pitch can be delivered). It is driven with a 2-phase gearless stepper motor or with a DC- or 2-phase stepper geared motor. The LS-40 series excels with very smooth, high resolution motion. For restricted space conditions, the LS-40 can also be ordered with a side-mounted motor.

Micro stages LS-40 are suited for the precise positioning of small parts such as fibers, optical components, laser diodes and inspection equipment. The space saving modules can be assembled into XYZ-systems. The micro stage LS-40 is

Travel ranges of 13, 26 or 52 mm are available and two standard limit switches prevent damage from accidental over-travel. XY-assembly is possible at the factory and must be indicated when ordering.



KEY FEATURES

- Travel range up to 52 mm
- Uni-directional repeatability down to 0.1 μm
- Maximum speed 5 mm/sec
- Load capacity up to 2 kg
- Integrated hall / mechanical / optical limit switches
- Optionally higher quality with ballscrew

TECHNICAL DATA

Travel range (mm)	13	26	52
Straightness / Flatness (μm)	± 1.5	± 3	± 5
Pitch (μrad)	± 150	± 170	± 190
Yaw (μm)	± 150	± 150	± 150
Weight (kg)	0.18	0.2	0.25

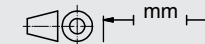
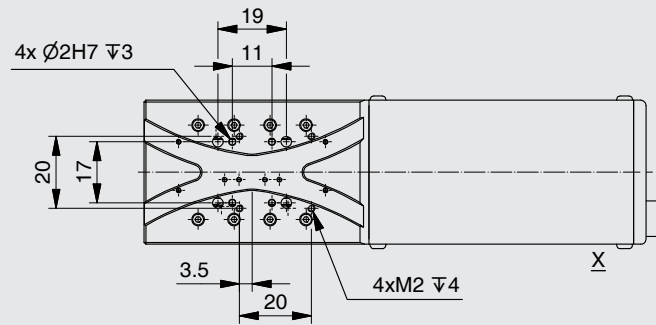
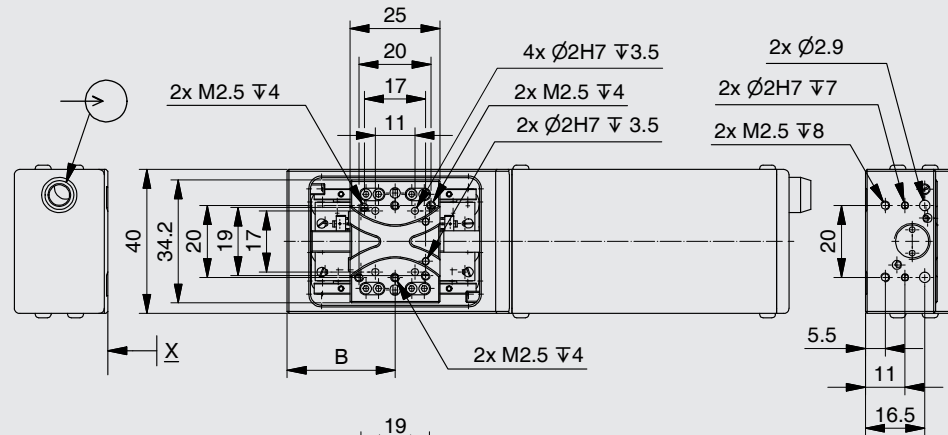
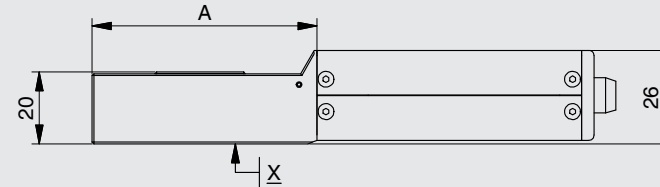
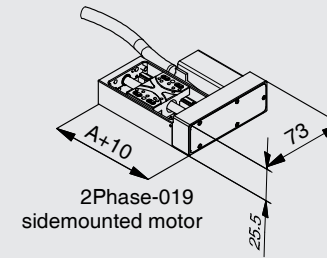
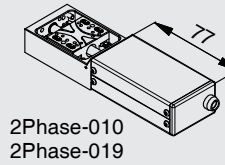
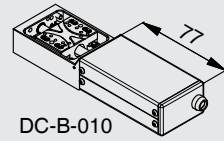
Motor (Pitch 0.5 mm)	DC-B-010	2Phase-019	2Phase-010
Speed max. (mm/sec)	1.5	5	0.4
Resolution calculated (μm)	0.0110804 (RE)	2.5 (FS)	0.2745086 (FS)
Resolution typical (μm)	0.1	0.1	0.1
Bi-directional Repeatability (μm)	± 3	± 3	± 3
Uni-directional Repeatability (μm)	0.1	0.1	0.1
Nominal Current (A)	0.32	0.8	0.25
Voltage Range (V)	12		

Accuracy	on request
Velocity range (mm/sec)	0.001 ... 5
Material	Aluminum, black anodized

Note: FS = full step, RE = rotary encoder
 More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

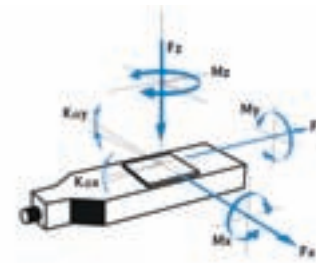
Travel (mm)	13	26	52
A	62.5	75.5	101.5
B	30	36.5	49.5



Order No.	6213-9-		0
DC-B-010		1	
2Phase-019		2	
2Phase-010		3	
2Phase-019 sidemounted		4	
13 mm		1	
26 mm		2	
52 mm		3	
HLS-010, Hall limit switches		1	
MLS-010, Mechanical limit switches		2	
OLS-010, Optical limit switches		3	

FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$	$k^{+x}(\mu rad/Nm)$	$k^{+y}(\mu rad/Nm)$
DC-B-026	50	15	60	7.5	7.5	7.5	140	80
2Phase-045	50	25	60	7.5	7.5	7.5	140	80
2Phase-042	50	25	60	7.5	7.5	7.5	140	80



The LS-65 linear stage features a compact, low profile construction for high strength in a lightweight package. Typical applications for this measuring stage are inspection stations and micro-manipulators for laser diodes and other highly sensitive components. A precision ground lead-screw with 1 mm pitch (optionally 0.4 mm pitch or ballscrew) guarantees smooth and quiet motion. The LS-65 linear stages are equipped with a re-circulating ball guiding system and are motorized with a DC or 2-phase stepper motor. Additionally the LS-65 can be ordered with our SMC pollux motor-controller module (2Phase-042).



KEY FEATURES

- Travel range up to 102 mm (4")
- Uni-directional repeatability down to 0.3 μm
- Maximum speed 10 mm/sec
- Load capacity up to 6 kg
- Integrated mechanical / optical limit switches
- Optionally higher resolution / 0.4 mm pitch
- Optionally higher repeatability with ballscrew

TECHNICAL DATA

Travel range (mm)	26	52	77	102
Straightness / Flatness (μm)	± 2	± 4	± 6	± 8
Pitch (μrad)	± 70	± 90	± 110	± 130
Yaw (μm)	± 70	± 80	± 90	± 100
Weight (kg)	0.6	0.7	0.8	0.9

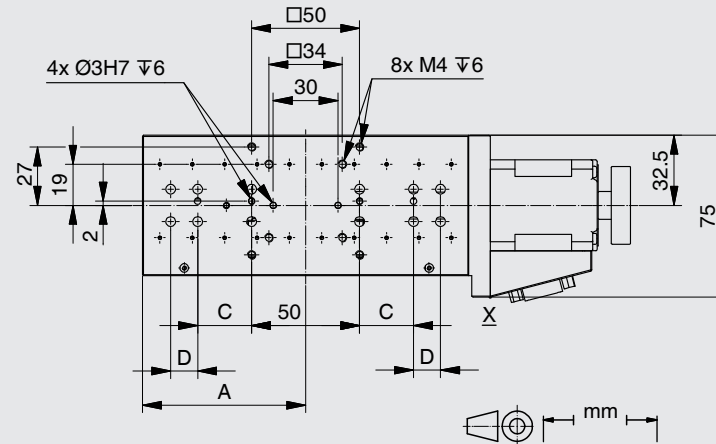
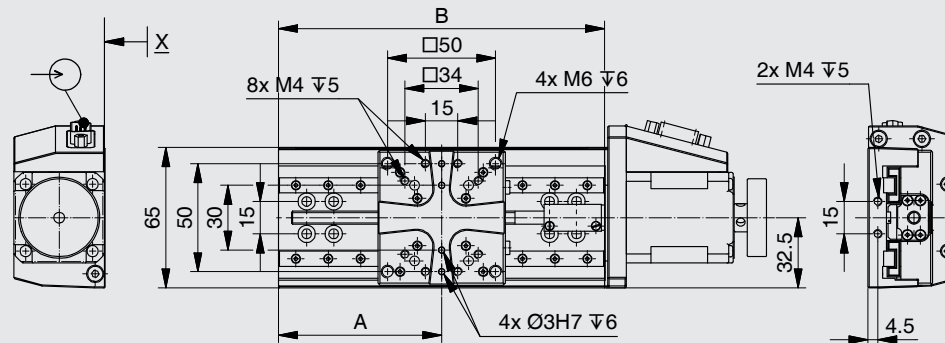
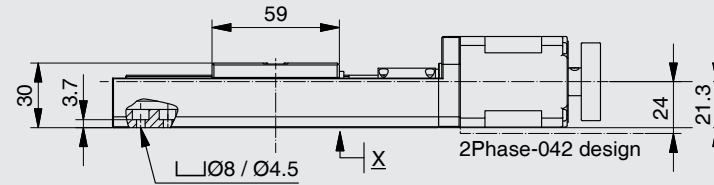
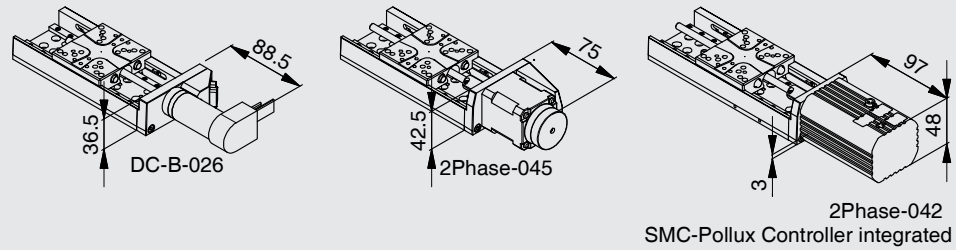
Motor (Pitch 1 mm)	DC-B-026	2Phase-045	2Phase-042
Speed max. (mm/sec)	20	20	13
Resolution calculated (μm)	0.5 (RE)	5 (FS)	5 (FS)
Resolution typical (μm)	0.5	0.2	0.2
Bi-directional Repeatability (μm)	± 5	± 5	± 5
Uni-directional Repeatability (μm)	0.5	0.3	0.3
Nominal Current (A)	0.98	1.2	0.5
Voltage Range (V)	24		

Accuracy	on request
Velocity range (mm/sec)	0.001 ... 10
Material	Aluminum, black anodized

Note: FS = full step, RE = rotary encoder
 More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

Travel (mm)	26	52	77	102
A	46.5	60.5	75.5	85.5
B	93	121	151	171
C	9	25	25	37.5
D	-	-	12.5	12.5

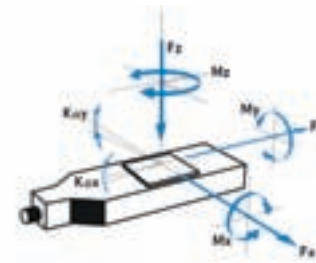


Order No.	6233-9-		0
DC-B-026		1	
2Phase-045		2	
2Phase-042, only with OLS-010		3	
26 mm (1")		1	
52 mm (2")		2	
77 mm (3")		3	
102 mm (4")		4	
MLS-010, Mechanical limit switches		2	
OLS-010, Optical limit switches		3	



FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$	$k^{+x}(\mu rad/Nm)$	$k^{+y}(\mu rad/Nm)$
DC-B-032	50	80	100	30	60	33	50	40
2Phase-045	50	80	100	30	60	33	50	40
DC-B-033	50	80	100	30	60	33	50	40



The LS-110 linear stage series is especially suited for industrial laser treatment. Linear guides with re-circulating linear ball bearings guarantee very high guiding stiffness. Driven by a re-circulating ball screw with 2 mm pitch, the LS-110 can be mounted in any orientation. For demanding positioning tasks, the LS-110 linear stages can be supplied with a linear scale which is centrally installed between the guides. The LS-110 can be equipped with a DC or a 2-phase stepper motor and is equipped with two mechanical limit switches.



KEY FEATURES

- Travel range up to 305 mm (12")
- Uni-directional repeatability down to 0.05 μm
- Maximum speed 90 mm/sec
- Load capacity up to 10 kg
- Integrated mechanical limit switches
- Option: linear scale (center mounted)

TECHNICAL DATA

Travel range (mm)	26	52	77	102	155	190	255	305
Straightness / Flatness (μm)	± 1	± 1.5	± 2	± 2.5	± 3	± 3.5	± 4	± 5
Pitch (μrad)	± 30	± 40	± 50	± 60	± 70	± 80	± 90	± 100
Yaw (μm)	± 40	± 40	± 40	± 40	± 40	± 40	± 40	± 40
Weight (kg)	2.6	2.7	2.8	2.9	3.1	3.1	3.5	3.7

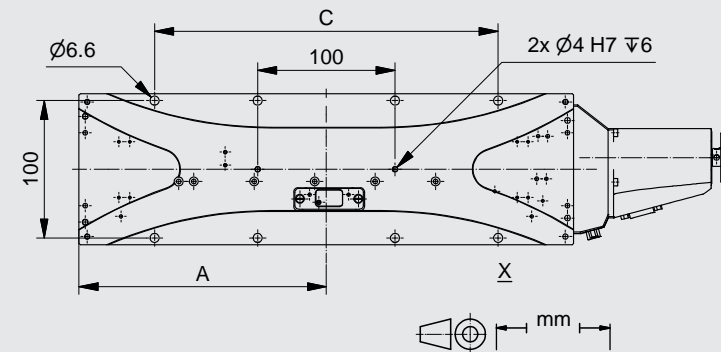
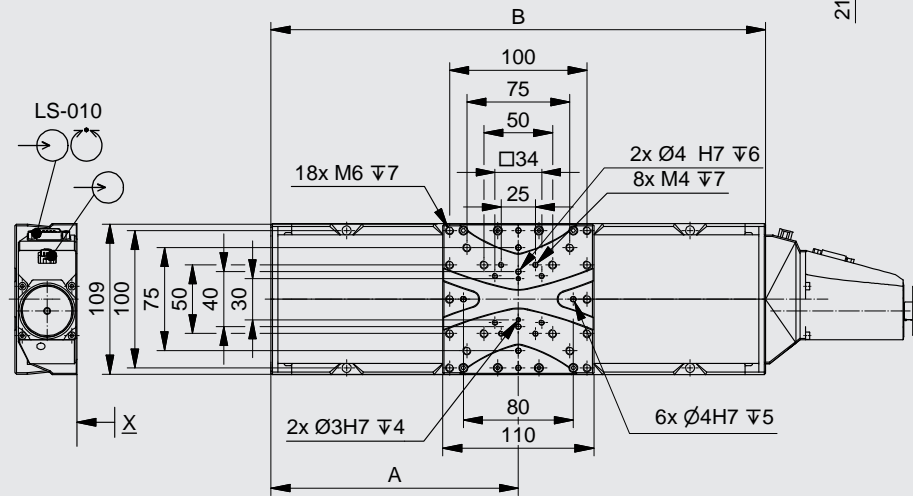
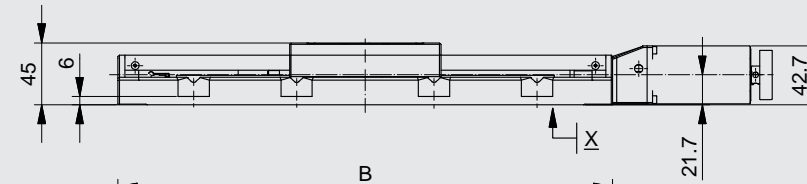
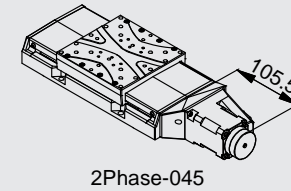
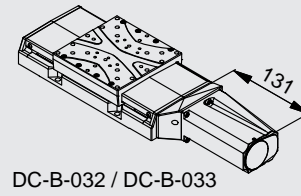
Motor (Pitch 2 mm)	DC-B-032	2Phase-045	DC-B-033	
Linear scale				LS-010
Speed max. (mm/sec)	90	45	90	
Resolution calculated (μm)	1 (RE)	10 (FS)	0.1 (RE)	0.05
Resolution typical (μm)	1	0.2	0.2	0.05
Bi-directional Repeatability (μm)	± 1	± 1	± 1	± 0.1
Uni-directional Repeatability (μm)	1	0.2	0.2	0.05
Nominal Current (A)	2.3	1.2	2.3	
Voltage Range (V)	24		24	

Accuracy	on request
Velocity range (mm/sec)	0.001 ... 90
Material	Aluminum, black anodized

Note: FS = full step, RE = rotary encoder
 More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

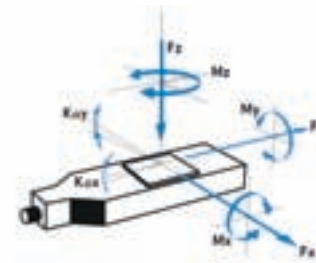
Travel (mm)	26	52	77	102	155	190	255	305
A	112.5	125	137.5	150	180	180	215	240
B	225	250	275	300	360	360	430	480
C	-	-	-	-	250	250	300	350



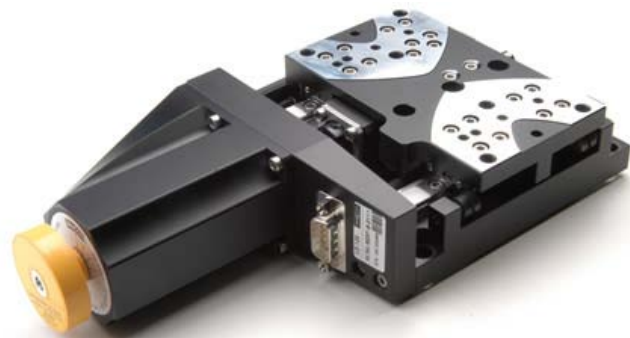
Order No.	6236-9-			
DC-B-032		1		
2Phase-045		3		
DC-B-033		4		
26 mm (1")		1		
52 mm (2")		2		
77 mm (3")		3		
102 mm (4")		4		
155 mm (6")		5		
190 mm		6		
255 mm (10")		7		
305 mm (12")		8		
without LS-010		0		
LS-010, Linear steel scale (max 155 mm)		1		
MLS-020, Mechanical limit switches		0		

FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$	$k^{+x}(\mu rad/Nm)$	$k^{+y}(\mu rad/Nm)$
DC-B-033	50	80	100	30	60	33	40	30
2Phase-048	50	80	100	30	60	33	40	30



The LS-120 linear stage is suited for high precision applications with limited space conditions. High rigidity within a compact package is achieved by using re-circulating linear ball bearings mounted within a highly rigid, tempered aluminum-alloy stage body. The linear stage is driven by a re-circulating ball screw with 2 mm pitch and can be supplied with a linear scale which is centrally installed between the guides. The LS-120 linear stages can be equipped with a DC or 2-phase stepper motor. Inductive limit switches are integrated in the linear stage.



KEY FEATURES

- Travel range up to 40 mm (xy setup by PI miCos)
- Maximum speed 90 mm/sec
- Load capacity up to 10 kg
- Integrated inductive limit switches
- Option: linear scale (center mounted)

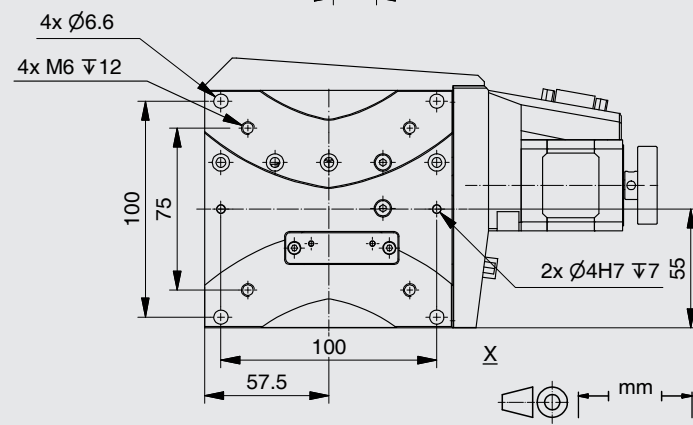
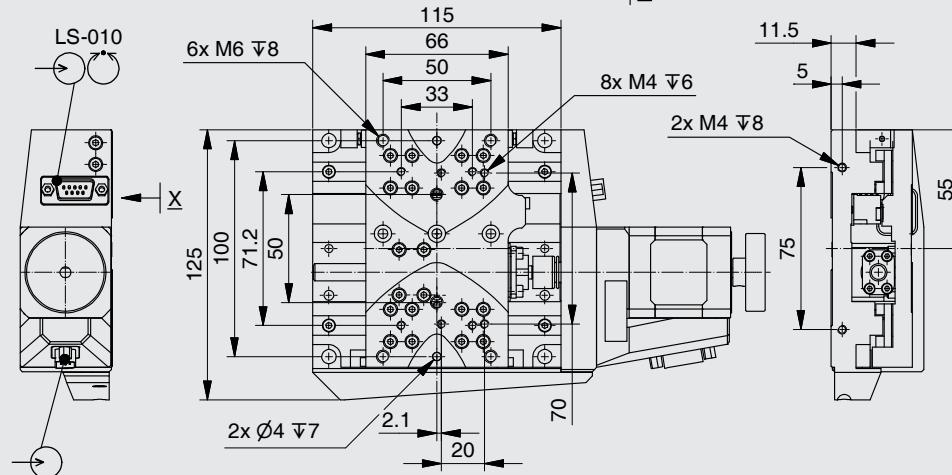
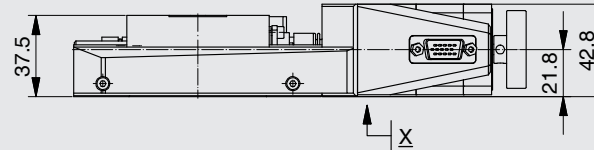
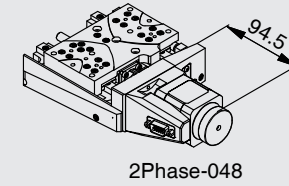
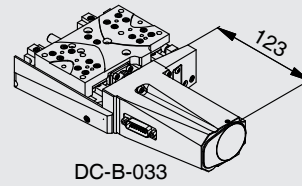
TECHNICAL DATA

Travel range (mm)	40		
Straightness / Flatness (μm)	± 1.5		
Pitch (μrad)	± 40		
Yaw (μm)	± 40		
Weight (kg)	1.8		

Motor (Pitch 2 mm)	DC-B-033	2Phase-048	
Linear scale			LS-010
Speed max. (mm/sec)	90		
Resolution calculated (μm)	0.1 (RE)		0.05
Resolution typical (μm)	0.2		0.1
Bi-directional Repeatability (μm)	± 1		± 0.1
Uni-directional Repeatability (μm)	0.2		0.1
Nominal Current (A)	2.3	1.2	
Voltage Range (V)	24		

Accuracy	on request		
Velocity range (mm/sec)	0.001 ... 90		
Material	Aluminum, black anodized		

Note: FS = full step, RE = rotary encoder
 More info: Detailed information concerning motors and encoders, see appendix.



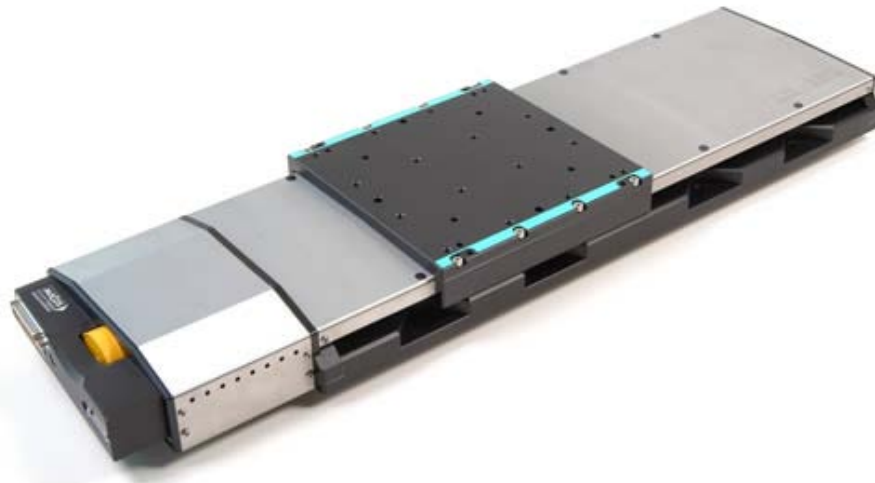
Order No.	6237-9-				
DC-B-033		1			
2Phase-048		2			
40 mm (1.5")		1			
40 mm (xy setup by PI miCos)		2			
without LS-010		0			
LS-010, Linear steel scale		1			
I LS-010, Inductive limit switches		4			

4.092 Linear Stage LS-180



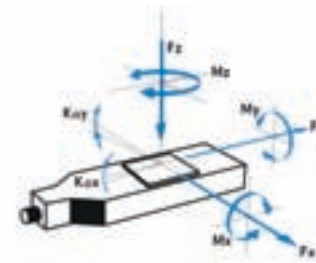
FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$	$k^{+x}(\mu rad/Nm)$	$k^{+y}(\mu rad/Nm)$
DC-B-040	500	200	1000	132	400	125	60	50
2Phase-052	500	250	1000	132	400	125	60	50



KEY FEATURES

- Travel range up to 610 mm (24")
- Uni-directional repeatability down to 0.05 μm
- Maximum speed 200 mm/sec
- Load capacity up to 100 kg
- Integrated inductive limit switches
- Option: linear scale (center mounted)



The LS-180 linear stage was developed for industrial applications. Re-circulating ball guides mounted on a rigid tempered aluminum-alloy body guarantee a very high guiding stiffness and long operating life. The ball screw with 5 mm pitch allows velocities up to 200 mm/s. For demanding positioning tasks the linear stages LS-180 can be supplied with a linear scale which is centrally installed between the guides. The LS-180 linear stages can be equipped with a DC or a 2-phase stepper motor and are supplied with two inductive limit switches.

TECHNICAL DATA

Travel range (mm)	155	205	305	408	508	610
Straightness / Flatness (μm)	± 2	± 3	± 4	± 5	± 6	± 8
Pitch (μrad)	± 40	± 50	± 60	± 70	± 80	± 100
Yaw (μm)	± 50	± 50	± 50	± 50	± 50	± 50
Weight (kg)	8.4	8.8	9.6	10.2	10.8	12

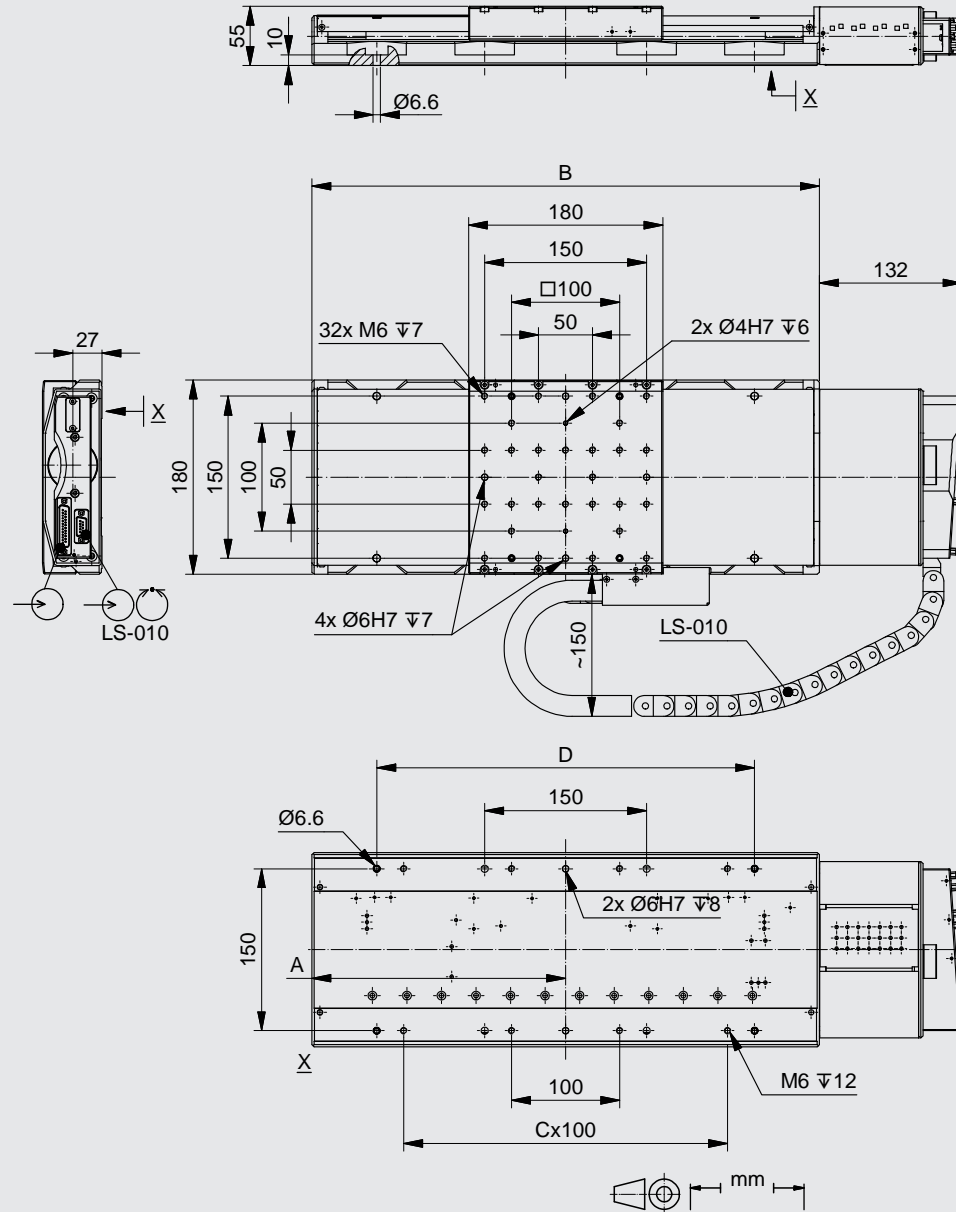
Motor (Pitch 5 mm)	DC-B-040	2Phase-052	
Linear scale			LS-010
Speed max. (mm/sec)	200	75	
Resolution calculated (μm)	0.25 (RE)	25 (FS)	0.05
Resolution typical (μm)	0.5	0.5	0.05
Bi-directional Repeatability (μm)	± 2.5	± 2.5	± 0.1
Uni-directional Repeatability (μm)	0.5	0.5	0.05
Nominal Current (A)	3.8	2	
Voltage Range (V)	24		

Accuracy	on request
Velocity range (mm/sec)	0.001 ... 200
Material	Aluminum, black anodized

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

Travel (mm)	155	205	305	408	508	610
A	235	260	310	360	410	460
B	470	520	620	720	820	920
C	3	3	5	5	5	7
D	350	350	450	550	650	750



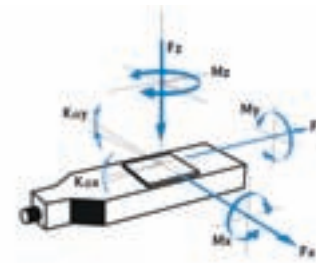
Order No.	6240-9-			
DC-B-040		1		
2Phase-052		2		
155 mm (6")		1		
205 mm (8")		2		
305 mm (12")		3		
408 mm (16")		4		
508 mm (20")		5		
610 mm (24")		6		
without LS-010		0		
LS-010, Linear steel scale		1		

4.086 Linear Stage LS-270



FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$	$k^{+x}(\mu rad/Nm)$	$k^{+y}(\mu rad/Nm)$
DC-B-086	1200	40	1500	250	280	250	3.2	1.6
2Phase-072	1200	260	1500	250	280	250	3.2	1.6



The LS-270 linear stage was developed for positioning high loads. Cross-roller bearings mounted on a rigid tempered aluminum-alloy body guarantee very high guiding stiffness and long operating life. The ball screw with 5 mm pitch allows velocities up to 150 mm/s. For demanding positioning tasks the LS-270 linear stages can be supplied with a linear scale which is centrally installed between the guides. The LS-270 linear stages can be equipped with a DC or a 2-phase stepper motor and have two inductive limit switches.

KEY FEATURES

- Travel range up to 1016 mm (40")
- Uni-directional repeatability down to 0.05 μm
- Maximum speed 150 mm/sec
- Load capacity up to 150 kg
- Integrated inductive limit switches
- Option: linear scale (center mounted)

TECHNICAL DATA

Travel range (mm)	155	305	508	815	1016
Straightness / Flatness (μm)	± 1.5	± 3	± 4	± 7	± 10
Pitch (μrad)	± 20	± 40	± 80	± 100	± 120
Yaw (μm)	± 20	± 20	± 30	± 40	± 50
Weight (kg)	25	29	35	43	50

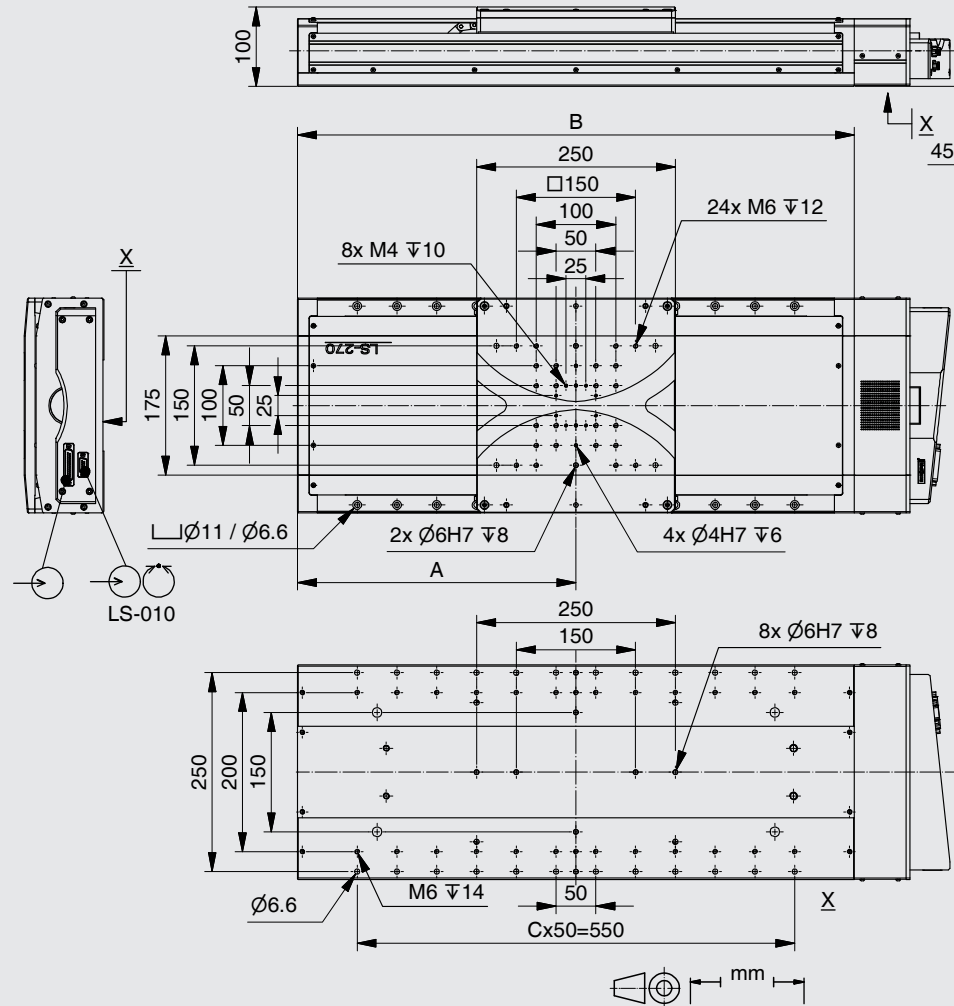
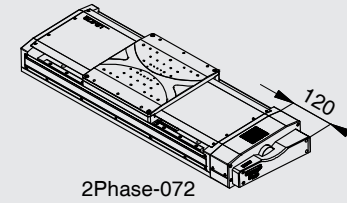
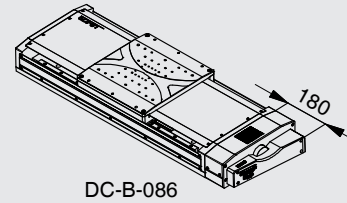
Motor (Pitch 5 mm)	DC-B-086	2Phase-072	
Linear scale			LS-010
Speed max. (mm/sec)	150	50	
Resolution calculated (μm)		12.5 (FS)	0.05
Resolution typical (μm)	0.5	0.4	0.05
Bi-directional Repeatability (μm)	± 2.5	± 2.5	± 0.04
Uni-directional Repeatability (μm)	0.5	0.4	0.05
Nominal Current (A)	5.57	2	
Voltage Range (V)	24		

Accuracy	on request
Velocity range (mm/sec)	0.001 ... 150
Material	Aluminum, black anodized

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

Travel (mm)	155	305	508	815	1016
A	275	350	450	600	700
B	550	700	900	1200	1400
C	9	11	15	21	25



Order No.	6239-9-				
DC-B-086		1			
2Phase-072		2			
155 mm (6")		1			
305 mm (12")		2			
508 mm (20")		3			
815 mm (32")		4			
1016 mm (40")		5			
without LS-010		0			
LS-010, Linear steel scale		1			
ILS-020, Inductive limit switches		4			

USA (East) & CANADA

PI (Physik Instrumente) L.P.
16 Albert St.
Auburn, MA 01501
Tel: +1 (508) 832 3456
Fax: +1 (508) 832 0506
Email: info@pi-usa.us
www.pi-usa.us

USA (West) & MEXICO

PI (Physik Instrumente) L.P.
5420 Trabuco Rd., Suite 100
Irvine, CA 92620
Tel: +1 (949) 679 9191
Fax: +1 (949) 679 9292
Email: info@pi-usa.us
www.pi-usa.us

GERMANY

Headquarters:
PI miCos GmbH
Freiburger Strasse 30
D-79427 Eschbach
GERMANY

Phone: +49 7634 50 57 0
Fax: +49 7634 50 57 393
e-mail: info@pimicos.com
home: www.pimicos.com

**Physik Instrumente (PI)
GmbH & Co. KG**
Auf der Römerstraße 1
76228 Karlsruhe/Palmbach
Tel: +49 (721) 4846-0
Fax: +49 (721) 4846-1019
Email: info@pi.ws
www.pi.ws

Call Us Today
508.832.3456 (East)
949.679.9191 (West)

