PInano® Trak Piezo Tracking System

Fast XYZ Stage for High Dynamics Microscopy

P-545.3D8S

- Fast response time <5 ms with subnanometer resolution: Ideal for tracking
- Including E-727 USB controller and software
- Travel ranges to 70 µm × 70 µm × 50 µm
- Low profile for easy integration: 20 mm
- Recessed sample holders, freely revolving nosepiece
- Extensive optional accessories
- Cost-optimized design

P-545.3D8S system, consisting of P-545.3D8H piezo stage and E-727.3RDAP controller

Application fields

- Tracking
- High-resolution microscopy
- Inverse microscopy
- Screening
- Confocal microscopy
- Biotechnology

Outstanding lifetime thanks 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.

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.

Extensive software for rapid start of productive operation

Thanks to support of MATLAB and NI LabVIEW as well as all common operating systems (Windows, Linux, and macOS), integration succeeds in virtually every environment – quickly and efficiently. Sophisticated programming examples and software tools such as PIMikroMove shorten the time to productive operation considerably.

Motion	Unit		P-545.3D8S
Active axes			X | Y | Z
Travel range in X	µm		70
Travel range in Y	µm		70
Travel range in Z	µm		50

Positioning	Unit	Tolerance	P-545.3D8S
Integrated sensor			Piezoresistive, indirect position measuring
System resolution	nm	Typ.	<1

Drive Properties	Unit	Tolerance	P-545.3D8S
Drive type			PICMA®
Electrical capacitance in X	µF	±20%	12
Electrical capacitance in Y	µF	±20%	12
Electrical capacitance in Z	µF	±20%	24

Mechanical Properties	Unit	Tolerance	P-545.3D8S
Resonant frequency in X, unloaded	kHz		1
Resonant frequency in Y, unloaded	kHz		1
Resonant frequency in Z, unloaded	kHz		0.8
Permissible push force in Z	N	Max.	100
Permissible pull force in Z	N	Max.	30
Guide			Flexure guide with direct drive
Overall mass	kg	±5%	1.2
Material			Aluminum

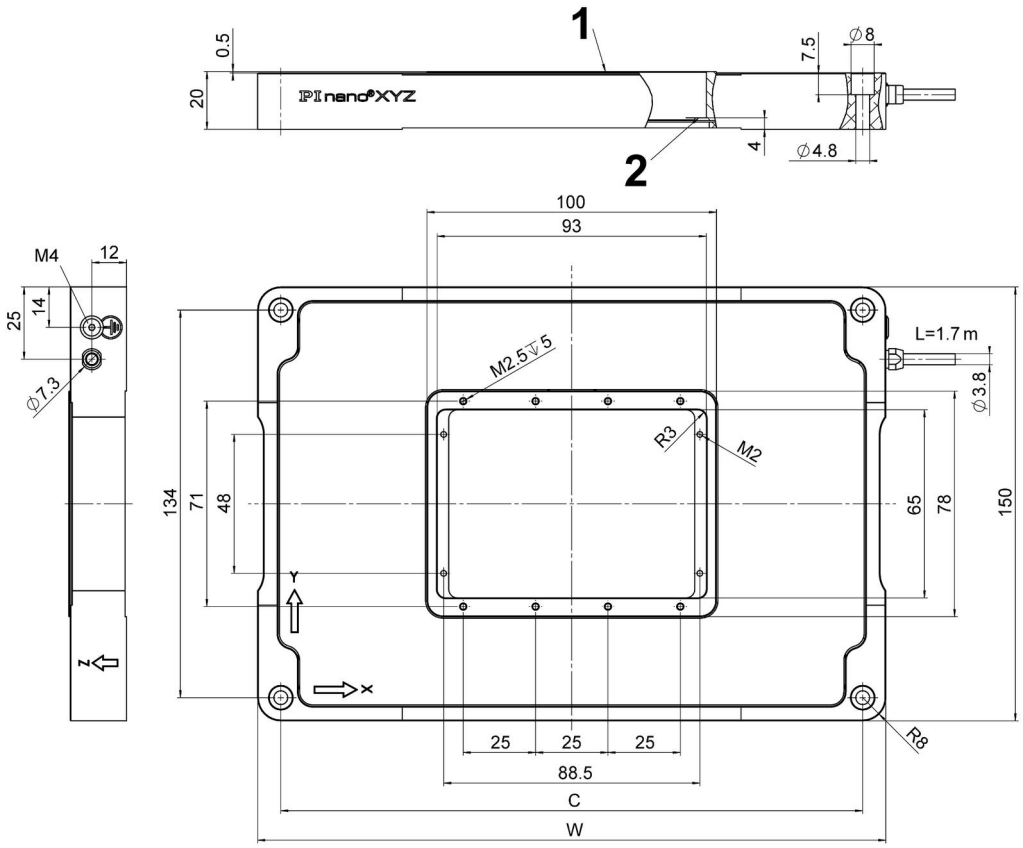
Miscellaneous	Unit	Tolerance	P-545.3D8S
Operating temperature range	°C		15 to 40
Connector			D-sub 37 (m)
Cable length	m	+10 cm	1.7

Controller	Unit		P-545.3D8S
Controller type			E-727.3RDAP (in the scope of delivery)
Application-related functions			Makro | Data recorder
Motion types			Wave generator
Communication interfaces			Ethernet | RS-232 | SPI | USB
Command set			GCS 2.0
User software			PIMikroMove
Software - APIs			C, C++, C# | MATLAB | NI LabView
I/O lines			Analog input via 18-bit A/D converter; Analog output via 20-bit D/A converter.

Permissible push force in Z: The recommended load for dynamic operation is 0.5 kg (max.). Higher dynamics are possible with a reduced load.

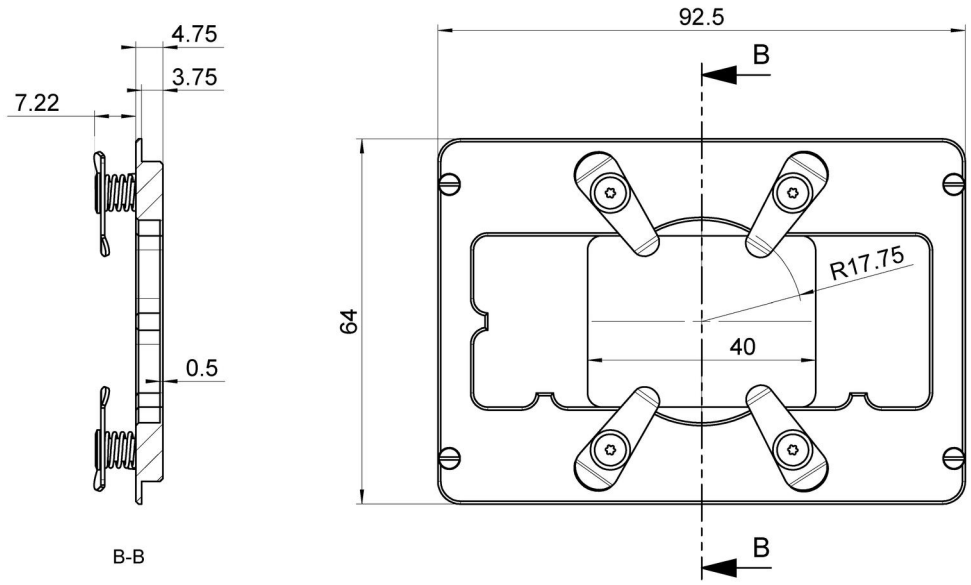
The resolution of the system is limited only by the noise of the amplifier and the measuring technology because PI piezo nanopositioning systems are free of friction.

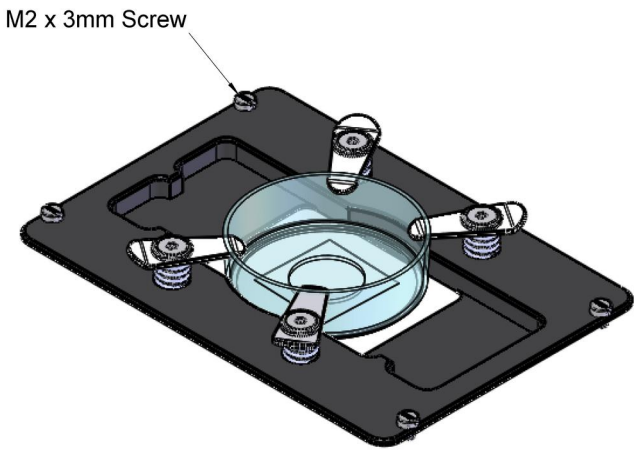
Drawings / Images



P-545.xx8S, dimensions in mm. P-545.3x8S: W = 217, C = 201. P-545.2x8S: W = 182, C = 166. 1: Upper mounting surface of the motion platform with eight M2.5 mounting holes. 2: Lower mounting surface of the motion platform with four M2 mounting holes (through holes).

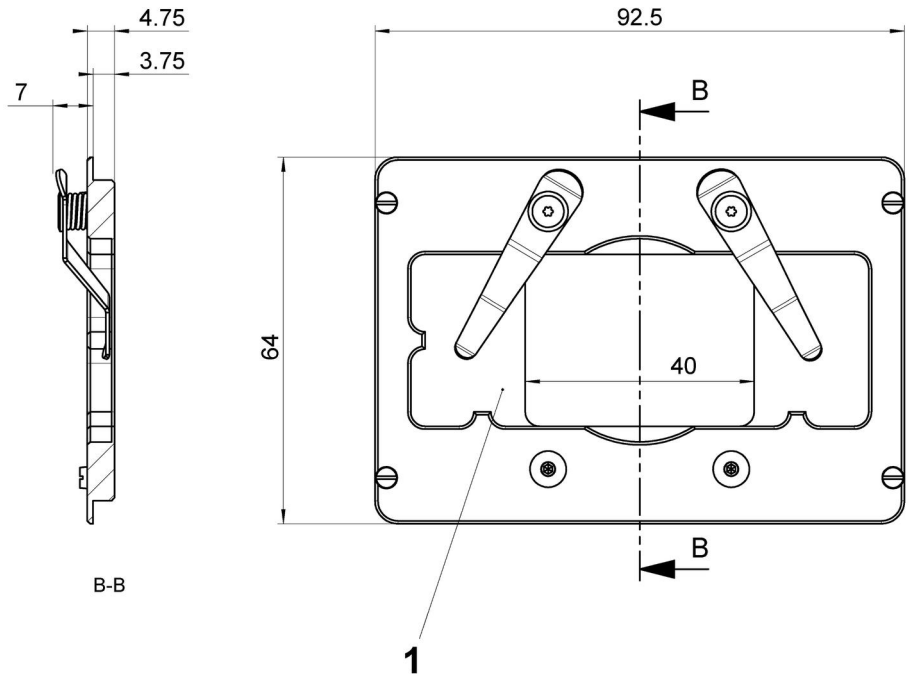
Drawings / Images

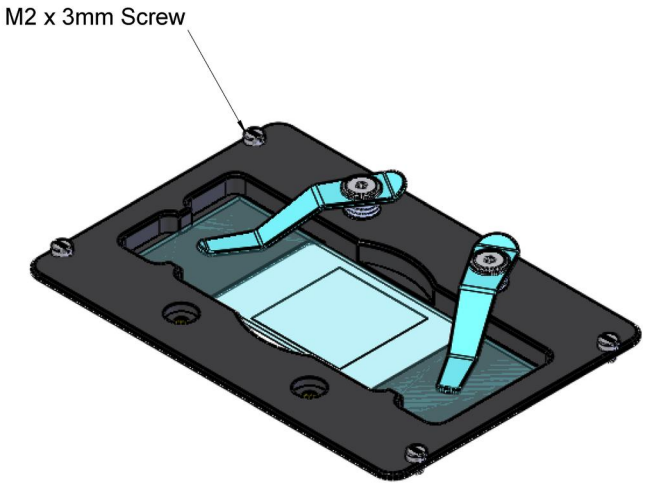




Accessories: P-545.PD3, Petri dish holder, dimensions in mm.

Drawings / Images





Accessories: P-545.SH3, microscope slide holder, dimensions in mm. 1: Recess for standard microscope slides (25 mm × 75 mm).

Order Information

P-545.3D8S
PInano® Trak XYZ piezo tracking system; clear aperture for microscope slides; 70 µm × 70 µm × 50 µm travel range (X × Y × Z); direct drive; piezoresistive, indirect position measuring; D-sub 37 (m) connector; 1.7 m cable length; with USB digital controller