

Pliglide LC Linear Stage with Air Bearings

Inexpensive High Performance Nanopositioning Stage



A-110

- Ideal for scanning applications or high-precision positioning
- Cleanroom compatible
- Size of the motion platform 160 mm × 200 mm
- Travel ranges to 400 mm
- Load capacity to 100 N

Product overview

Pliglide positioning systems have a magnetic linear motor, magnetically preloaded air bearings and an optical linear encoder: Noncontact and friction-free motion for the highest accuracy and reliability

Accessories and options

- Encoder
- Pliglide filter and air preparation kits
- Single and multi-axis motion controller
- XY setups and individual configurations
- Base plates made of granite and systems for reducing vibration

Application fields

Pliglide positioning systems are ideally suited for many high-precision applications such as metrology, photonics, and precision scanning in semiconductor or flat panel display manufacturing.

Thanks to the friction-free motion, no particles are formed, which makes Pliglide stages ideal for cleanroom applications.

Motion	Unit	Tolerance	A-110.050A1	A-110.050B1	A-110.100A1	A-110.100B1	A-110.200A1	A-110.200B1	A-110.300A1	A-110.300B1
Active axes			X	X	X	X	X	X	X	X
Travel range in X	mm		50	50	100	100	200	200	300	300
Acceleration in X, unloaded	m/s ²	max.	20	20	20	20	20	20	20	20
Maximum velocity in X, unloaded	mm/s		500	500	500	500	1000	1000	1000	1000
Straightness (Linear crosstalk in Y with motion in X)	μm	max.	± 0.5	± 0.5	± 0.5	± 0.5	± 0.75	± 0.75	± 1	± 1
Flatness (Linear crosstalk in Z with motion in X)	μm	max.	± 0.5	± 0.5	± 0.5	± 0.5	± 0.75	± 0.75	± 1	± 1
Pitch (Rotational crosstalk in θY with motion in X)	μrad	max.	± 7.5	± 7.5	± 10	± 10	± 10	± 10	± 17.5	± 17.5
Yaw (Rotational crosstalk in θZ with motion in X)	μrad	max.	± 7.5	± 7.5	± 10	± 10	± 10	± 10	± 17.5	± 17.5

Positioning	Unit	Tolerance	A-110.050A1	A-110.050B1	A-110.100A1	A-110.100B1	A-110.200A1	A-110.200B1	A-110.300A1	A-110.300B1
Bidirectional repeatability in X	µm	typ.	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
Positioning accuracy in X, calibrated	µm	typ.	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
Positioning accuracy in X, uncalibrated	µm	typ.	± 1.5	± 1.5	± 1.5	± 1.5	± 2	± 1.5	± 3	± 1.5
Integrated sensor			Incremental linear encoder	Absolute linear encoder	Incremental linear encoder	Absolute linear encoder	Incremental linear encoder	Absolute linear encoder	Incremental linear encoder	Absolute linear encoder
Sensor signal			Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C	Sin/cos, 1 V peak-peak	BiSS-C
Sensor resolution	nm		4.88	1	4.88	1	4.88	1	4.88	1
Sensor signal period	µm		20		20		20		20	
Reference switch			Encoder index		Encoder index		Encoder index		Encoder index	
Limit switches			Hall effect		Hall effect		Hall effect		Hall effect	

Drive Properties	Unit	Tolerance	A-110.050A1	A-110.050B1	A-110.100A1	A-110.100B1	A-110.200A1	A-110.200B1	A-110.300A1	A-110.300B1
Drive type			Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor	Electric motor/Magnetic direct drive/Ironless 3-phase linear motor
Nominal voltage	V		48	48	48	48	48	48	48	48
Peak voltage	V		60	60	60	60	60	60	60	60
Nominal current, RMS	A	typ.	1.6	1.6	1.6	1.6	3.2	3.2	3.2	3.2
Peak current, RMS	A	typ.	4.2	4.2	4.2	4.2	6.9	6.9	6.9	6.9
Drive force in negative direction of motion in X	N	typ.	20	20	20	20	39	39	39	39
Drive force in positive direction of motion in X	N	typ.	20	20	20	20	39	39	39	39
Peak force in negative direction of motion in X	N		60	60	60	60	85	85	85	85
Peak force in positive direction of motion in X	N		60	60	60	60	85	85	85	85
Force constant	N/A		4.1	4.1	4.1	4.1	12.3	12.3	12.3	12.3
Resistance phase-phase	Ω	typ.	11	11	11	11	3.6	3.6	3.6	3.6
Inductance phase-phase	mH		6	6	6	6	1.24	1.24	1.24	1.24
Back EMF phase-phase	V·s/m	max.	10	10	10	10	10.1	10.1	10.1	10.1
Pole pitch N-N	mm		33.6	33.6	33.6	33.6	24	24	24	24

Mechanical Properties	Unit	Tolerance	A-110.050A1	A-110.050B1	A-110.100A1	A-110.100B1	A-110.200A1	A-110.200B1	A-110.300A1	A-110.300B1
Guide			Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload
Moved mass in X, unloaded	g		2500	2500	2500	2500	2600	2600	2600	2600
Permissible push force in Z	N	max.	100	100	100	100	100	100	100	100
Overall mass	g		6300	6300	7500	7500	11000	11000	12000	12000
Material			Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware

Miscellaneous	Unit	Tolerance	A-110.050A1	A-110.050B1	A-110.100A1	A-110.100B1	A-110.200A1	A-110.200B1	A-110.300A1	A-110.300B1
Connector			D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)	D-sub 9W4 (m)
Sensor connector			D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)	D-sub 15-pole (m)
Operating pressure	kPa		515 to 585	515 to 585	515 to 585	515 to 585	515 to 585	515 to 585	515 to 585	515 to 585
Air consumption	L/min	max.	28	28	28	28	28	28	28	28
Air quality			Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3
Recommended controllers / drivers			A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x	A-81x, A-82x
Operating temperature range	°C		15 to 25	15 to 25	15 to 25	15 to 25	15 to 25	15 to 25	15 to 25	15 to 25

Motion	Unit	Tolerance	A-110.400A1	A-110.400B1
Active axes			X	X
Travel range in X	mm		400	400
Acceleration in X, unloaded	m/s ²	max.	20	20
Maximum velocity in X, unloaded	mm/s		1000	1000
Straightness (Linear crosstalk in Y with motion in X)	µm	max.	± 1	± 1
Flatness (Linear crosstalk in Z with motion in X)	µm	max.	± 1	± 1
Pitch (Rotational crosstalk in ΘY with motion in X)	µrad	max.	± 20	± 20
Yaw (Rotational crosstalk in ΘZ with motion in X)	µrad	max.	± 20	± 20

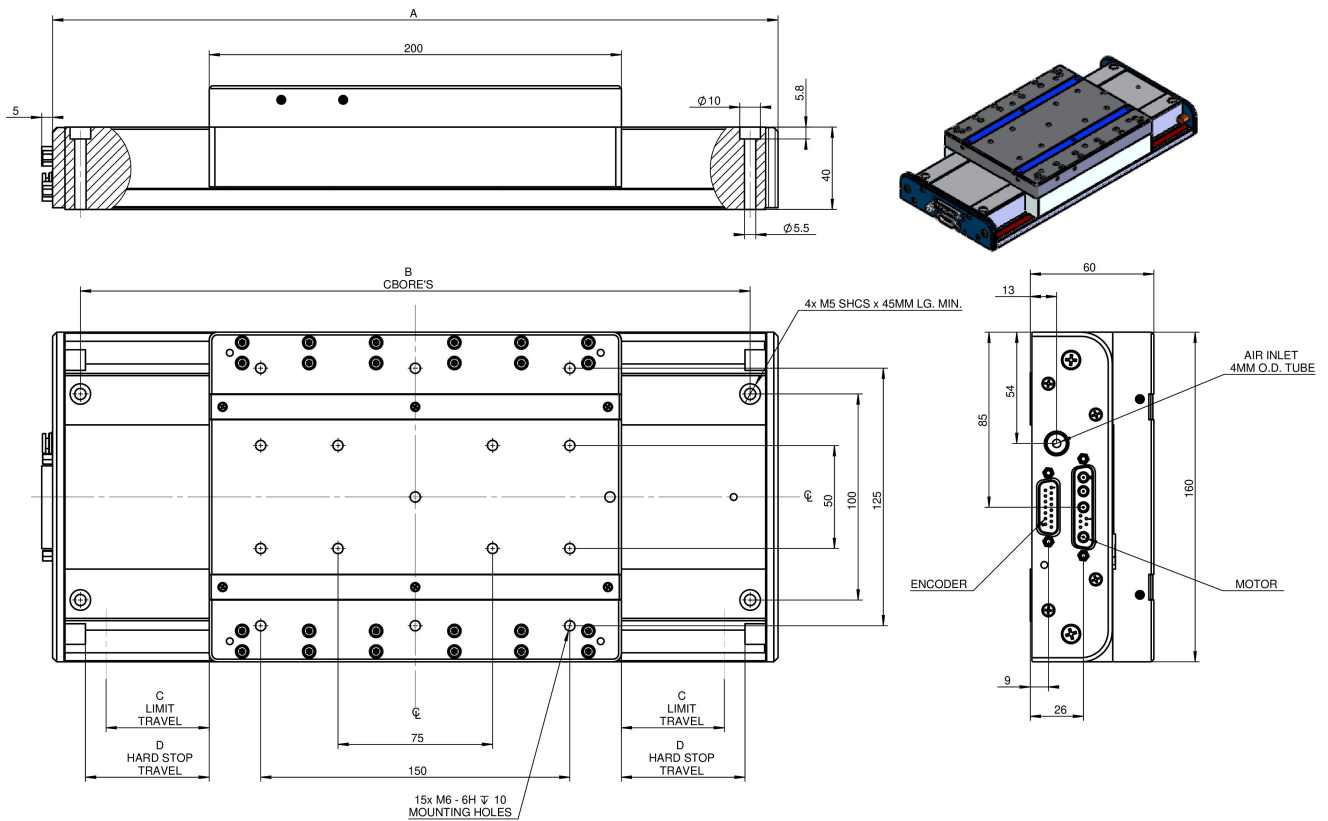
Positioning	Unit	Tolerance	A-110.400A1	A-110.400B1
Bidirectional repeatability in X	µm	typ.	± 0.1	± 0.1
Positioning accuracy in X, calibrated	µm	typ.	± 0.5	± 0.5
Positioning accuracy in X, uncalibrated	µm	typ.	± 4	± 1.5
Integrated sensor			Incremental linear encoder	Absolute linear encoder
Sensor signal			Sin/cos, 1 V peak-peak	BISS-C
Sensor resolution	nm		4.88	1
Sensor signal period	µm		20	
Reference switch			Encoder index	
Limit switches			Hall effect	

Drive Properties	Unit	Tolerance	A-110.400A1	A-110.400B1
Drive type			Electric motor/Magnetic direct drive/Brushless 3-phase linear motor	Electric motor/Magnetic direct drive/Brushless 3-phase linear motor
Nominal voltage	V		48	48
Peak voltage	V		60	60
Nominal current, RMS	A	typ.	3.2	3.2
Peak current, RMS	A	typ.	6.9	6.9
Drive force in negative direction of motion in X	N	typ.	39	39
Drive force in positive direction of motion in X	N	typ.	39	39
Peak force in negative direction of motion in X	N		85	85
Peak force in positive direction of motion in X	N		85	85
Force constant	N/A		12.3	12.3
Resistance phase-phase	Ω	typ.	3.6	3.6
Inductance phase-phase	mH		1.24	1.24
Back EMF phase-phase	V·s/m	max.	10.1	10.1
Pole pitch N-N	mm		24	24

Mechanical Properties	Unit	Tolerance	A-110.400A1	A-110.400B1
Guide			Air bearing guide/Air bearing guide with preload	Air bearing guide/Air bearing guide with preload
Moved mass in X, unloaded	g		2600	2600
Permissible push force in Z	N	max.	100	100
Overall mass	g		14000	14000
Material			Hardcoat aluminum, stainless steel mounting hardware	Hardcoat aluminum, stainless steel mounting hardware

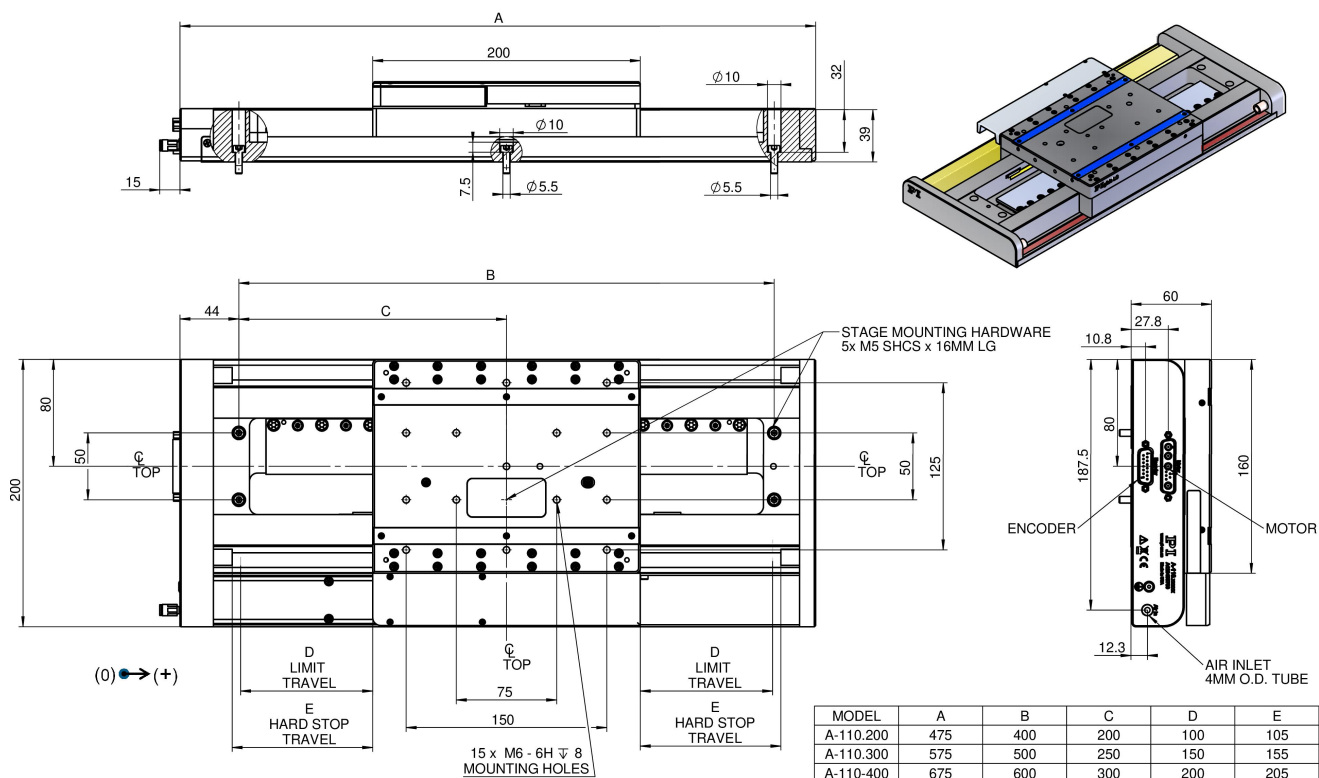
Miscellaneous	Unit	Tolerance	A-110.400A1	A-110.400B1
Connector			D-sub 9W4 (m)	D-sub 9W4 (m)
Sensor connector			D-sub 15-pole (m)	D-sub 15-pole (m)
Operating pressure	kPa		515 to 585	515 to 585
Air consumption	L/min	max.	28	28
Air quality			Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3	Clean (filtered up to 1.0 µm or better) - ISO 8573-1 class 1 Oil free - ISO 8573-1 class 1 Dry (-15 °C dew point) - ISO 8573-1 class 3
Recommended controllers / drivers			A-81x, A-82x	A-81x, A-82x
Operating temperature range	°C		15 to 25	15 to 25

Drawings / Images



A-110.050, A-110.100, dimensions in mm

Drawings / Images



A-100.200, A-100.300, A-100.400, dimensions in mm

Order information

A-110.050A1

Pliglide LC linear stage, air bearings, 50 mm travel range, incremental linear encoder with sin/cos signal transmission, 20 μ m sensor signal period, ironless 3-phase linear motor, 48 V

A-110.050B1

Pliglide LC linear stage, air bearings, 50 mm travel range, absolute linear encoder with BiSS-C signal transmission, 1 nm sensor resolution, ironless 3-phase linear motor, 48 V

A-110.100A1

Pliglide LC linear stage, air bearings, 100 mm travel range, incremental linear encoder with sin/cos signal transmission, 20 μ m sensor signal period, ironless 3-phase linear motor, 48 V

A-110.100B1

Pliglide LC linear stage, air bearings, 100 mm travel range, absolute linear encoder with BiSS-C signal transmission, 1 nm sensor resolution, ironless 3-phase linear motor, 48 V

Order information

A-110.200A1

Piglide LC linear stage, air bearings, 200 mm travel range, incremental linear encoder with sin/cos signal transmission, 20 µm sensor signal period, ironless 3-phase linear motor, 48 V

A-110.200B1

Piglide LC linear stage, air bearings, 200 mm travel range, absolute linear encoder with BiSS-C signal transmission, 1 nm sensor resolution, ironless 3-phase linear motor, 48 V

A-110.300A1

Piglide LC linear stage, air bearings, 300 mm travel range, incremental linear encoder with sin/cos signal transmission, 20 µm sensor signal period, ironless 3-phase linear motor, 48 V

A-110.300B1

Piglide LC linear stage, air bearings, 300 mm travel range, absolute linear encoder with BiSS-C signal transmission, 1 nm sensor resolution, ironless 3-phase linear motor, 48 V

A-110.400A1

Piglide LC linear stage, air bearings, 400 mm travel range, incremental linear encoder with sin/cos signal transmission, 20 µm sensor signal period, ironless 3-phase linear motor, 48 V

A-110.400B1

Piglide LC linear stage, air bearings, 400 mm travel range, absolute linear encoder with BiSS-C signal transmission, 1 nm sensor resolution, ironless 3-phase linear motor, 48 V