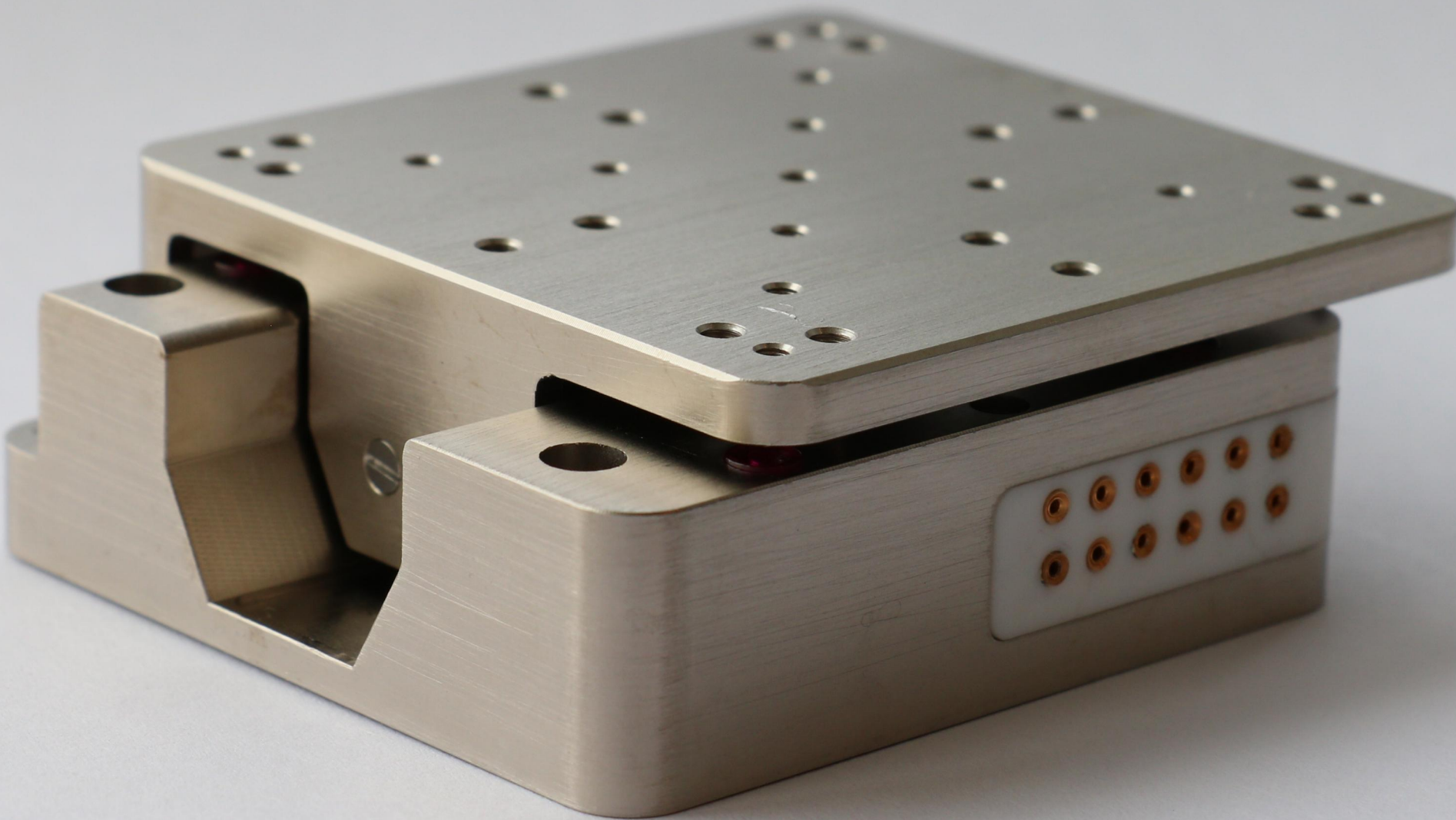
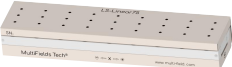




Low Temperature · Piezoelectric Motion Unit

A PRODUCT LINE OF PIEZOELECTRIC MOTION , MULTIFIELDS TECHNOLOGIES.

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Table 1 - Product Matrix of Motion Units (Work Below 2 K)

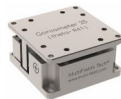
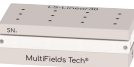
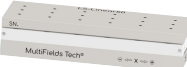
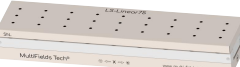
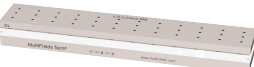
	"Linear" Series			"Rotator" Series		"Goniometer" Series		"Scanner" Series		
16mm Series (Footprint Size)	 Linear16-x	 Linear16-z		 Rotator16		NA		 Scanner16-xy	 Scanner16-z	5 Products
25mm Series (Footprint Size)	 Linear25-x	 Linear25-z	 Linear25-z-LR	 Rotator25	 Rotator25-optic	 Goniometer25-phi	 Goniometer25-theta	 Scanner25-xy	 Scanner25-z	9 Products
35mm Series (Footprint Size)	 Linear35-x	 Linear35-z-optic		 Rotator35		 Goniometer35-phi	 Goniometer35-theta	 Scanner35-xy	 Scanner35-z	7 Products
	Linear stage, 7 Products			Rotator, 4 Products		Goniometer, 4 Products		Scanner, 6 Products		Total, 21

Table 2 - Product Line of Long Stroke Linear Motion Units (Work Below 2 K)

Travel Range	30 mm	50 mm	75 mm	100 mm	200 mm	
Long Stroke Linear Motion Unit	 LS-Linear30	 LS-Linear50	 LS-Linear75	 LS-Linear100	 LS-Linear200	5 Products

List, all piezoelectric motion units PN

Including linear motion, rotation motion , tilting motion and scanning motion

.HV ~ 1e-7 mbar, High Vacuum
.UHV ~ 2e-11 mbar Ultra High Vacuum
.ULT ~ 10 mK, Ultra Low Temperature (BeCu Frame)

Linear16 Series

- Linear16-x.HV
- Linear16-x.UHV
- Linear16-x.ULT
- Linear16-x.UHV.ULT
- Linear16-z.HV
- Linear16-z.UHV
- Linear16-z.ULT
- Linear16-z.UHV.ULT

Rotator16 Series

- Rotator16.HV
- Rotator16.UHV
- Rotator16.ULT
- Rotator16.UHV.ULT

Scanner16 Series

- Scanner16-xy.HV
- Scanner16-xy.UHV
- Scanner16-xy.ULT
- Scanner16-xy.UHV.ULT
- Scanner16-z.HV
- Scanner16-z.UHV
- Scanner16-z.ULT
- Scanner16-z.UHV.ULT
-

Linear25-x Series

- Linear25-x.Slim.HV
- Linear25-x.Slim.UHV
- Linear25-x.Slim.ULT
- Linear25-x.Slim.UHV.ULT

Linear25-z Series

- Linear25-z.HV
- Linear25-z.UHV
- Linear25-z.ULT
- Linear25-z.UHV.ULT
- Linear25-z.HV.LR
- Linear25-z.UHV.LR
- Linear25-z.ULT.LR
- Linear25-z.UHV.ULT.LR

Rotator25 Series

- Rotator25.HV
- Rotator25.UHV
- Rotator25.ULT
- Rotator25.UHV.ULT
- Rotator25-optic.HV
- Rotator25-optic.UHV
- Rotator25-optic.ULT
- Rotator25-optic.UHV.ULT

Scanner25 Series

- Scanner25-xy.HV
- Scanner25-xy.UHV
- Scanner25-xy.ULT
- Scanner25-xy.UHV.ULT
- Scanner25-z.HV

- Scanner25-z.UHV
- Scanner25-z.ULT
- Scanner25-z.UHV.ULT

Goniometer25 Series

- Goniometer25-phi.HV
- Goniometer25-phi.UHV
- Goniometer25-phi.ULT
- Goniometer25-phi.UHV.ULT
- Goniometer25-theta.HV
- Goniometer25-theta.UHV
- Goniometer25-theta.ULT
- Goniometer25-theta.UHV.ULT

Linear35-optic Series

- Linear35-z-optic.HV
- Linear35-z-optic.UHV
- Linear35-z-optic.ULT
- Linear35-z-optic.UHV.ULT

Rotator35 Series

- Rotator35.HV
- Rotator35.UHV
- Rotator35.ULT
- Rotator35.UHV.ULT

Goniometer35 Series

- Goniometer35-phi.HV
- Goniometer35-phi.UHV
- Goniometer35-phi.ULT
- Goniometer35-phi.UHV.ULT

- Goniometer35-theta.HV
- Goniometer35-theta.UHV
- Goniometer35-theta.ULT
- Goniometer35-theta.UHV.ULT

Scanner35 Series

- Scanner35-xy.HV
- Scanner35-xy.UHV
- Scanner35-xy.ULT
- Scanner35-xy.UHV.ULT
- Scanner35-z.HV
- Scanner35-z.UHV
- Scanner35-z.ULT
- Scanner35-z.UHV.ULT

LS-Linear Series

- LS-Linear30.HV
- LS-Linear50.HV
- LS-Linear75.HV
- LS-Linear100.HV
- LS-Linear200.HV
- LS-Linear30.UHV
- LS-Linear50.UHV
- LS-Linear75.UHV
- LS-Linear100.UHV
- LS-Linear200.UHV

Total, 90 Products

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	•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

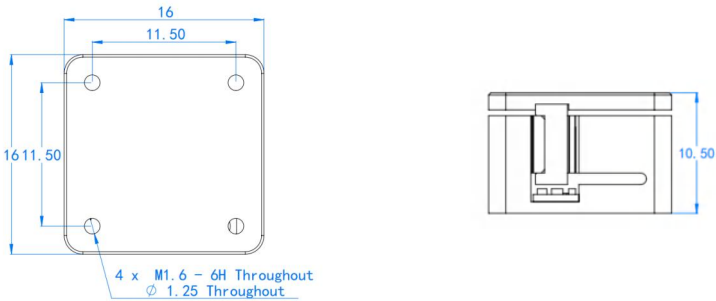


Linear16-x.HV

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

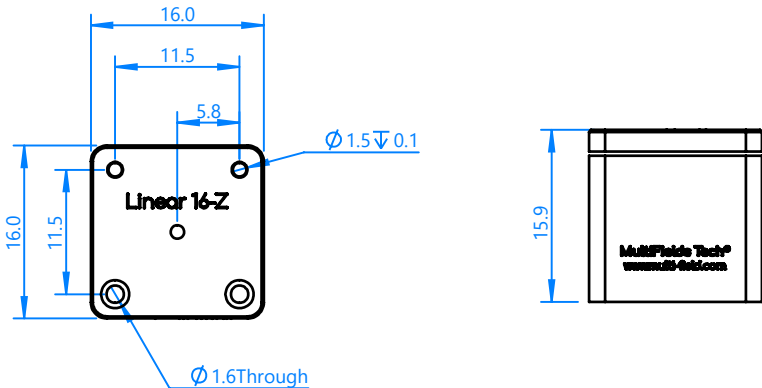


Linear16-z.HV

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 × hight	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.

"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

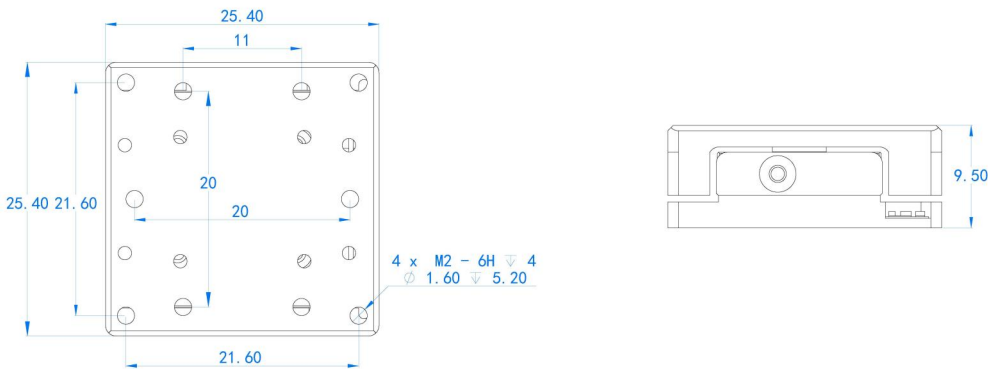


Linear25-x.HV

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 × hight	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.

"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 × hight	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

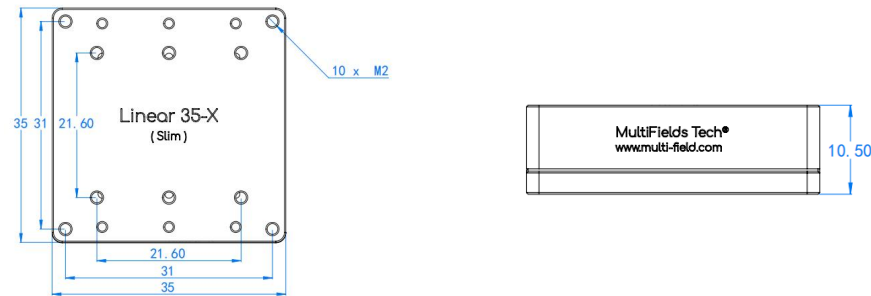


Linear35-x.HV

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 × hight	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			

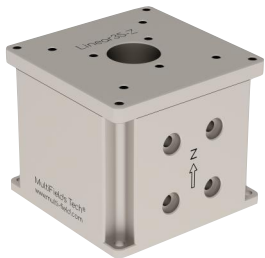
Fine Tune Resolution @2 K—Fine tune mode is a unique analog motion driven method, where piezo units are controlled by analog voltage signal, instead of continuous high frequency wave sequence. Because the resolution of the analog signal is very high, the stage can achieve sub-nano meter positioning accuracy.

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.

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

Low Temperature · Piezoelectric Motion- Linear Series

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

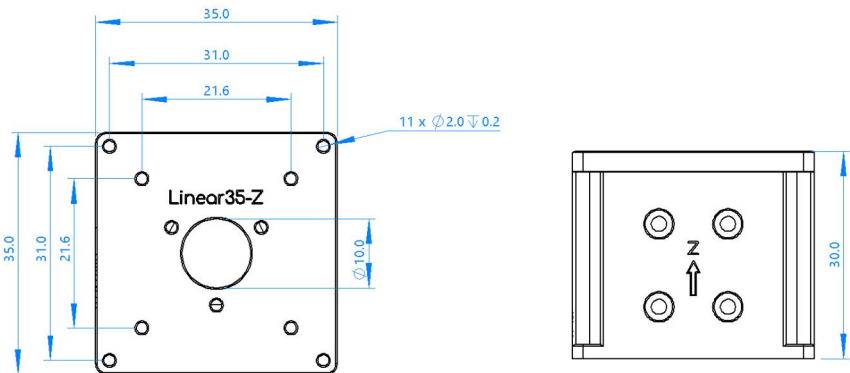


Linear35-z.HV

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 × hight	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.

Overview of "Rotator Series" Piezoelectric Motion Unit

Low Temperature · Piezoelectric Motion - Rotator Series

Choose your suitable MultiFields® "Rotator Series" product



Rotator16



Rotator25



Rotator25-optic



Rotator35

Series defined by size		"16mm Series"	"25mm Series"	"25mm Series"	"35mm Series"	Series defined by size	
1	Work Environment	• Default: 1.4 K ~ 400 K; 1e-7 mbar; 35 Tesla • Option1 - .ULT, lowest use temperature 30 mK; • Option2 - .UHV, highest vacuum environment 2E-11 mbar;				Work Environment 1	
2	Dimensions	Dia 16*15.6 mm	25*25*16.5 mm	30*23*14.5 mm	35*35*16.5 mm	Dimensions 2	
3	Travel Range	360 ° endless				Travel Range 3	
4	Max. Load	100 g	250 g	250 g	500 g	Max. Load 4	
5	Dynamic Torque	0.4 Ncm	1.5 Ncm	1.5 Ncm	2.5 Ncm	Dynamic Torque 5	
6	Max. Velocity @300 K	10 °/s	3 °/s	3 °/s	10 °/s	Max. Velocity @300 K 6	
7	Encoder	Resistive Sensor				Encoder 7	
Sensor Range		270 °	320 °	320 °		Sensor Range	
Sensor Resolution		10 m°				Sensor Resolution	
Sensor Repeatability		50 m°				Sensor Repeatability	
8	Fine Tune Resolution @ 2 K*	5 μ°	4 μ°	4 μ°	3 μ°	Fine Tune Resolution @ 2 K* 8	
9	Step Size (min) @ 300 K*	0.5 m°	0.4 m°	0.4 m°	0.3 m°	Step Size (min) @ 300 K* 9	
10	Pins	Drive - 2 pins Sensor - 3 pins				Pins 10	
11	Main Body	Default: Pure Ti ULT: BeCu				Main Body 11	
12	Weight	10 g	24 g	24 g	45 g	Weight 12	

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" – Rotator16 (closed-loop)

Low Temperature · Piezoelectric Motion- Rotator Series

Smallest rotary stage with closed-loop control

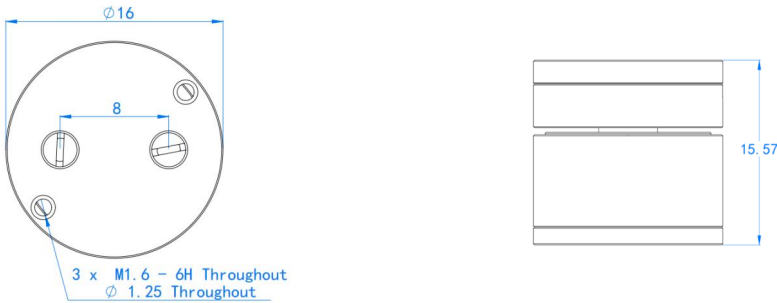


Rotator16.HV

Features

- Compact design, dimensions: Dia 16*15.6 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 torque: 100 g & 0.4 Ncm
- Travel range: 360 ° endless
- Closed-loop control with position sensing up to 10 m° resolution

Dimension drawing



Rotator16, 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	Dia 16 mm × 15.6 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*	5 μ°			
11	Step Size (min) @300 K*	0.5 m°			
Motion (Closed Loop Mode)					
12	Travel range	360 ° endless			
13	Max. Velocity @300 K	~ 10 °/s			
14	Max. Load	100 g			
15	Dynamic torque	0.4 Ncm			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	270 °			
18	Sensor resolution	10 m°			
19	Repeatability	~ 50 m°			

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" – Rotator25 (closed-loop)

Low Temperature · Piezoelectric Motion- Rotator Series

Rotary stage with closed-loop control



Rotator25.HV

Features

- Compact design, dimensions: 25*25*14.5 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 torque: 250 g & 1.5 Ncm
- Travel range: 360 ° endless
- Closed-loop control with position sensing up to 10 m° resolution

Dimension drawing



Rotator25, 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 × 14.5 mm			
2	Weight	24 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*	4 μ°			
11	Step Size (min) @300 K*	0.4 m°			
Motion (Closed Loop Mode)					
12	Travel range	360 ° endless			
13	Max. Velocity @300 K	~ 3 °/s			
14	Max. Load	250 g			
15	Dynamic torque	1.5 Ncm			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	320 °			
18	Sensor resolution	10 m°			
19	Repeatability	~ 50 m°			

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" – Rotator25-optic (closed-loop)

Low Temperature · Piezoelectric Motion- Rotator Series

Optic optimized design - with 6 mm diameter throughout aperture along rotation axis.

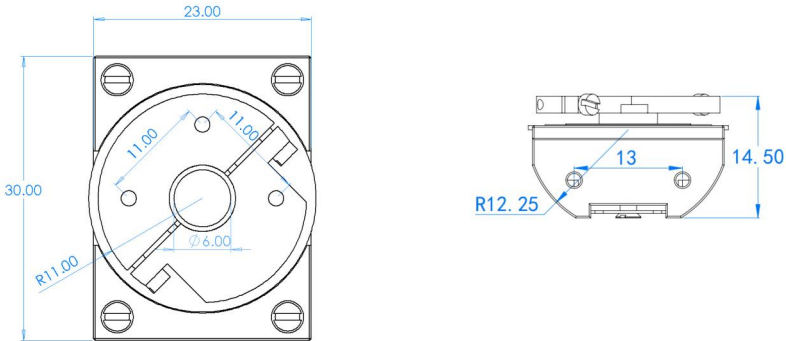


Rotator25-optic.HV

Features

- Compact design, dimensions: 30*23*14.5 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 torque: 250 g & 1.5 Ncm
- Travel range: 360 ° endless
- Closed-loop control with position sensing up to 10 m° resolution
- Aperture Φ 6 mm

Dimension drawing



Rotator25-optic, 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	30 mm × 23 mm × 14.5 mm			
2	Weight	24 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*	4 μ°			
11	Step Size (min) @300 K*	0.4 m°			
Motion (Closed Loop Mode)					
12	Travel range	360 ° endless			
13	Max. Velocity @300 K	~ 3 °/s			
14	Max. Load	250 g			
15	Dynamic torque	1.5 Ncm			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	320 °			
18	Sensor resolution	10 m°			
19	Repeatability	~ 50 m°			

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" – Rotator35 (closed-loop)

Low Temperature · Piezoelectric Motion- Rotator Series

Rotary stage with closed-loop control

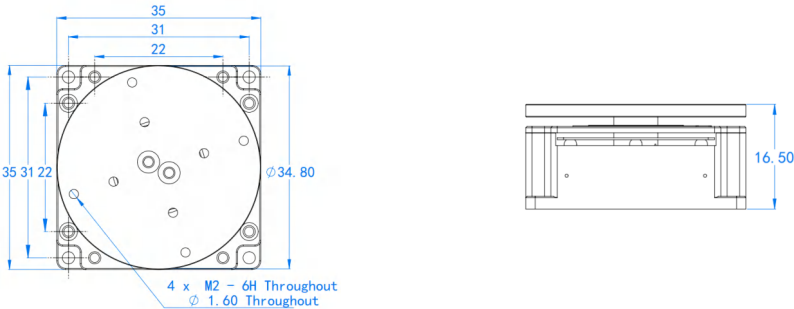


Rotator35.HV

Features

- Compact design, dimensions: 35*35*16.5 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 torque: 500 g & 2.5 Ncm
- Travel range: 360 ° endless
- Closed-loop control with position sensing up to 10 m° resolution

Dimension drawing



Rotator35, 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	35 mm × 35 mm × 16.5 mm			
2	Weight	45 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*	3 μ°			
11	Step Size (min) @300 K*	0.3 m°			
Motion (Closed Loop Mode)					
12	Travel range	360 ° endless			
13	Max. Velocity @300 K	~ 10 °/s			
14	Max. Load	500 g			
15	Dynamic torque	2.5 Ncm			
Position Sensor (Closed Loop Mode)					
16	Position encoder	Resistive Sensor			
17	Encoder range	320 °			
18	Sensor resolution	10 m°			
19	Repeatability	~ 50 m°			

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.

Overview Of "Goniometer Series" Piezoelectric Motion Unit

Low Temperature Piezoelectric Motion - Goniometer Series

Choose your suitable MultiFields® "Goniometer Series" product



Goniometer25-theta



Goniometer25-phi



Goniometer35-theta



Goniometer35-phi

Series defined by size		"25mm Series"		"35mm Series"		Series defined by size	
1	Work Environment	• Default: 1.4 K ~ 400 K; 1e-7 mbar; 35 Tesla • Option1 - .ULT, lowest use temperature 30 mK; • Option2 - .UHV, highest vacuum environment 2E-11 mbar;				Work Environment	1
2	Dimensions	25*25*12.5 mm	25*25*12.5 mm	35*35*16 mm	35*35*16 mm	Dimensions	2
3	Rotation Center To Top Plate	41 mm	53.5 mm	50 mm	66 mm	Rotation Center To Top Plate	3
4	Travel Range	6.6 °	6 °	12 °	10 °	Travel Range	4
5	Max. Load	200 g	200 g	500 g	500 g	Max. Load	5
6	Dynamic Force	2.2 N	2.2 N	3 N	3 N	Dynamic Force	6
7	Encoder	Resistive Sensor				Encoder	7
Sensor Range		6.6 °	6 °	12 °	10 °	Sensor Range	
Sensor Resolution		0.2 m°		0.5 m°		Sensor Resolution	
8	Fine Tune Resolution @ 2 K*	0.5 μ°				Fine Tune Resolution @ 2 K*	8
9	Step Size (min) @300 K*	50 μ°				Step Size (min) @300 K*	9
10	Pins	Driven - 2 pins; Sensor - 3 pins				Pins	9
11	Main Body	Default: Pure Ti; ULT: BeCu				Main Body	10
12	Weight	20 g	20 g	70 g	70 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 increamental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.

"25mm Series" – Goniometer25-theta (closed-loop)

Low Temperature · Piezoelectric Motion- Goniometer Series

Tilter stage with closed-loop control

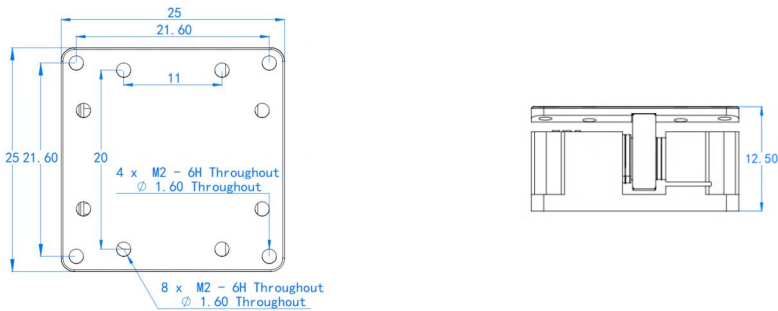


Goniometer25-theta.HV

Features

- Compact design, dimensions: 25*25*12.5 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 & rotation center to top plate: 200 g & 41 mm
- Long travel range: 6.6 °
- Closed-loop control with position sensing up to 0.2 m° resolution

Dimension drawing



Goniometer25-theta, 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 × 12.5 mm			
2	Weight	20 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*	0.5 μ°			
11	Step Size (min) @300 K*	50 μ°			
Motion (Closed Loop Mode)					
12	Travel range	~ 6.6 °			
13	Max. Velocity @300 K	~ 1 °/s			
14	Max. Load	200 g			
15	Dynamic force	2.2 N			
16	Rotation center to top plate	41 mm			
Position Sensor (Closed Loop Mode)					
17	Position encoder	Resistive Sensor			
18	Encoder range	6.6 °			
19	Sensor resolution	0.2 m°			

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" – Goniometer25-phi (closed-loop)

Low Temperature · Piezoelectric Motion- Goniometer Series

Tilter stage with closed-loop control

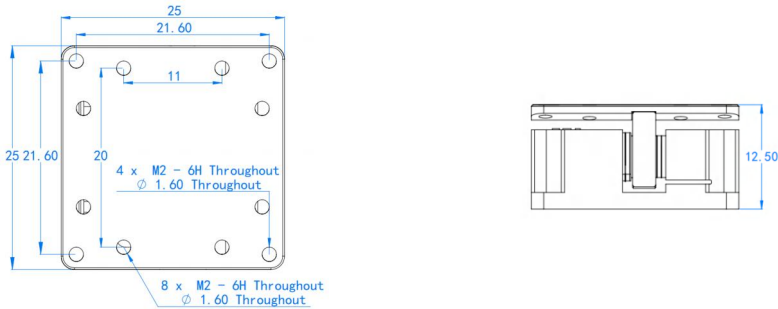


Goniometer25-phi.HV

Features

- Compact design, dimensions: 25*25*12.5 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 & rotation center to top plate: 200 g & 53.5 mm
- Long travel range: 6 °
- Closed-loop control with position sensing up to 0.2 m° resolution

Dimension drawing



Goniometer25-phi, 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 × 12.5 mm			
2	Weight	20 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*	0.5 μ°			
11	Step Size (min) @300 K*	50 μ°			
Motion (Closed Loop Mode)					
12	Travel range	~ 6 °			
13	Max. Velocity @300 K	~ 1 °/s			
14	Max. Load	200 g			
15	Dynamic force	2.2 N			
16	Rotation center to top plate	53.5 mm			
Position Sensor (Closed Loop Mode)					
17	Position encoder	Resistive Sensor			
18	Encoder range	6 °			
19	Sensor resolution	0.2 m°			

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" – Goniometer35-theta (closed-loop)

Low Temperature · Piezoelectric Motion- Goniometer Series

Tilter stage with closed-loop control

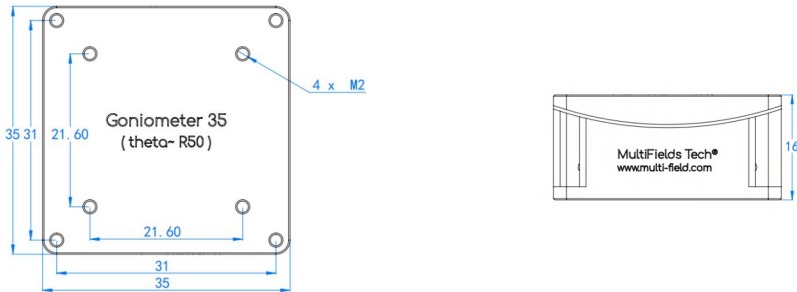


Goniometer35-theta.HV

Features

- Compact design, dimensions: 35*35*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 & rotation center to top plate: 500 g & 50 mm
- Long travel range: 12 °
- Closed-loop control with position sensing up to 0.5 m° resolution

Dimension drawing



Goniometer35-theta, 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	35 mm × 35 mm × 16 mm			
2	Weight	70 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	Driven - 2 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	0.5 μ°			
11	Step Size (min) @300 K*	50 μ°			
Motion (Closed Loop Mode)					
12	Travel range	~ 12 °			
13	Max. Velocity @300 K	~ 1 °/s			
14	Max. Load	500 g			
15	Dynamic force	3 N			
16	Rotation center to top plate	50 mm			
Position Sensor (Closed Loop Mode)					
17	Position encoder	Resistive Sensor			
18	Encoder range	12 °			
19	Sensor resolution	0.5 m°			

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" – Goniometer35-phi (closed-loop)

Low Temperature · Piezoelectric Motion- Goniometer Series

Tilter stage with closed-loop control

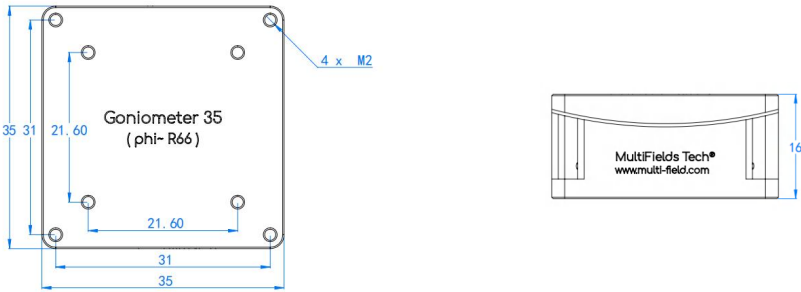


Goniometer35-phi.HV

Features

- Compact design, dimensions: 35*35*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 & rotation center to top plate: 500 g & 66 mm
- Long travel range: 10 °
- Closed-loop control with position sensing up to 0.5 m° resolution

Dimension drawing



Goniometer35-phi, 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	35 mm × 35 mm × 16 mm			
2	Weight	70 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	Driven - 2 pins, Sensor - 3 pins			
Open Loop Movement - Single Step Mode & Fine Tune					
10	Fine Tune Resolution @2 K*	0.5 μ°			
11	Step Size (min) @300 K*	50 μ°			
Motion (Closed Loop Mode)					
12	Travel range	~ 10 °			
13	Max. Velocity @300 K	~ 1 %/s			
14	Max. Load	500 g			
15	Dynamic force	3 N			
16	Rotation center to top plate	66 mm			
Position Sensor (Closed Loop Mode)					
17	Position encoder	Resistive Sensor			
18	Encoder range	12 °			
19	Sensor resolution	0.5 m°			

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.

Overview of “Scanner Series” Piezoelectric Motion Unit

Low Temperature Piezoelectric Motion - Scanner Series

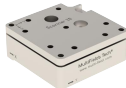
Choose your suitable MultiFields® “Scanner Series” product



Scanner16-xy



Scanner16-z



Scanner25-xy



Scanner25-z



Scanner35-xy



Scanner35-z

Series defined by size		“16mm Series”		“25mm Series”	“25mm Series”	“35mm Series”		Series defined by size
1	Work Environment	• Default: 1.4 K ~ 400 K; 1e-7 mbar; 35 Tesla • Option1 - .ULT, lowest use temperature 30 mK; • Option2 - .UHV, highest vacuum environment 2E-11 mbar;						Work Environment 1
2	Scanning Axes	X, Y	Z	X, Y	Z	X, Y	Z	Scanning Axes 2
3	Dimensions	16*16*9 mm	16*16*6 mm	25*25*13.5 mm	25*25*12 mm	35*35*14.5 mm	35*35*14.5 mm	Dimensions 3
4	Travel Range	30 μm*30 μm	30 μm	55 μm*55um	55 μm	100 μm*100 μm	100 μm	Travel Range 4
5	Max. Load	100 g	100 g	200 g	200 g	500 g	500 g	Max. Load 5
6	Repeatability	< 10 nm						Repeatability 6
7	Drive Voltage	Max. 75 V @300K; Max. 180 V @4K						Drive Voltage 7
8	Resolution	0.5 nm	0.5 nm	0.8 nm	0.8 nm	2 nm	2 nm	Resolution 8
9	Pins	4 pins	2 pins	4 pins	2 pins	4 pins	2 pins	Pins 9
10	Main Body	Default: Pure Ti; ULT: BeCu						Main Body 10
11	Weight	8 g	7g	23 g	20 g	65 g	65 g	Weight 11

"16 mm Series" – Scanner16-xy

Low Temperature · Piezoelectric Motion- Scanner Series

Smallest scanner stage

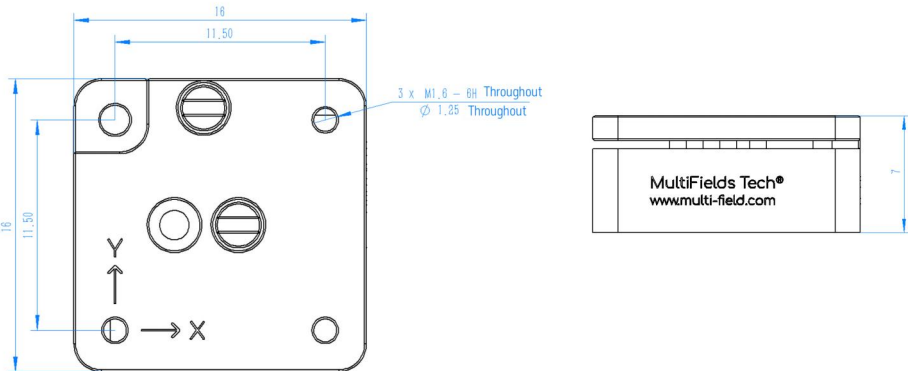


Scanner16-xy.HV

Features

- Compact design, dimensions: 16*16*7 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: 100 g
- Long travel range @300 K: 30*30 μm
- Position sensing up to 0.5 nm resolution

Dimension drawing



Scanner16–xy, 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 × 7 mm			
2	Weight	8 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	2 pins for each axis			
Motion (Closed Loop Mode)					
10	Scanning Axes	X, Y			
11	Travel range @300 K	30 × 30 μm			
12	Drive voltage	Max. 75 V @300 K Max. 180 V @4 K			
13	Max. Load	100 g			
14	Capacitance @300 K	1 uF			
15	Resolution	0.5 nm			
16	Repeatability	< 10 nm			

"16 mm Series" – Scanner16-z

Low Temperature · Piezoelectric Motion- Scanner Series

Smallest scanner stage

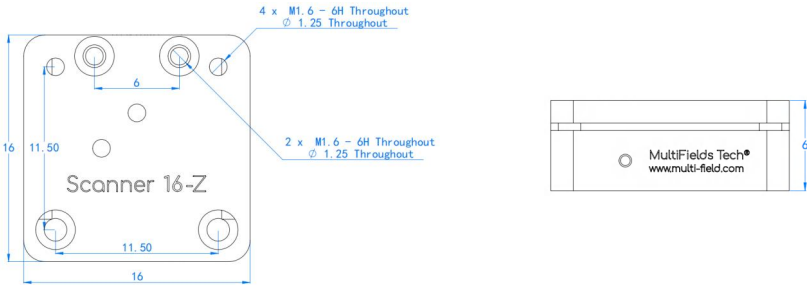


Scanner16-z.HV

Features

- Compact design, dimensions: 16*16*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: 100 g
- Long travel range @300 K: 30 μm
- Position sensing up to 0.5 nm resolution

Dimension drawing



Scanner16-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 × hight	16 mm × 16 mm × 6 mm			
2	Weight	7g			
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	2 pins			
Motion (Closed Loop Mode)					
10	Scanning Axes	Z			
11	Travel range @300 K	30 μm			
12	Drive voltage	Max. 75 V @300 K Max. 180 V @4 K			
13	Max. Load	100 g			
14	Capacitance @300 K	0.8 uF			
15	Resolution	0.5 nm			
16	Repeatability	< 10 nm			

"25 mm Series" – Scanner25-xy

Low Temperature · Piezoelectric Motion- Scanner Series

High-load scanner stage

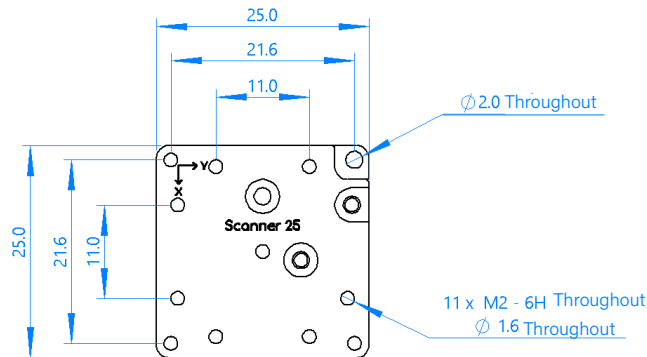


Scanner25-xy.HV

Features

- Compact design, dimensions: 25*25*10 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: 200 g
- Long travel range @300 K: 55*55 μm
- Position sensing up to 0.8 nm resolution

Dimension drawing



Scanner25-xy, 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 × 10 mm			
2	Weight	23 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	2 pins for each axis			
Motion (Closed Loop Mode)					
10	Scanning Axes	X, Y			
11	Travel range @300 K	55 × 55 μm			
12	Drive voltage	Max. 75 V @300 K Max. 180 V @4 K			
13	Max. Load	200 g			
14	Capacitance @300 K	4 uF			
15	Resolution	0.8 nm			
16	Repeatability	< 10 nm			

"25 mm Series" – Scanner25-z

Low Temperature · Piezoelectric Motion- Scanner Series

High-load scanner stage

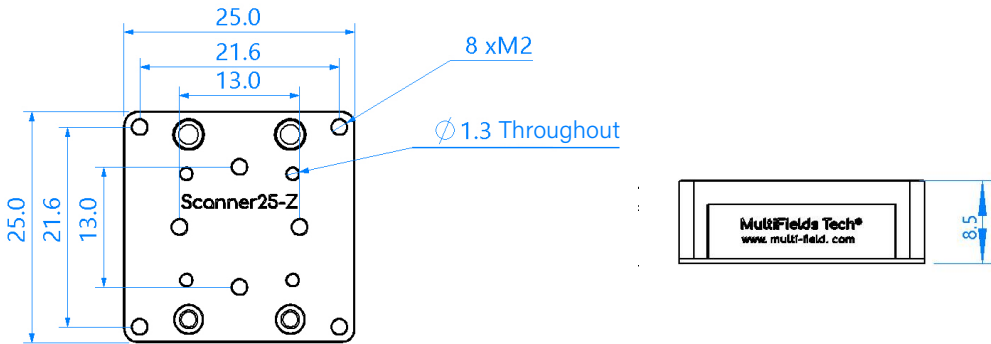


Scanner25-z.HV

Features

- Compact design, dimensions: 25*25*8.5 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: 200 g
- Long travel range @300 K: 55 μ m
- Position sensing up to 0.8 nm resolution

Dimension drawing



Scanner25-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 × hight	25 mm × 25 mm × 8.5 mm			
2	Weight	20 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	2 pins			
Motion (Closed Loop Mode)					
10	Scanning Axes	Z			
11	Travel range @300 K	55 μm			
12	Drive voltage	Max. 75 V @300 K Max. 180 V @4 K			
13	Max. Load	200 g			
14	Capacitance @300 K	4.2 uF			
15	Resolution	0.8 nm			
16	Repeatability	< 10 nm			

"35 mm Series" – Scanner35-xy

Low Temperature · Piezoelectric Motion- Scanner Series

High-load scanner stage

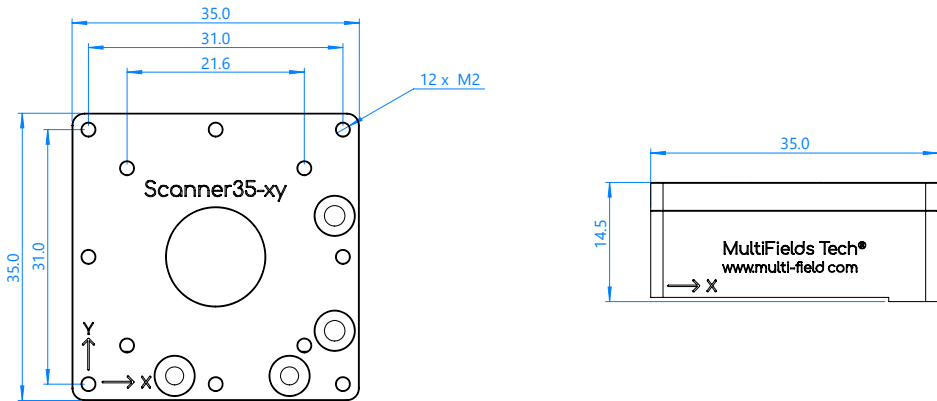


Scanner35-xy.HV

Features

- Compact design, dimensions: 35*35*14.5 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: 500 g
- Long travel range @300 K: 100*100 μm
- Position sensing up to 2 nm resolution

Dimension drawing



Scanner35-xy, 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	35 mm × 35 mm × 14.5 mm			
2	Weight	65 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	2 pins for each axis			
Motion (Closed Loop Mode)					
10	Scanning Axes	X, Y			
11	Travel range @300 K	100 × 100 μm			
12	Drive voltage	Max. 75 V @300 K Max. 180 V @4 K			
13	Max. Load	500 g			
14	Capacitance @300 K	8 uF			
15	Resolution	2 nm			
16	Repeatability	< 10 nm			

"35 mm Series" – Scanner35-z

Low Temperature · Piezoelectric Motion- Scanner Series

High-load scanner stage

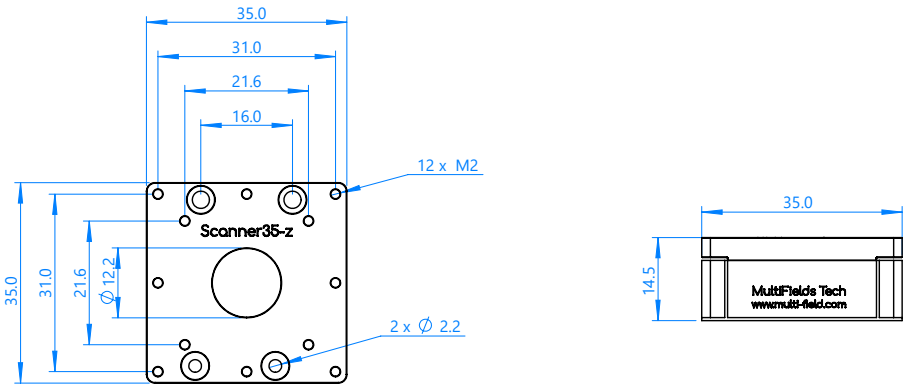


Scanner35-z.HV

Features

- Compact design, dimensions: 35*35*14.5 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: 500 g
- Long travel range @300 K: 100 μ m
- Position sensing up to 2 nm resolution

Dimension drawing



Scanner35-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 × hight	35 mm × 35 mm × 14.5 mm			
2	Weight	65 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	2 pins			
Motion (Closed Loop Mode)					
10	Scanning Axes	Z			
11	Travel range @300 K	100 μm			
12	Drive voltage	Max. 75 V @300 K Max. 180 V @4 K			
13	Max. Load	500 g			
14	Capacitance @300 K	8 uF			
15	Resolution	2 nm			
16	Repeatability	< 10 nm			

Overview of “LS-Linear Series” Piezoelectric Motion Unit

Low Temperature Piezoelectric Motion - Scanner Series

Choose your suitable MultiFields® “LS-linear Series” product



Series defined by size							Series defined by size	
1	Work Environment	• Default: 1.4 K ~ 400 K; 1e-7 mbar; 35 Tesla • Option1 - .ULT, lowest use temperature 30 mK; • Option2 - .UHV, highest vacuum environment 2E-11 mbar;					Work Environment	1
2	Motion Axes	X Axis					Motion Axes	2
3	Dimensions	60 mm × 32 mm × 19.5 mm	90 mm × 32 mm × 19.5 mm	135 mm × 32 mm × 19.5 mm	180 mm × 32 mm × 19.5 mm	320 mm × 32 mm × 19.5 mm	Dimensions	3
4	Travel Range	30 mm	50 mm	75 mm	100 mm	200 mm	Travel Range	4
5	Max. Load	0.75 kg	1.5 kg			2 kg	Max. Load	5
6	Positioner Sensor	Resistive sensor					Positioner Sensor	6
	Sensor Range	30 mm	50 mm	75 mm	100 mm	200 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	Pins	Drive - 2 pins, Sensor - 3 pins					Pins	8
9	Main Body	Default: Pure Ti; ULT: BeCu					Main Body	9
10	Weight	120 g	150 g	200 g	300 g	600 g	Weight	10

“LS-linear series” – LS-Linear30

Low Temperature · Piezoelectric Motion- Long Stroke Linear Stage

Long travel range 30 mm (1.2 inch), linear motion stage

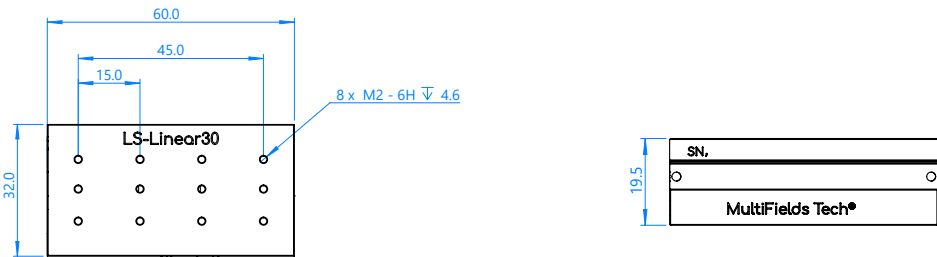


LS-Linear30

Features

- Compact design, dimensions: 60*32*19.5 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: 750 g & 3 N
- Long travel range: 30 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



LS-Linear30, 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	60 mm × 32 mm × 19.5 mm			
2	Weight	120 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			
Motion (Closed Loop Mode)					
10	Travel range	30 mm			
11	Max. Velocity @300 K	~ 3 mm/s			
12	Drive voltage	Max. 200 V			
13	Max. Load	750 g			
14	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
15	Position encoder	Resistive Sensor			
16	Encoder range	30 mm			
17	Sensor resolution	~ 150 nm			
18	Repeatability	1 - 2 μm			

“LS-linear series” – LS-Linear50

Low Temperature · Piezoelectric Motion- Long Stroke Linear Stage

Long travel range 50 mm (2 inch), linear motion stage

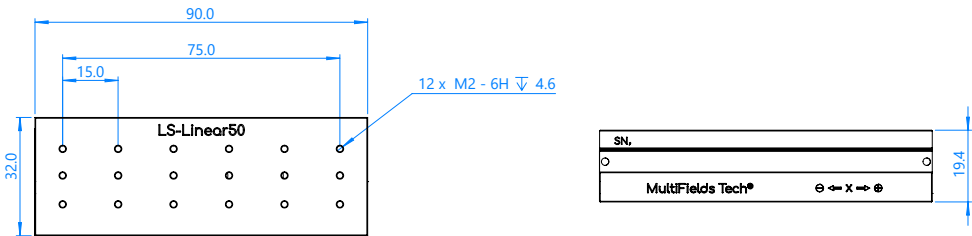


LS-Linear50

Features

- Compact design, dimensions: 90*32*19.5 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: 750 g & 3 N
- Long travel range: 50 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



LS-Linear50, Specification

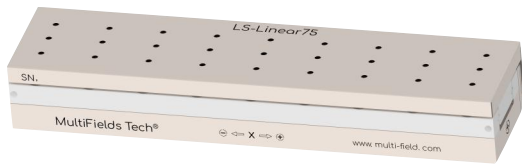
*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

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	90 mm × 32 mm × 19.5 mm			
2	Weight	150 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			
Motion (Closed Loop Mode)					
10	Travel range	50 mm			
11	Max. Velocity @300 K	~ 3 mm/s			
12	Drive voltage	Max. 200 V			
13	Max. Load	750 g			
14	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
15	Position encoder	Resistive Sensor			
16	Encoder range	50 mm			
17	Sensor resolution	~ 150 nm			
18	Repeatability	1 - 2 μm			

“LS-linear-series” – LS-Linear75

Low Temperature · Piezoelectric Motion- Long Stroke Linear Stage

Long travel range 75 mm (3 inch), linear motion stage

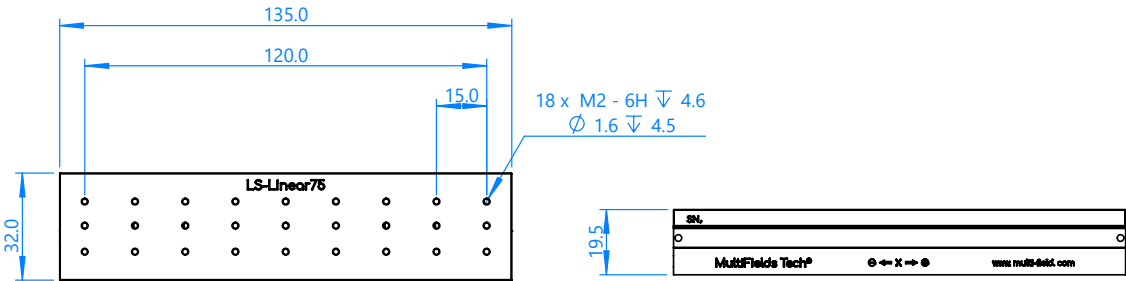


LS-Linear75

Features

- Compact design, dimensions: 135*32*19.5 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: 1000 g & 3 N
- Long travel range: 75 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



LS-Linear75, Specification

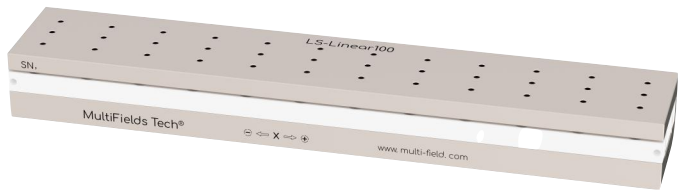
*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

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	135 mm × 32 mm × 19.5 mm			
2	Weight	200 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			
Motion (Closed Loop Mode)					
10	Travel range	75 mm			
11	Max. Velocity @300 K	~ 3 mm/s			
12	Drive voltage	Max. 200 V			
13	Max. Load	1000 g			
14	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
15	Position encoder	Resistive Sensor			
16	Encoder range	75mm			
17	Sensor resolution	~ 150 nm			
18	Repeatability	1 - 2 μm			

“LS-linear-series” – LS-Linear100

Low Temperature · Piezoelectric Motion- Long Stroke Linear Stage

Long travel range 100 mm (4 inch), linear motion stage

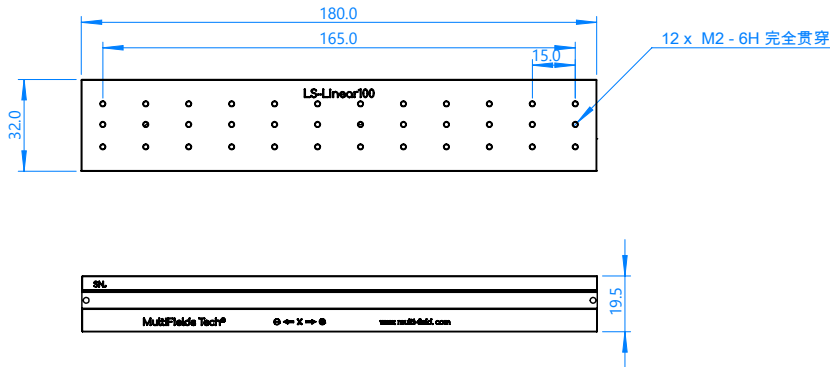


LS-Linear100

Features

- Compact design, dimensions:180*32*19.5 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: 1000 g & 3 N
- Long travel range: 100 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



LS-Linear100, Specification

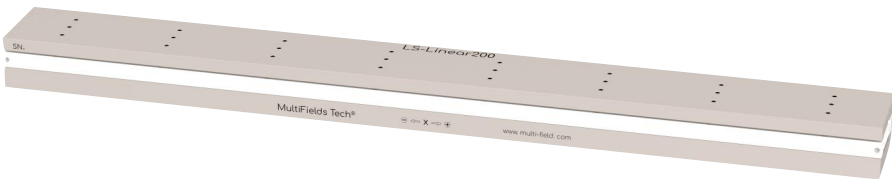
*All data below is measured with 50 ohm wires. Though there is no requirement on wires' conductance, we recommend resistance below 50 ohm.

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	180 mm × 32 mm × 19.5 mm			
2	Weight	300 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			
Motion (Closed Loop Mode)					
10	Travel range	100 mm			
11	Max. Velocity @300 K	~ 3 mm/s			
12	Drive voltage	Max. 200 V			
13	Max. Load	1000 g			
14	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
15	Position encoder	Resistive Sensor			
16	Encoder range	100 mm			
17	Sensor resolution	~ 150 nm			
18	Repeatability	1 - 2 μm			

“LS-linear-series” – LS-Linear200

Low Temperature · Piezoelectric Motion- Long Stroke Linear Stage

Long travel range 200 mm (8 inch), linear motion stage

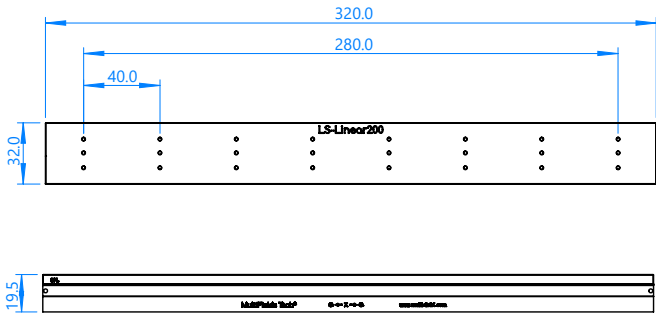


LS-Linear200

Features

- Compact design, dimensions: 320*32*19.5 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: 1500 g & 3 N
- Long travel range: 200 mm
- Closed-loop control with position sensing up to 0.1 μm resolution

Dimension drawing



LS-Linear200, Specification

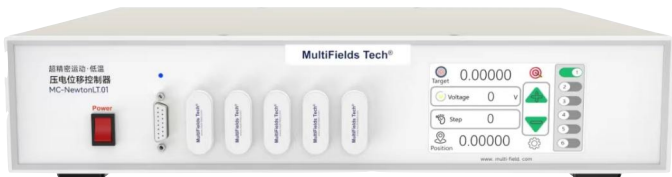
*All data below is measured with 50 ohm wires. Though there is no requirement on wires’ conductance, we recommend resistance below 50 ohm.

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	320 mm × 32 mm × 19.5 mm			
2	Weight	600 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			
Motion (Closed Loop Mode)					
10	Travel range	200 mm			
11	Max. Velocity @300 K	~ 3 mm/s			
12	Drive voltage	Max. 200 V			
13	Max. Load	1500 g			
14	Dynamic force	3 N			
Position Sensor (Closed Loop Mode)					
15	Position encoder	Resistive Sensor			
16	Encoder range	320 mm			
17	Sensor resolution	~ 150 nm			
18	Repeatability	1 - 2 μm			

Motion Controller – MC - NewtonLT.01/06

Low Temperature · Piezoelectric Motion Controller

6-channels closed-loop controller designed for low temperature piezoelectric motion units



MC - NewtonLT.01

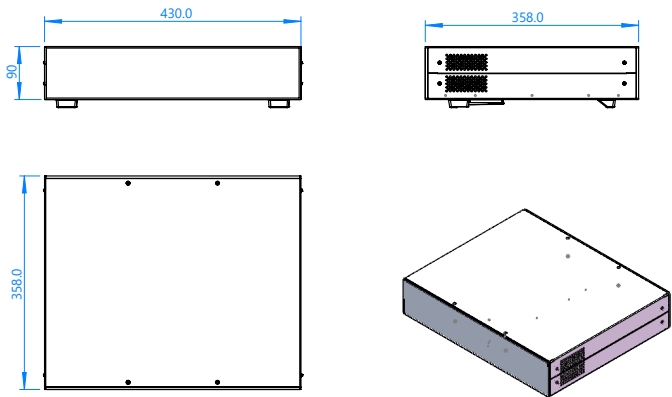


MC - NewtonLT.06

Features

- Support FINE TUNE function

Dimension drawing



MC - NewtonLT.01/06, 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 ⇨		MC - NewtonLT.01	MC - NewtonLT.06
1	Compatible positioner	Linear, Rotator, Goniometer & LS-Linear Series	
2	Control mode	All channels closed-loop control	
3	Size	19" / 3U	
4	Work voltage & power	220 VAC & 60 W	
5	Remote	USB & TCP/IP	
6	Output channels	1 channel	6 channels
7	Max output voltage	-200 V ~ +200 V	
8	Drive frequency range	1 ~ 10 kHz	
9	Power for 1 channel	Max. 40 W	
10	Slew rate	2 kV/us	
11	GND in drive output	1 channels independent GND	6 channels independent GND
12	Encoder	Resistive encoder	
13	Sensor output voltage	DC 2.5 V	
14	Resolution of read voltage	50 μV (18-bit)	
15	Connectors	1 channel	6 channels
16	Input resistance	10 kOhm	
17	GND in sensor readout	1 channel independent GND	6 channels independent GND
18	Electrical connector	D-sub 15 for each channel	

Motion Controller - ArchimedesLT.03

Low Temperature · Piezoelectric Motion Controller

3-channels controller designed for low temperature piezoelectric scanning motion units



MC - ArchimedesLT.03

ArchimedesLT.03, Specification

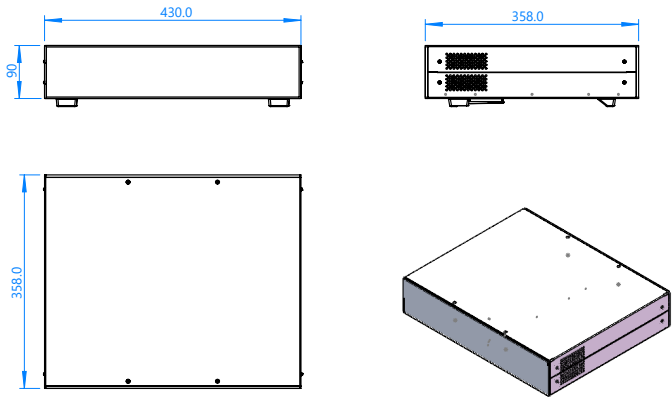
*

Optional Versions ⇄	ArchimedesLT.03
1 Compatible positioner	Scanning Stages
2 Size	19" / 3U
3 Work voltage & power	220 VAC & 60 W
4 Remote	USB & TCP/IP
5 Output channels	3 channels
6 Max output voltage	-150 V ~ +150 V
7 Drive frequency range	Max. 1kHz
8 Connectors	3 channels, BNC
9 Input resistance	10 kOhm
10 Compatible Scanners	Scanner16-xy, Scanner16-z, Scanner25-xy, Scanner25-z, Scanner35-xy, Scanner35-z

Features

- 3-Channels scanning motion control output
- Compatible with all low temperature Scanning Stages of MultiFields
- LabVIEW Sub VI control program is provided to support users' independent use
- USB / GPIB computer remote control

Dimension drawing



Product Family of LT · Piezoelectric Motion Accessories

Accessories product line.

Table, Accessories Line of Piezoelectric Motion @LT

	Adapt Plate				Flexible Thermal Connection	Tool Box	
Category	 Interconnect	 Vertical Orientation	 Installation Plate	 PinsPlate	 FTC.**,**	 PM.LT.ToolBox.Basic	
Application	Used to mount positioner with cross-mounting of different series positioner	Used to mount positioner with vertical orientation	Used to directly connect on an optic table for positioner	Used to directly connect on an optic table for positioner	Used to keep sample cold when piezoelectric positioner moving in vacuum environment	Basic version of ToolBox	

Adapter Plate - Guidance for MultiFields Low Temperature
Piezoelectric Positioners Interconnect

Positioner on the topside ⇓	Linear16-z	Linear16-x	Linear25	Linear35	Rotator16	Rotator25	Rotator35	Goniometer25	Gonimeter35	Scanner16	Scanner25
Linear16-z			AP.LT.L16z	AP.LT.L16z		AP.LT.L16z	AP.LT.L16z	AP.LT.L16z			AP.LT.L16z
Linear16-x	✓	✓	✓	✓		✓	✓	✓	✓		AP.LT.L16x
Linear25			✓	✓			✓	*	*		*
Linear35				✓					*		
Rotator16						AP.LT.R16	AP.LT.R16	AP.LT.R16	AP.LT.R16		
Rotator25			✓	✓			*	*	*		*
Rotator35				✓					*		
Goniometer25			✓	✓			✓	✓	*		*
Gonimeter35				✓					✓		
Scanner16	✓	✓	AP.LT.S16	AP.LT.S16				AP.LT.S16	AP.LT.S16		AP.LT.S16
Scanner25			✓	✓				✓	✓		
Positioner on the bottom ⇐	Linear16-z	Linear16	Linear25	Linear35	Rotator16	Rotator25	Rotator35	Goniometer25	Gonimeter35	Scanner16	Scanner25

This table gives a comprehensive guide for two same or different positioners connect to each other.
The left column positioners are selected on topside, while the top row positioners are selected as the bottom one.

There are three conditions when two MultiFields Positioners Mount together, including

- (1) ✓ do not need extra plate to connect.
- (2) * do not need extra plate to connect. Though this mounting form is workable in specific cases, we don't recommend this connection arrangement.
- (3) " AP.LT.**** " the part name of adapter plates needed to connect with each other.
- (4) "Blank-cell", means this mounting form should be avoid.

Accessories - Adapter Plate - Interconnect

Piezoelectric Motion - Low temperature series - Accessories

Adapter plates designed for MultiFields piezoelectric motion units



Adapter Plates for MultiFields Piezoelectric Positioners

	Part Name	Discription
Linear16-z	AP.LT.L16z	Adapter Plate Used to mount Linear16-z on other MultiFields positioners
Linear16-x	AP.LT.L16x	Adapter Plate Used to mount Linear16-x on other MultiFields positioners
Rotator16	AP.LT.R16	Adapter Plate Used to mount Rotator16 on other MultiFields positioners
Scanner16	AP.LT.L25	Adapter Plate Used to mount Scanner16 on other MultiFields positioners

Adapter Plates are Used to Mount MultiFields Piezoelectric Positioners with Cross-mounting of Different Series Positioners.

1. All the adapter plates are fabricated by pure Ti metal.
2. Non-magnetic screws are included when you purchase the adapter plate set.

Accessories - Adapter Plate - Vertical Orientation

Piezoelectric Motion - Low temperature series - Accessories

Adapter plates designed for mounting MultiFields motion units with vertical orientation



Adapter Plates for MultiFields Piezoelectric Positioners

	Part Name	Discription
Linear16-z	APLT.L16z-v	Adapter Plates Used to Title Linear16-z by 90°
Linear16-x	APLT.L16x-v	Adapter Plates Used to Title Linear16-z by 90°
Rotator16	APLT.R16-v	Adapter Plates Used to Title Rotator16 by 90°
Linear25	APLT.L25-v	Adapter Plates Used to Title Linear25 by 90°
Linear35	APLT.L35-v	Adapter Plates Used to Title Linear35 by 90°
Rotator25	APLT.R25-v	Adapter Plates Used to Title Rotator25 by 90°
Rotator25.Optic	APLT.R25.Optic-v	Adapter Plates Used to Title Rotator25.Optic by 90°
Rotator35	APLT.R35-v	Adapter Plates Used to Title Rotator35 by 90°
Goniometer25	APLT.G25-v	Adapter Plates Used to Title Goniometer25 by 90°
Goniometer35	APLT.G35-v	Adapter Plates Used to Title Goniometer35 by 90°

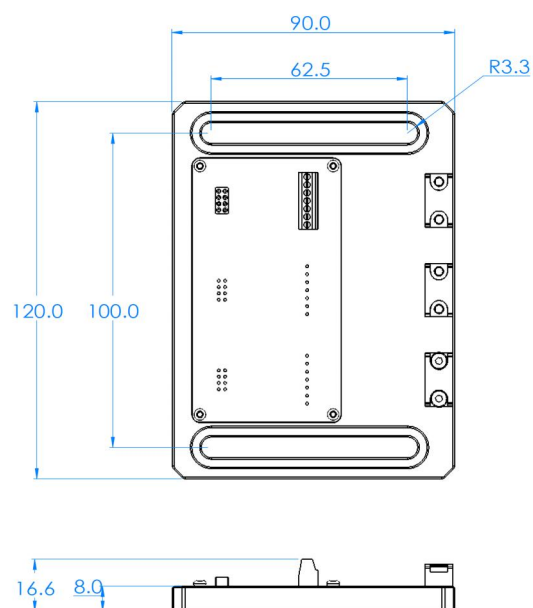
Adapter Plates are Used to Mount MultiFields Piezoelectric Positioners with Vertical Orientation.

- 1. All the adapter plates are fabricated by pure Ti metal.
- 2. Non-magnetic screws are included when you purchase the adapter plate set.
- 3. All the positioners, which are able to be used when it is tilted 90° , have been listed following. The absent ones mean they are not recommended to be tilted by 90°

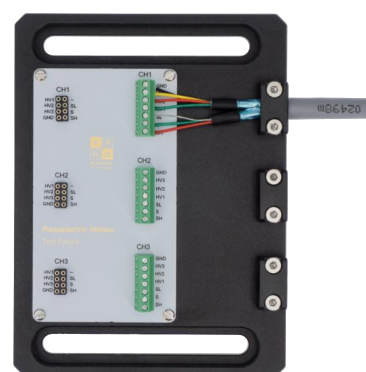
Accessories - Adapter Plate - PinsPlate

Piezoelectric Motion - Low temperature series - Accessories

An adapter for MultiFields LT Motion Units to directly connect on an optic table.



AP.LT.PinsPlate

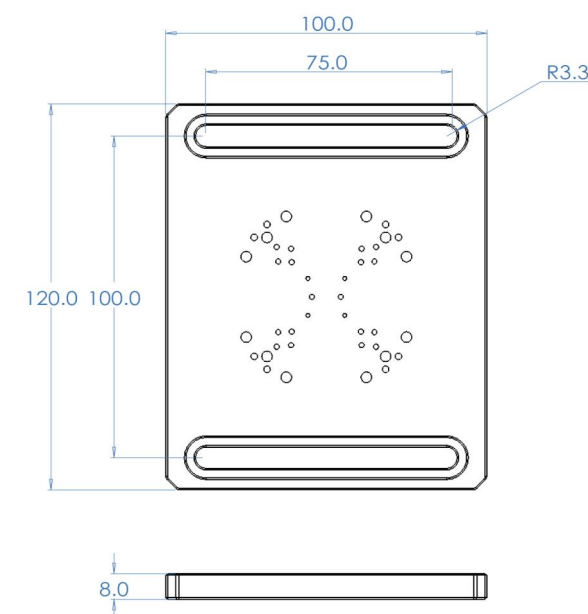


* Real photos of APLT.PinsPlate, the cable in photo is PMC.cable supplied by MultiFields

Accessories - Adapter Plate - Installation Plate

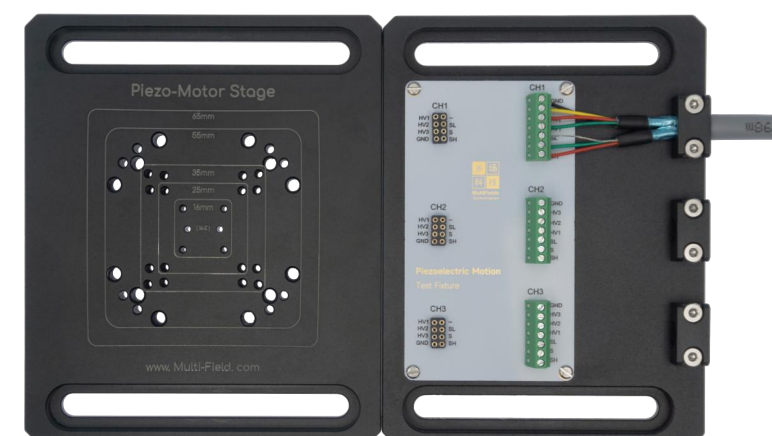
Piezoelectric Motion - Low temperature series - Accessories

An adapter for MultiFields LT Motion positioners to directly connect on an optic table.



AP.LT.InstPlate

*此板几乎兼容MultiFields的所有压电运动产品。



*实物照片，转接板AP.LT.PinsPlate（左）和AP.LT.PinPlate（右）的组合

Accessories - Flexible Thermal Connection Set

Piezoelectric Motion - Low temperature series - Accessories



FTC##.L**

Flexible thermal connection set are used to keep sample cold when piezoelectric positions moving in vacuum environment . Higher thermal conductivity is always welcomed in low temperature experiments for a lower base temperature. And a flexible structure guarantees the device won't consumes excessive load capacity.

- 1. All the adapter plates are fabricated by pure non-magnetic metal.
- 2. Non-magnetic screws are included when you purchase the flexible thermal connection set.

Flexible Thermal Connection Set for Positioners

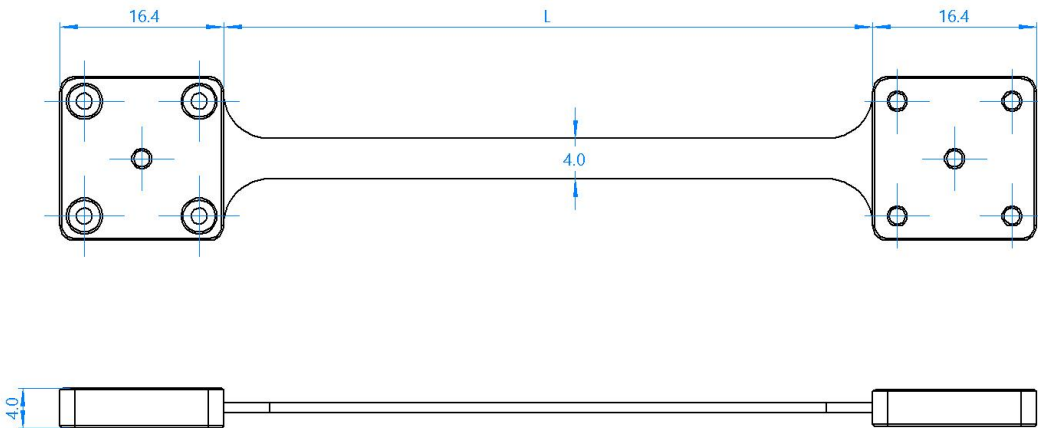
	FTC16.L**	FTC25.L**	FTC35.L**
Description	Designed for 16mm Linear and Scanner series stack	Designed for 25mm Linear and Scanner Series Stack	Designed for 35mm Linear, Goniometer and Scanner Series Stack
Size & Dimensions			
Footprint base plate	16 × 16 mm	25 × 25mm	35 × 35mm
Footprint top plate	16 × 16 mm	25 × 25mm	35 × 35mm
thickness, base plate	2.5 mm		
Thickness, top plate	4 mm		
Length copper coupling foil	35 mm; 65 mm; 100 mm version		
Working Conditions			
Temperature range	10 mK to 420 K		
Pressure conditions	Ambient, HV, UHV		
Use in magnetic field	max. 35 Tesla		
Cernox Sensor & Heater (optional)			
Temperature Range	1.6 K to 350 K		
Wires	Thermometers, 4 Pins; Heater, 2pins; Pure copper wires,36 awg		
Heater Resistance	50 Ohm		
Heater Power	Max. 50W		
Thermal Conductivity @300 K	FTC**.035mm, 40 mW/K FTC**.065mm, 29 mW/K FTC**.100mm, 16 mW/K		

Accessories - Flexible Thermal Connection Set

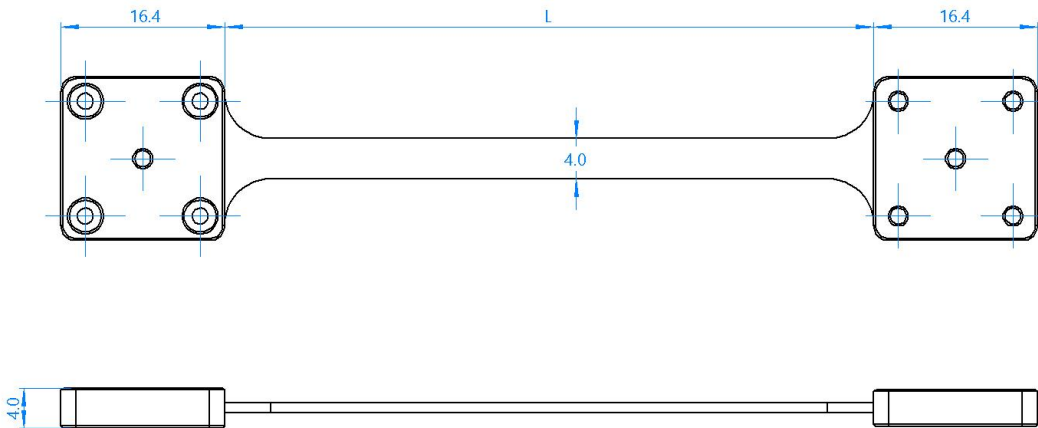
Piezoelectric Motion - Low temperature series - Accessories

2D Drawings with size and screw details

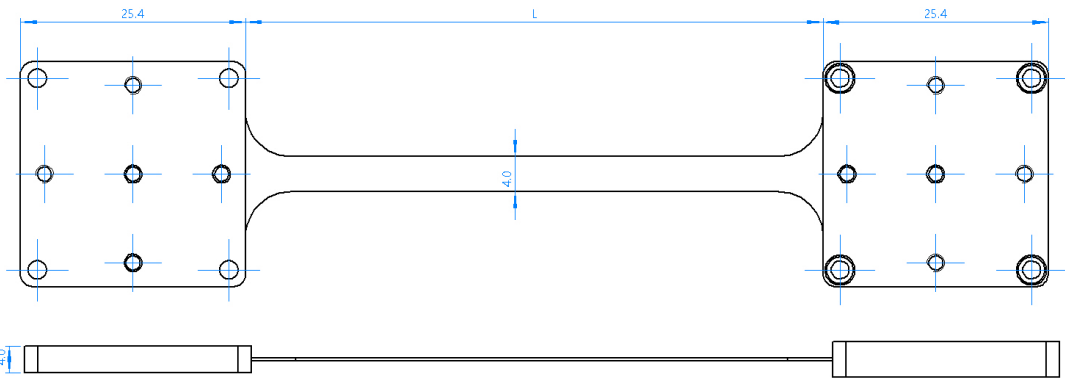
2D drawings



FTC16.L**.xx series



FTC35.L**.xx series



FTC25.L**.xx series

FTC##. L**. xx. CX
##, top-plate fit 16,25 & 35mm series stage
**, length (mm) between base-plate and top-plate
xx, connected to cryogenics system cold-plate
CX, thermometer added

- | | | |
|---|---|---|
| FTC16.L**.xx series <ul style="list-style-type: none">• FTC16.L35.xx• FTC16.L65.xx• FTC16.L100.xx• FTC16.L35.xx.CX• FTC16.L65.xx.CX• FTC16.L100.xx.CX | FTC25.L**.xx series <ul style="list-style-type: none">• FTC25.L35.xx• FTC25.L65.xx• FTC25.L100.xx• FTC25.L35.xx.CX• FTC25.L65.xx.CX• FTC25.L100.xx.CX | FTC35.L**.xx series <ul style="list-style-type: none">• FTC35.L35.xx• FTC35.L65.xx• FTC35.L100.xx• FTC35.L35.xx.CX• FTC35.L65.xx.CX• FTC35.L100.xx.CX |
|---|---|---|

Accessaries - ToolBox.Basic

Piezoelectric Motion - Low temperature series - Accessories

The basic version of ToolBox is supplied



PM.LT.ToolBox.Basic

ToolBox.Basic

items	Specification	Quantity
1 Screws -BeCu	Compatible with 30 mK & 35 Tesla M1.6, M2 suitable	One set
2 Connectors	Compatible with 30 mK & 35 Tesla	One set
PA - standard	2pins, 3pins and 4pins	
Peek - UHV compatible	4pins - BeCu pins, Peek main body	
3 Tools	Multifunction screw driver Tweezers	One set
4 USB-Driver	Manual, software etc.	1 pc

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