

High-Precision Nanopositioning Stage

Highly Dynamic and Stable Piezo Scanner with Extremely Accurate Guiding



P-752

- Resolution 0.1 nm
- Rapid response
- Travel range to 35 μm
- Highest linearity due to capacitive sensors
- Friction-free flexure guides for very high travel accuracy
- Outstanding lifetime due to PICMA[®] piezo actuators

Fields of application

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

Outstanding lifetime thanks to PICMA[®] piezo actuators

The patented 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 are 100 % vacuum compatible and work in a wide temperature range.

Automatic configuration and fast component exchange

Mechanics and controllers can be combined as required and exchanged quickly. All servo and linearization parameters are stored in the ID chip of the Sub-D connector of the mechanics. The autocalibration function of the digital controllers uses this data each time the controller is switched on.

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 optimum repeatability, outstanding stability, and stiff, fast-responding control.

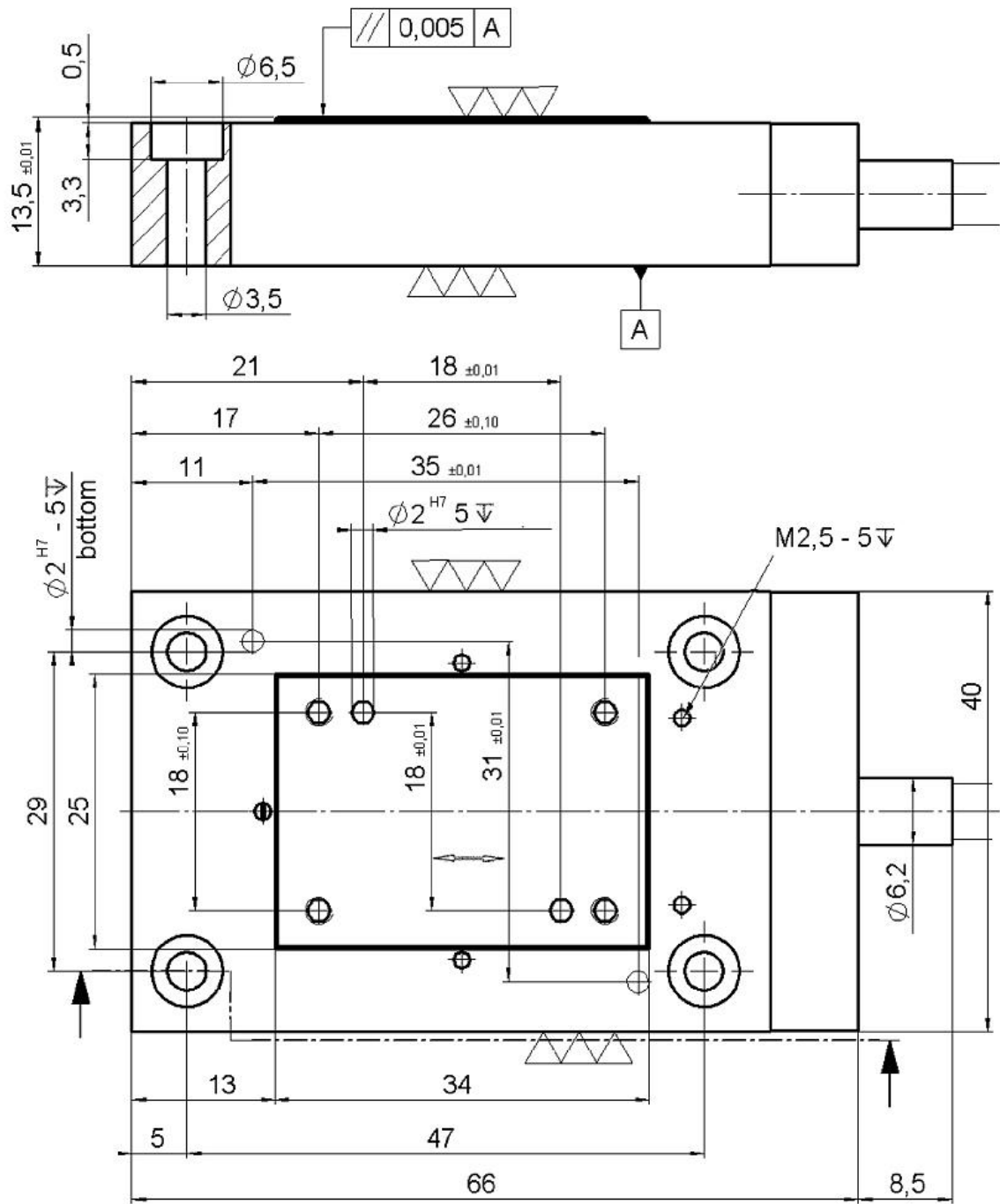
Specifications

	P-752.11C	P-752.1CD	P-752.21C	P-752.2CD	Units	Tolerance
Active axes	X	X	X	X		
Motion and positioning						
Integrated sensor	Capacitive	Capacitive	Capacitive	Capacitive		
Travel range at -20 to +120 V, open loop	20	20	35	35	μm	+20 % / -0 %
Travel range, closed loop	15	15	30	30	μm	
Resolution, open loop / closed loop	0.1	0.1	0.2	0.2	nm	typ.
Linearity error, closed loop	0.03	0.03	0.03	0.03	%	typ.
Repeatability	±1	±1	±2	±2	nm	typical, full travel
Pitch / yaw	±1	±1	±1	±1	μrad	typ.
Mechanical properties						
Stiffness in motion direction	30	30	20	20	N/μm	±20 %
Resonant frequency, no load	3200	3200	2100	2100	Hz	±20 %
Resonant frequency, under load, 300 g	980	980	600	600	Hz	±20 %
Push/pull force capacity in motion direction	100 / 10	100 / 10	100 / 10	100 / 10	N	max.
Load capacity	30	30	30	30	N	max.
Drive properties						
Ceramic type	PICMA® P-885	PICMA® P-885	PICMA® P-885	PICMA® P-885		
Electrical capacitance	2.1	2.1	3.7	3.7	μF	±20 %
Miscellaneous						
Operating temperature range	-20 to 80	-20 to 80	-20 to 80	-20 to 80	°C	
Material	Steel	Steel	Steel	Steel		
Dimensions	66 mm × 40 mm × 13.5 mm	66 mm × 40 mm × 13.5 mm	84 mm × 40 mm × 13.5 mm	84 mm × 40 mm × 13.5 mm		
Mass	0.25	0.25	0.35	0.35	kg	±5 %
Cable length	1.5	1.5	1.5	1.5	m	±10 mm
Sensor/voltage connection	LEMO	Sub-D 7W2 (m)	LEMO	Sub-D 7W2 (m)		
Recommended electronics	E-505, E-610, E-625, E-665, E-754	E-505, E-610, E-625, E-665, E-754	E-505, E-610, E-625, E-665, E-754	E-505, E-610, E-625, E-665, E-754		

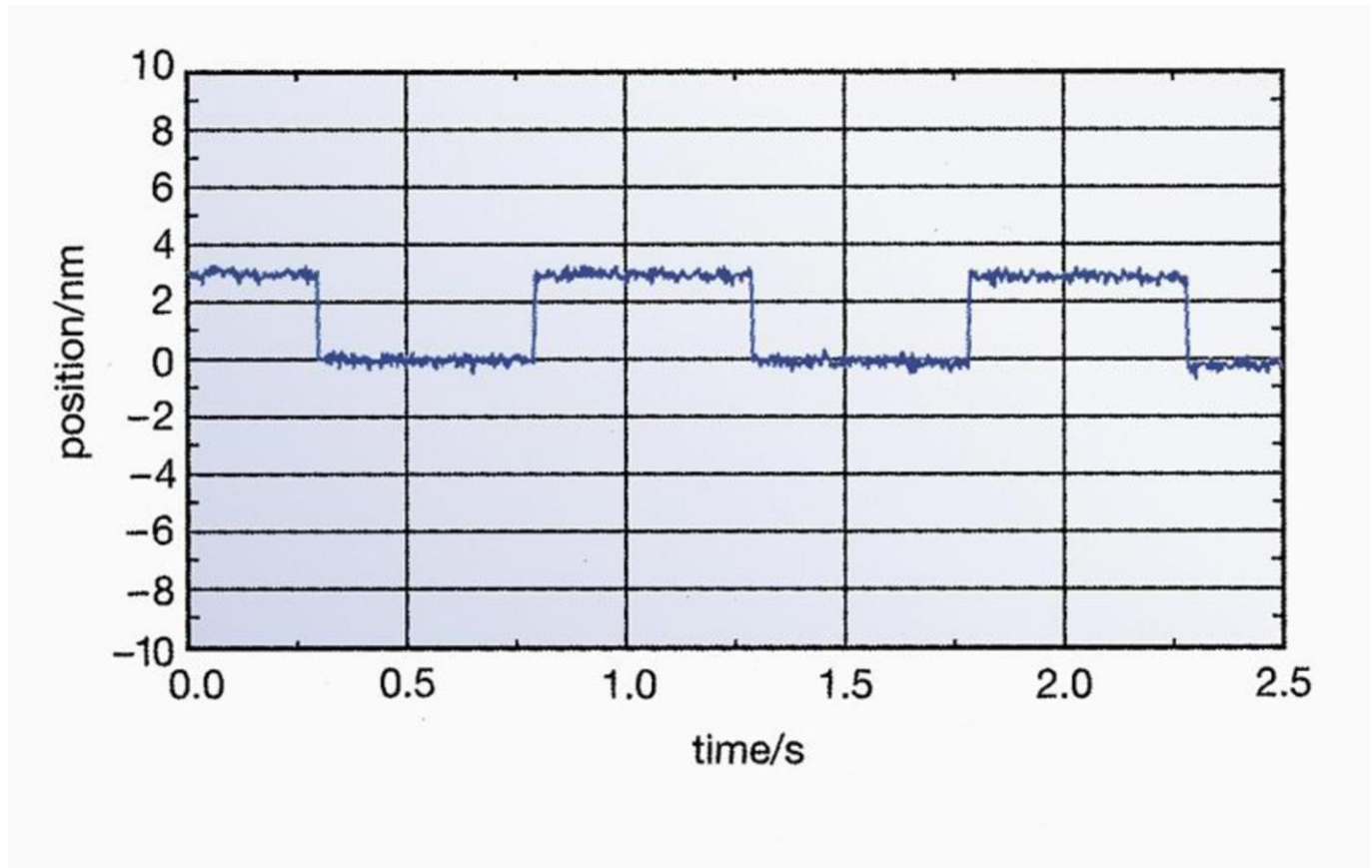
The resolution of the system is limited only by the noise of the amplifier and the measuring technology because PI piezo nanopositioning systems are free of friction.

All specifications based on room temperature (22 °C ±3 °C).

Ask about customized versions.



P-752.1xx, dimensions in mm



Response behavior of a P-752.11C to square wave control with an amplitude of 3 nm. Sub-nm resolution, stability, and bidirectional repeatability are clearly visible. Controller: E-501.00, E-503.00, E-509.C1; servo control settings: 240 Hz bandwidth.

Ordering Information

P-752.11C

High dynamics piezo nanopositioning system, 15 μm , direct position measuring, capacitive sensor, LEMO connector(s)

P-752.1CD

High dynamics piezo nanopositioning system, 15 μm , direct position measuring, capacitive sensor, Sub-D connector

P-752.21C

High dynamics piezo nanopositioning system, 30 μm , direct position measuring, capacitive sensor, LEMO connector(s)

P-752.2CD

High dynamics piezo nanopositioning system, 30 μm , direct position measuring, capacitive sensor, Sub-D connector