

Precision Z Stage

e.g., for compact XYZ combinations with M-511 series



M-501

- Extremely high-resolution encoder
- ActiveDrive Motor
- Zero-play ball screws
- Noncontact limit and reference switches
- Stress-relieved aluminum base for high stability
- Self-locking to 10 kg

Motion	Unit	Tolerance	M-501.1DG	M-501.1PD
Active axes			Z	Z
Travel range in Z	mm		12.5	12.5
Maximum velocity in Z, unloaded	mm/s		1	3
Yaw (Rotational crosstalk in θ_X with motion in Z)	μrad	Typ.	± 150	± 150
Pitch (Rotational crosstalk in θ_Y with motion in Z)	μrad	Typ.	± 150	± 150

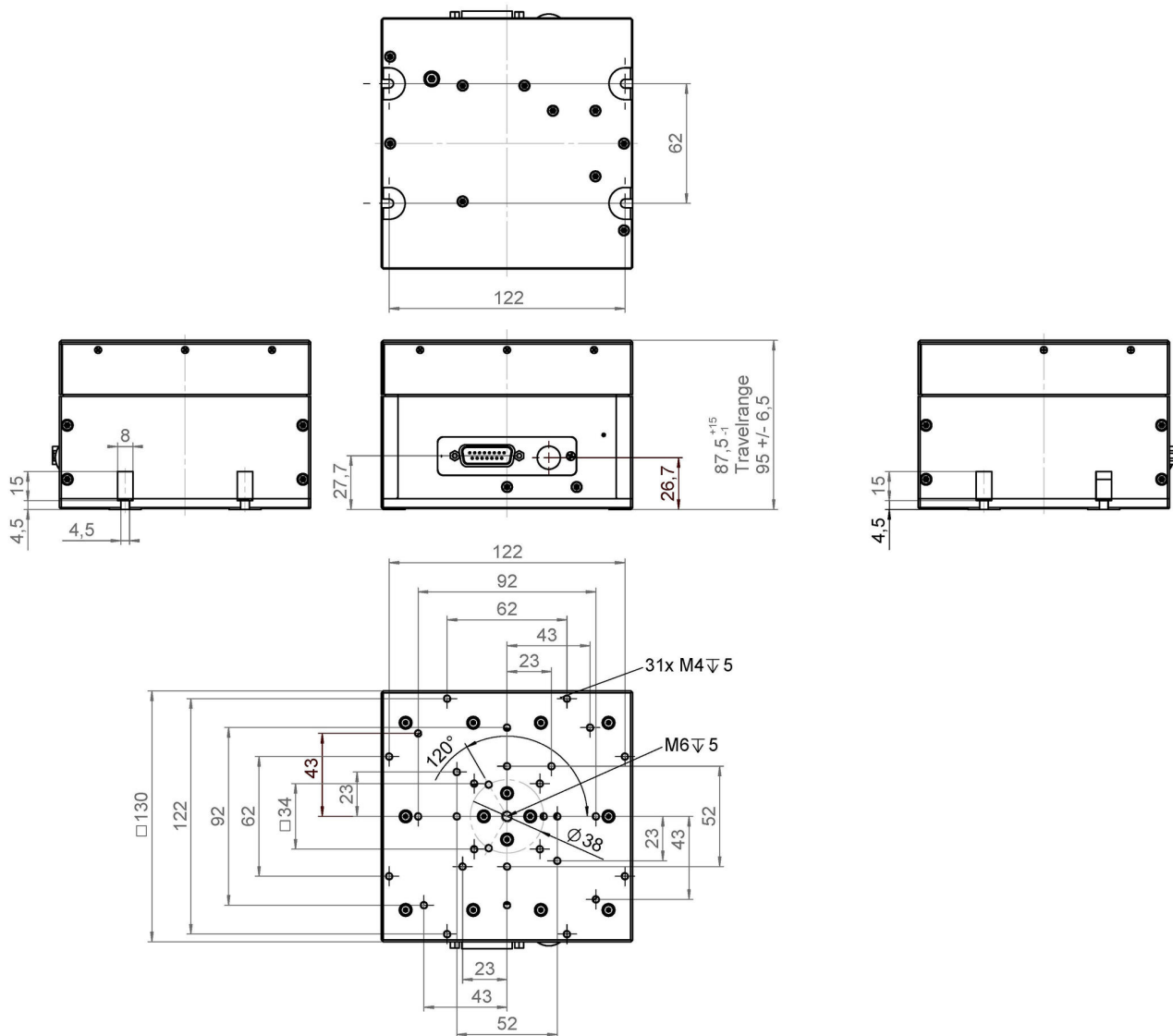
Positioning	Unit	Tolerance	M-501.1DG	M-501.1PD
Integrated sensor			Incremental rotary encoder	Incremental rotary encoder
Unidirectional repeatability in Z	μm	Typ.	0.1	0.1
Bidirectional repeatability in Z	μm	Typ.	± 3	± 3
Minimum incremental motion in Z	μm	Typ.	0.1	0.1
Sensor signal			A/B quadrature, RS-422	A/B quadrature, RS-422
Sensor resolution	Cts./rev.		2048	40960
Reference switch			Hall effect	Hall effect
Reference switch repeatability	μm		1	1
Limit switches			Hall effect	Hall effect

Drive Properties	Unit	Tolerance	M-501.1DG	M-501.1PD
Drive type			DC gear motor	DC motor with ActiveDrive
Maximum power consumption	W		4	17
Nominal voltage	V		12	24
Drive force in negative direction of motion in Z	N	Typ.	100	50
Drive force in positive direction of motion in Z	N	Typ.	100	50
Torque constant	N-m/A	Typ.	14.5	34.6
Number of pole pairs			1	1

Mechanical Properties	Unit	Tolerance	M-501.1DG	M-501.1PD
Guide			Crossed roller guide	Crossed roller guide
Drive screw type			Ball screw	Ball screw
Drive screw pitch	mm		1	1
Gear ratio i			80 : 26 + 29,6 : 1 gearing (91 : 1)	80 : 26
Holding force in Z, passive	N		100	20
Permissible push force in Z	N	Max.	100	50
Permissible torque in θ_x	N·m	Max.	40	40
Permissible torque in θ_Y	N·m	Max.	20	20
Permissible torque in θ_Z	N·m	Max.	20	20
Overall mass	g		2600	2600
Material			Anodized aluminum	Anodized aluminum

Miscellaneous	Unit		M-501.1DG	M-501.1PD
Connector			D-sub 15-pin (m)	D-sub 15-pin (m)
Recommended controllers / drivers			C-863 C-884	C-863 C-884
Operating temperature range	°C		-20 to 50	10 to 50

Drawings / Images



M-501, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

Order Information

M-501.1DG

Precision Z stage; DC gear motor; 12.5 mm travel range; 100 N load capacity; 1 mm/s maximum velocity; incremental rotary encoder, 2048 counts/rev sensor resolution, A/B quadrature, RS-422

M-501.1PD

Precision Z stage; DC motor with ActiveDrive; 12.5 mm travel range; 50 N load capacity; 3 mm/s maximum velocity; incremental rotary encoder, 40960 counts/rev sensor resolution, A/B quadrature, RS-422