

LISA Linear Actuator and Positioning Stage

Dynamic and Stable in Position



P-753

- Guided stage and actuator at the same time
- Travel range up to 38 μm
- Resolution 0.1 nm
- Particularly fast response behavior due to direct drive
- Highest linearity due to capacitive sensors

Application fields

- Scanning microscopy
- Measuring technology
- Test procedures and quality assurance
- Photonics
- Fiber positioning

Outstanding lifetime due to PICMA® piezo actuators

The PICMA® piezo actuators are all-ceramic insulated. This protects them against humidity and failure resulting from an increase in leakage current. PICMA® actuators offer an up to ten times longer lifetime than conventional polymer-insulated actuators. 100 billion cycles without a single failure are proven.

Subnanometer resolution with capacitive sensors

Capacitive sensors measure with subnanometer resolution without contacting. They guarantee excellent linearity of motion, long-term stability, and a bandwidth in the kHz range.

High guiding accuracy due to zero-play flexure guides

Flexure guides are free of maintenance, friction, and wear, and do not require lubrication. Their stiffness allows high load capacity and they are insensitive to shock and vibration. They work in a wide temperature range.

Maximum accuracy due to direct position measuring

Motion is measured directly at the motion platform without any influence from the drive or guide elements. This allows optimal repeatability, outstanding stability, and stiff, fast-responding control.

Higher stiffness and dynamics due to PICMA® direct drive

Piezo nanopositioners with PICMA® direct drive have no mechanical translation. This allows fast response speeds as well as the highest possible stiffness and dynamics in the piezo drive range.

Motion	Unit	Tolerance	P-753.11C	P-753.1CD	P-753.21C	P-753.2CD	P-753.31C	P-753.3CD
Active axes			X	X	X	X	X	X
Travel range in X	μm		15	15	30	30	38	38
Linearity error, closed loop	%	Typ.	0.03	0.03	0.03	0.03	0.03	0.03
Pitch (Rotational crosstalk in θY with motion in X)	μrad	Typ.	±5	±5	±7	±7	±10	±10
Yaw (Rotational crosstalk in θZ with motion in X)	μrad	Typ.	±5	±5	±7	±7	±10	±10

Positioning	Unit		P-753.11C	P-753.1CD	P-753.21C	P-753.2CD	P-753.31C	P-753.3CD
Integrated sensor			Capacitive, direct position measuring	Capacitive, direct position measuring	Capacitive, direct position measuring	Capacitive, direct position measuring	Capacitive, direct position measuring	Capacitive, direct position measuring
System resolution in X	nm		0.1	0.1	0.2	0.2	0.25	0.25

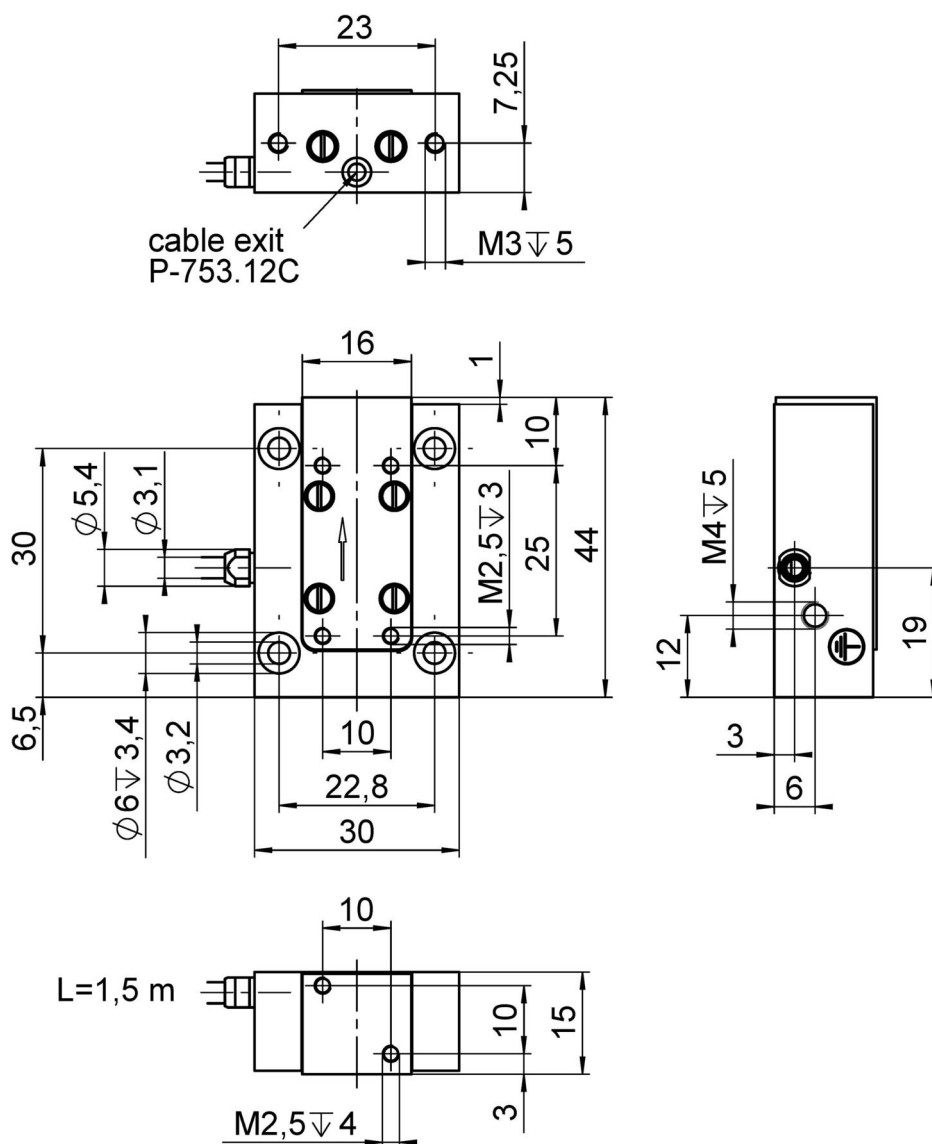
Drive Properties	Unit	Tolerance	P-753.11C	P-753.1CD	P-753.21C	P-753.2CD	P-753.31C	P-753.3CD
Drive type			Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®
Electrical capacitance in X	μF	±20%	1.5	1.5	3.1	3.1	4.6	4.6

Mechanical Properties	Unit	Tolerance	P-753.11C	P-753.1CD	P-753.21C	P-753.2CD	P-753.31C	P-753.3CD
Stiffness in X	N/μm	±20%	45	45	24	24	16	16
Resonant frequency in X, unloaded	Hz	±20%	5600	5600	3700	3700	2900	2900
Resonant frequency in X, under load with 200 g	Hz	±20%	2500	2500	1700	1700	1400	1400
Permissible push force in X	N	Max.	100	100	100	100	100	100
Permissible push force in Z	N	Max.	80	80	90	90	100	100
Permissible pull force in X	N	Max.	20	20	20	20	20	20
Guide			Flexure guide/ Flexure guide with lever amplification	Flexure guide/ Flexure guide with lever amplification	Flexure guide/ Flexure guide with lever amplification	Flexure guide/ Flexure guide with lever amplification	Flexure guide/ Flexure guide with lever amplification	Flexure guide/ Flexure guide with lever amplification
Overall mass	g	±5%	160	160	215	215	260	260
Material			Steel	Steel	Steel	Steel	Steel	Steel

Miscellaneous	Unit	Tolerance	P-753.11C	P-753.1CD	P-753.21C	P-753.2CD	P-753.31C	P-753.3CD
Operating temperature range	°C		-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80
Connector			LEMO LVPZT	D-sub 7W2 (m)	LEMO LVPZT	D-sub 7W2 (m)	LEMO LVPZT	D-sub 7W2 (m)
Sensor connector			LEMO for capacitive sensors		LEMO for capacitive sensors		LEMO for capacitive sensors	
Cable length	m	+50 / -0 mm	1.5	1.5	1.5	1.5	1.5	1.5
Recommended controllers / drivers			E-625, E-709. 1C1L, E-754	E-625, E-709. 1C1L, E-754	E-625, E-709. 1C1L, E-754	E-625, E-709. 1C1L, E-754	E-625, E-709. 1C1L, E-754	E-625, E-709. 1C1L, E-754

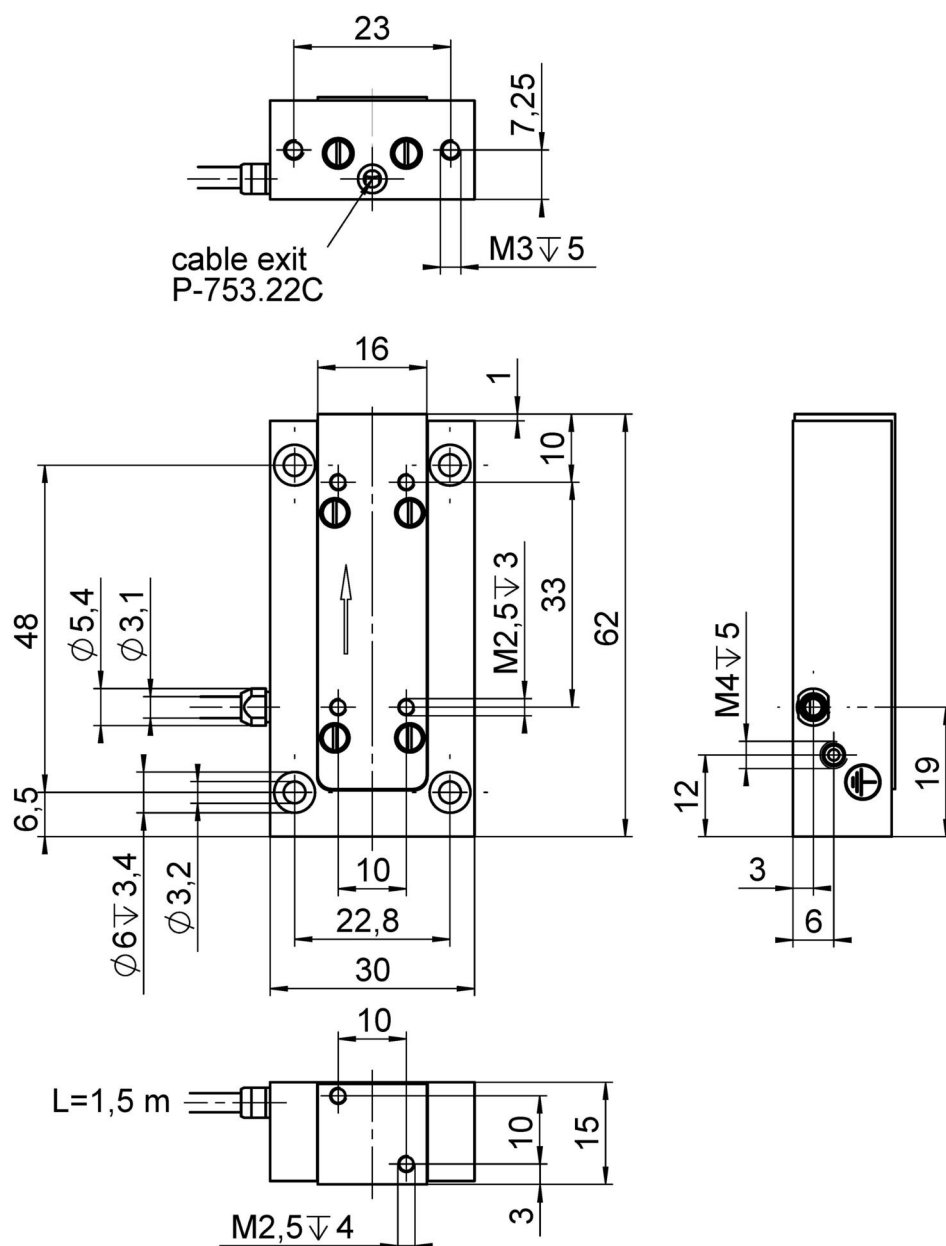
The resolution of the system is limited only by the noise of the amplifier and the measuring technology because PI piezo nanopositioning systems are free of friction.

Drawings / Images

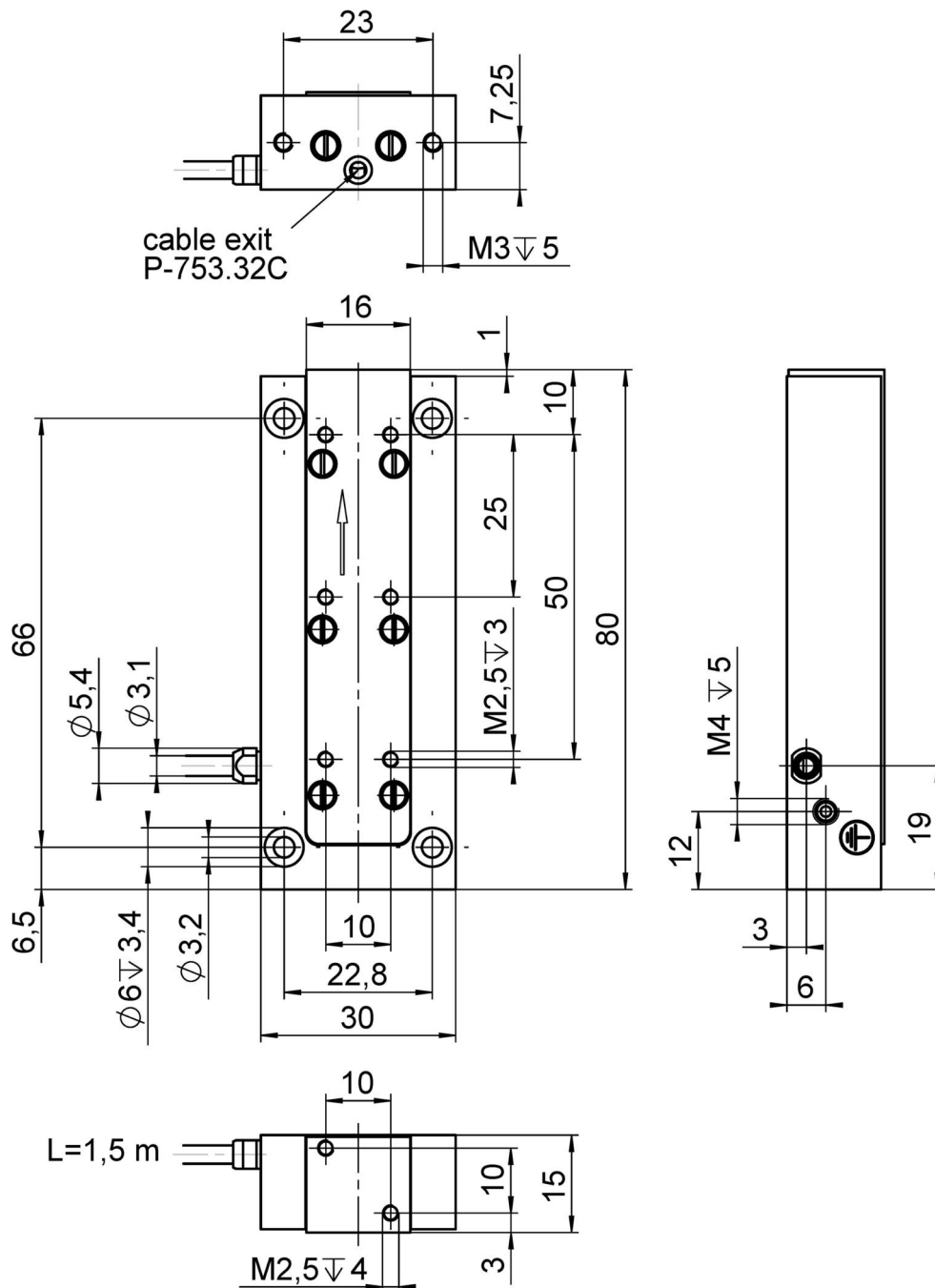


P-753.1, dimensions in mm. Max. torque at the M2.5 threads: 0.3 Nm. Note that a comma is used in the drawings instead of a decimal point.

Drawings / Images



P-753.2, dimensions in mm. Max. torque at the M2.5 threads: 0.3 Nm. Note that a comma is used in the drawings instead of a decimal point.



P-753.3, dimensions in mm. Max. torque at the M2.5 threads: 0.3 Nm. Note that a comma is used in the drawings instead of a decimal point.

Order Information

P-753.11C

LISA linear actuator and positioning stage; 15 µm travel range; capacitive, direct position measuring; LEMO LVPZT; 1.5 m cable length

P-753.1CD

LISA linear actuator and positioning stage; 15 µm travel range; capacitive, direct position measuring; D-sub 7W2 (m); 1.5 m cable length

P-753.21C

LISA linear actuator and positioning stage; 30 µm travel range; capacitive, direct position measuring; LEMO LVPZT; 1.5 m cable length

P-753.2CD

LISA linear actuator and positioning stage; 30 µm travel range; capacitive, direct position measuring; D-sub 7W2 (m); 1.5 m cable length

P-753.31C

LISA linear actuator and positioning stage; 38 µm travel range; capacitive, direct position measuring; LEMO LVPZT; 1.5 m cable length

P-753.3CD

LISA linear actuator and positioning stage; 38 µm travel range; capacitive, direct position measuring; D-sub 7W2 (m); 1.5 m cable length