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.

Piezoelectric Motion - LT

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

Low Temperature · Piezoelectric Motion- Goniometer Series

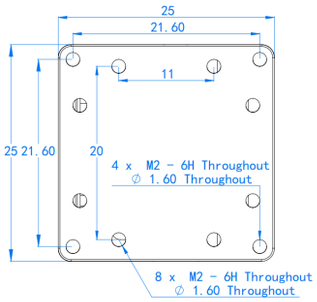
Tilter stage with closed-loop control

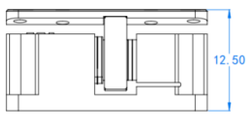
Goniometer25-theta.HV

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 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-phi (closed-loop)

Low Temperature · Piezoelectric Motion- Goniometer Series

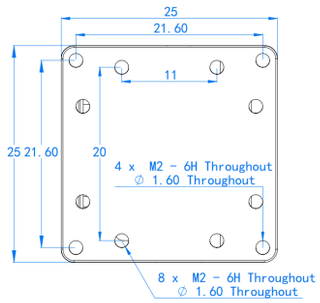
Tilter stage with closed-loop control

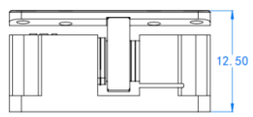
Goniometer25-phi.HV

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 increamental 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

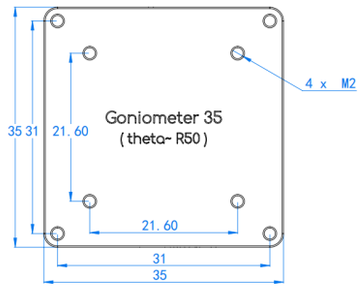
Tilter stage with closed-loop control

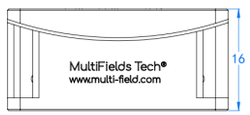
Goniometer35-theta.HV

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 increamental 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

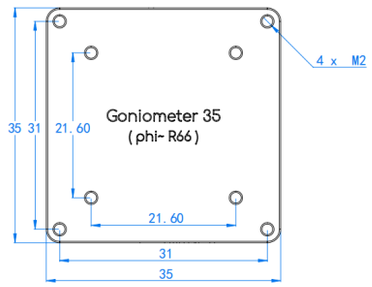
Tilter stage with closed-loop control

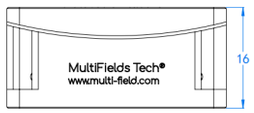
Goniometer35-phi.HV

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 increamental step size that the stage can move when it's doing stick-slip motion, driven by continuous high frequency wave sequence.