

Overview of "Linear Series" Piezoelectric Motion Unit

Low Temperature Piezoelectric Motion - Linear Series

Choose your suitable MultiFields® "Linear Series" products



Defined by size	"16mm Series"		"25mm Series"			"35mm Series"		Defined by size
1 Work Environment	<ul style="list-style-type: none"> •Default: 1.4 K ~ 400 K; 1e-7 mbar; 35Tesla •Option1 - .ULT, lowest use temperature 30 mK; •Option2 - .UHV, highest vacuum environment 2E-11 mbar; 							Work Environment 1
2 Dimensions	16*16*10.5 mm	16*16*16 mm	25*25*9.5 mm	25*25*19.6 mm	25*25*29.6 mm	35*35*10.5 mm	35*35*30 mm	Dimensions 2
3 Travel Range	3 mm	3 mm	6 mm	6 mm	16 mm	20 mm	8 mm	Travel Range 3
4 Max. Load	50 g	250 g	500 g	300 g	300 g	2500 g	500 g	Max. Load 4
5 Dynamic Drive Force	1.5 N	3 N	2 N	3 N	3 N	3 N	5 N	Dynamic Drive Force 5
6 Position Sensor	Resistive sensor							Position Sensor 6
Sensor Range	3 mm	3 mm	6 mm	6 mm	16 mm	20 mm	8 mm	Sensor Range
Sensor Resolution	150 nm							Sensor Resolution
Sensor Repeatability	1 -2 μm							Sensor Repeatability
7 Drive Voltage	Max. 200 V							Drive Voltage 7
8 Fine Tune Resolution @ 2 K*	sub-nanometer @ 2 K							Fine Tune Resolution @ 2 K* 8
9 Step Size (min) @ 300 K*	~ 10 nm @ 300 K							Step Size (min) @ 300 K* 9
10 Pins Number	Drive - 2 pins Sensor - 3 pins	Drive - 2 pins / 4pins (adv) Sensor - 3 pins	Drive - 2 pins Sensor - 3 pins	Drive - 2 pins / 4pins (adv) Sensor - 3 pins	Drive - 2 pins / 4pins (adv) Sensor - 3 pins	Drive - 2 pins Sensor - 3 pins	Drive - 2 pins / 4pins (adv) Sensor - 3 pins	Pins Number 10
11 Weight	10 g	12 g	24 g	34g	40 g	38 g	118 g	Weight 11

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

"16mm Series" – Linear16-x (closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

Smalle linear stage of x direction, 50g max load, closed-loop control

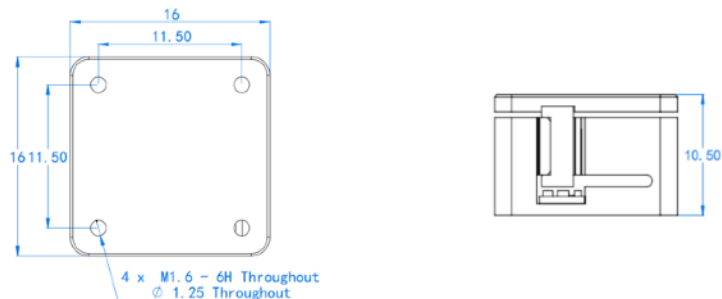


Linear16-x.HV

Features

- Compact design, dimensions: 16*16*10.5 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 50 g & 1.5 N
- Long travel range: 3 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



Linear16-x, Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

Optional Versions ⇄		.HV (default)	.ULT	.UHV	.ULT.UHV
		.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar			
1	Footprint × hight	16 mm × 16 mm × 10.5 mm			
2	Weight	10 g			
Working Environment					
3	Work environment	Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35 Tesla			
4	Option1 - 30 mK		✓		✓
5	Option2 - 2e-11 mbar			✓	✓
Materials					
6	Mainbody	Pure Ti	BeCu	Pure Ti	BeCu
7	Wires	Phosphor Bronze Twisted Paired Wires, 20cm			
8	Pin materials	Polyster (glass fiber filled), BeCu		Peek, BeCu	
9	Pins number	Drive - 2 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	sub - nm			
11	Step Size (min) @300 K*	~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range	3 mm			
13	Max. Velocity @300 K	~ 2 mm/s			
14	Max. Load	50 g			
15	Dynamic force	1.5 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder @2 K	Resistive Sensor			
17	Encoder range	3 mm			
18	Sensor resolution	~ 150 nm			
19	Repeatability	1 - 2 μm			

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

"16mm Series" – Linear16-z (closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

Smallest linear stage of z direction, with 250g super-high load

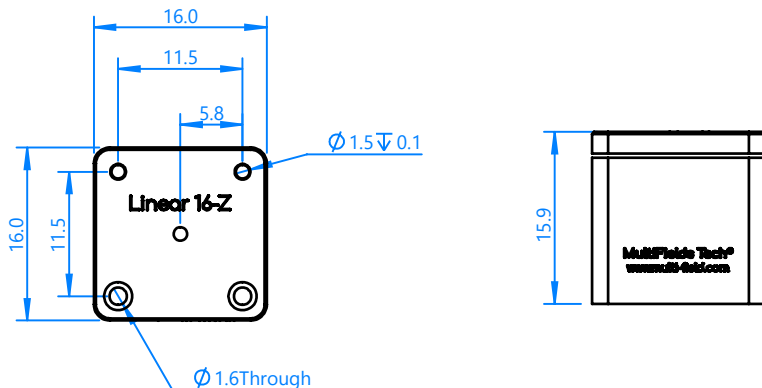


Linear16-z.HV

Features

- Compact design, dimensions: 16*16*16 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 250 g & 3 N
- Long travel range: 3 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



Linear16-z, Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

	Optional Versions ⇄	.HV (default)	.ULT	.UHV	.ULT.UHV
		.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar			
1	Footprint × height	16 mm × 16 mm × 16 mm			
2	Weight	12 g			
Working Environment					
3	Work environment	Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35 Tesla			
4	Option1 - 30 mK		✓		✓
5	Option2 - 2e-11 mbar			✓	✓
Materials					
6	Mainbody	Pure Ti	BeCu	Pure Ti	BeCu
7	Wires	Phosphor Bronze Twisted Paired Wires, 20cm			
8	Pin materials	Polyster (glass fiber filled), BeCu		Peek, BeCu	
9	Pins number	Drive - 2 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	sub - nm			
11	Step Size (min) @300 K*	~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range	3 mm			
13	Max. Velocity @300 K	~ 2 mm/s			
14	Max. Load	250 g			
15	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	3 mm			
18	Sensor resolution	~ 150 nm			
19	Repeatability	1 - 2 μm			

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

Piezoelectric Motion - LT

Piezoelectric Motion - LT

"25mm Series" – Linear25-x (closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

Perfect Balance. A top-of-the-line solution that combines a compact size with excellent motion performance

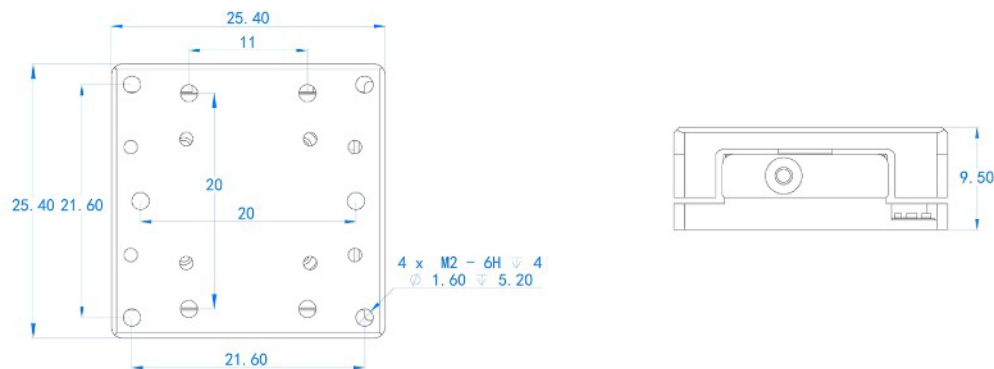


Linear25-x.HV

Features

- Compact design, dimensions: 25.4*25.4*9.5 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 500 g & 2 N
- Long travel range: 6 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



Linear25-x, Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

Optional Versions ⇄		.HV (default)	.ULT	.UHV	.ULT.UHV
		.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar			
1	Footprint × height	25.4 mm × 25.4 mm × 9.5 mm			
2	Weight	24 g			
Working Environment					
3	Work environment	Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35Tesla			
4	Option1 - 30 mK		✓		✓
5	Option2 - 2e-11 mbar			✓	✓
Materials					
6	Mainbody	Pure Ti	BeCu	Pure Ti	BeCu
7	Wires	Phosphor Bronze Twisted Paired Wires, 20cm			
8	Pin materials	Polyster (glass fiber filled), BeCu		Peek, BeCu	
9	Pins number	Drive - 4 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	sub - nm			
11	Step Size (min) @300 K*	~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range	6 mm			
13	Max. Velocity @300 K	~ 3 mm/s			
14	Max. Load	500 g			
15	Dynamic force	2 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	6 mm			
18	Sensor resolution	~ 150 nm			
19	Repeatability	1 - 2 μm			

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

Piezoelectric Motion - LT

Piezoelectric Motion - LT

"25mm Series" – Linear25-z (closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

Perfect Balance. A top-of-the-line solution for low cross-talk motion

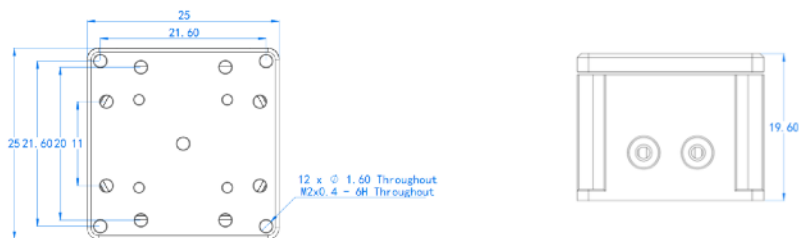


Linear25-z.HV

Features

- Compact design, dimensions: 25*25*19.6 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 300 g & 3 N
- Long travel range: 6 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



Linear25-z, Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

Optional Versions ⇄		.HV (default)	.ULT	.UHV	.ULT.UHV
		.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar			
1	Footprint × height	25 mm × 25 mm × 19.6 mm			
2	Weight	34 g			
Working Environment					
3	Work environment	Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35Tesla			
4	Option1 - 30 mK		✓		✓
5	Option2 - 2e-11 mbar			✓	✓
Materials					
6	Mainbody	Pure Ti	BeCu	Pure Ti	BeCu
7	Wires	Phosphor Bronze Twisted Paired Wires, 20cm			
8	Pin materials	Polyster (glass fiber filled), BeCu		Peek, BeCu	
9	Pins number	Drive - 2 pins /4 pins (adv) , Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	sub - nm			
11	Step Size (min) @300 K*	~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range	6 mm			
13	Max. Velocity @300 K	~ 2 mm/s			
14	Max. Load	300 g			
15	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	6 mm			
18	Sensor resolution	~ 150 nm			
19	Repeatability	1 - 2 μm			

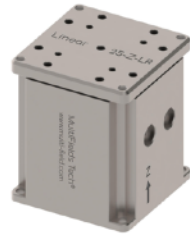
Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

"25mm Series" – Linear25-z-LR (closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

Large motion range with low cross-talk in XY direction



Linear25-z-LR.HV

Features

- Compact design, dimensions: 25*25*29.6 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 300 g & 3 N
- Long travel range: 16 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



Linear25-z-LR, Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

Optional Versions ⇄		.HV (default)	.ULT	.UHV	.ULT.UHV
		.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar			
1	Footprint × hight	25 mm × 25 mm × 29.6 mm			
2	Weight	40 g			
Working Environment					
3	Work environment	Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35 Tesla			
4	Option1 - 30 mK		✓		✓
5	Option2 - 2e-11 mbar			✓	✓
Materials					
6	Mainbody	Pure Ti	BeCu	Pure Ti	BeCu
7	Wires	Phosphor Bronze Twisted Paired Wires, 20cm			
8	Pin materials	Polyster (glass fiber filled), BeCu		Peek, BeCu	
9	Pins number	Drive - 2 pins /4 pins (adv) , Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	sub - nm			
11	Step Size (min) @300 K*	~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range	16 mm			
13	Max. Velocity @300 K	~ 2 mm/s			
14	Max. Load	300 g			
15	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	16 mm			
18	Sensor resolution	~ 150 nm			
19	Repeatability	1 - 2 μm			

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

"35mm Series" – Linear35-x (closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

High-load linear stage with closed-loop control

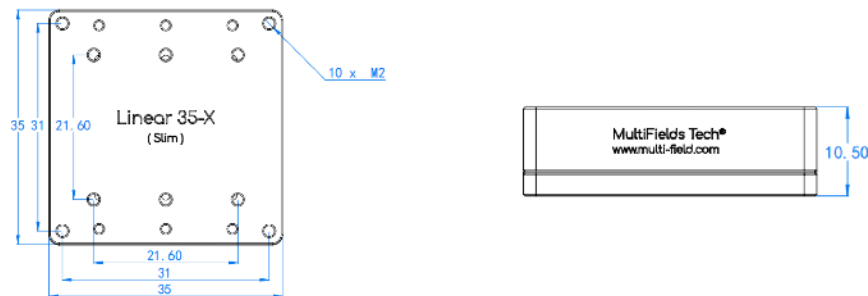


Linear35-x.HV

Features

- Compact design, dimensions: 35*35*10.5 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 2500 g & 3 N
- Long travel range: 20 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



Linear35-x, Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

Optional Versions ⇄	.HV (default)	.ULT	.UHV	.ULT.UHV	
.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar					
1	Footprint × height				
		35 mm × 35 mm × 10.5 mm			
2	Weight				
		38 g			
Working Environment					
3	Work environment				
		Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35 Tesla			
4	Option1 - 30 mK				
		✓		✓	
5	Option2 - 2e-11 mbar				
			✓	✓	
Materials					
6	Mainbody				
		Pure Ti	BeCu	Pure Ti	BeCu
7	Wires				
		Phosphor Bronze Twisted Paired Wires, 20cm			
8	Pin materials				
		Polyster (glass fiber filled), BeCu		Peek, BeCu	
9	Pins number				
		Drive - 3 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*				
		sub - nm			
11	Step Size (min) @300 K*				
		~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range				
		20 mm			
13	Max. Velocity @300 K				
		~ 2 mm/s			
14	Max. Load				
		2500 g			
15	Dynamic force				
		3 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder				
		Resistive Sensor			
17	Encoder range				
		20 mm			
18	Sensor resolution				
		~ 150 nm			
19	Repeatability				
		1 - 2 μm			

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

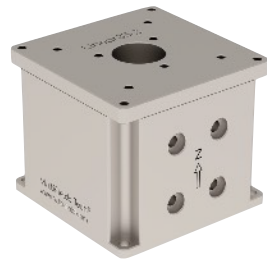
Piezoelectric Motion - LT

Piezoelectric Motion - LT

"35mm Series" – Linear35-z(closed-loop)

Low Temperature · Piezoelectric Motion- Linear Series

Optic optimized design - 10 mm diameter throughout aperture along motion axis.

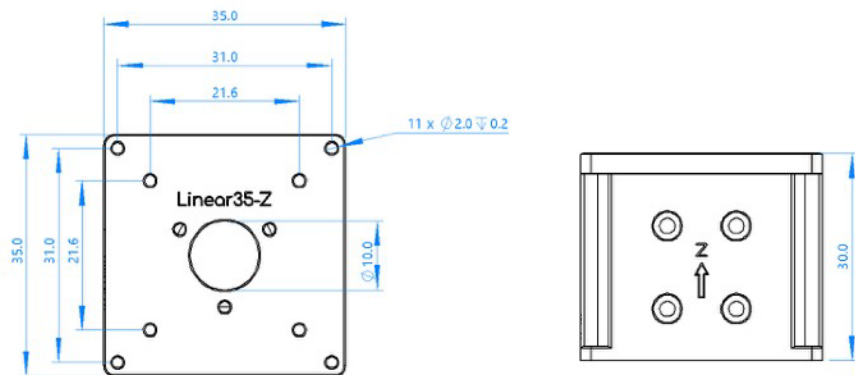


Linear35-z.HV

Features

- Compact design, dimensions: 35*35*30 mm
- Ultra-high vacuum & very low temperature compatible: 2 E-11 mbar & 30 mK
- Non-magnetic material Composed of pure Ti & BeCu, compatible with the 35 Tesla magnetic field
- High loads & high thrusts: 500 g & 3 N
- Long travel range: 8 mm
- Closed-loop control with position sensing up to 0.1 μm resolution
- Clear Aperture: 10 mm

Dimension drawing



Linear35-z , Specification

*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

Optional Versions ⇨		.HV (default)	.ULT	.UHV	.ULT.UHV
		.HV version, default product; .ULT version, used at He3 or dilution cryogenics systems .UHV version, compatible with 2E-11 mbar			
1	Footprint × height	35 mm × 35 mm × 30 mm			
2	Weight	118 g			
3	Clear Aperture	10 mm			
Working Environment					
4	Work environment	Temperature range: 1.4 ~ 400 K Vacuum: 1e-7 mbar Max. Magnetic field: 35 Tesla			
5	Option1 - 30 mK		✓		✓
6	Option2 - 2e-11 mbar			✓	✓
Materials					
7	Mainbody	Pure Ti	BeCu	Pure Ti	BeCu
8	Wires	Phosphor Bronze Twisted Paired Wires, 20cm			
9	Pin materials	Polyster (glass fiber filled), BeCu		Peek, BeCu	
10	Pins number	Drive - 3 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	sub - nm			
11	Step Size (min) @300 K*	~ 10 nm			
Motion (Closed Loop Mode)					
12	Travel range	8 mm			
13	Max. Velocity @300 K	~ 2 mm/s			
14	Max. Load	500 g			
15	Dynamic force	5 N			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	8 mm			
18	Sensor resolution	~ 150 nm			
19	Repeatability	1 - 2 μm			

Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

Step Size (min) @300 K—The open loop minimum incremental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.