

## PU 40, PU 90, PU 100 series

### Compact 1-axis translation stages

#### Concept:

PU translators consist of a single metallic part which includes the flexure guiding system. This design means that PU translation stages show excellent mechanical stability and, because they are pre-loaded, can work dynamically. The FEA modeled flexures guarantee zero friction and high robustness. These actuators can support loads of up to 240 N in the high load version and generate single axis motion of 40 to 100 microns. They are easily adaptable because they can be mounted both horizontally and vertically. The rugged design makes the PU series well suited for all kinds of industrial applications where reliable sub-nanometer accuracy is needed.

#### Specials:

The elements of the PU series can be equipped with an integrated measurement system. The systems may be specially prepared for vacuum and/or cryogenic applications. Other materials, such as nonmagnetic stainless steel, anodized aluminum, or titanium, are also available.

#### Mounting:

The elements of the PU series consist of one monolithic element. Please note that there must be a space between the PU translator and the plate to which it is fixed, otherwise movement may be blocked and not parallel. To facilitate this, a distance plate is included in every delivery. Precision pin holes provide the means for very accurate mounting of the PU translators. Translators are delivered with distance plates, 2pcs precision pins, and a M4x25mm\* metric screw. The PU series can be loaded with tensile forces defined by the specified pull force values for each element.

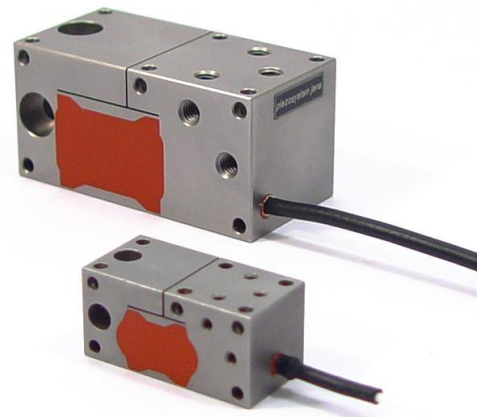


Image: PU 40 and PU 90

#### Product highlights:

- high mechanical stability because of high stiffness
- accurate parallel motion by parallelogram design
- motion without mechanical play
- high resolution in nm and sub-nm range
- motion up to 100  $\mu\text{m}$
- integrated lever transmission
- XY and XYZ configurations are possible
- precision pin holes for accurate adjustment

#### Applications:

- universal application for 1D, 2D, and 3D systems

## PU 40

### Technical data:

PU series	unit	PU 40	PU 40 SG	PU XYZ 40****
<b>part no.</b>	-	T-506-00	T-506-01	T-507-00
<b>combinable up to 3-axes</b>	-	yes	yes	-
<b>motion in open loop (<math>\pm 10\%</math>)*</b>	$\mu\text{m}$	40	40	40 x 40 x 40
<b>motion in closed loop (<math>\pm 0,2\%</math>)*</b>	$\mu\text{m}$	-	32	32 x 32 x 32
<b>capacitance (<math>\pm 20\%</math>)**</b>	$\mu\text{F}$	0.7	0.7	
<b>integrated measurement system</b>	-	-	strain gage	
<b>resolution in open loop***</b>	nm	0.08	-	
<b>resolution in closed loop***</b>	$\mu\text{m}$	-	0.8	
<b>resonant frequency</b>	Hz	1270	1270	
<b>typ. repeatability</b>	nm	-	33	
<b>stiffness</b>	N/ $\mu\text{m}$	0.8	0.8	
<b>max. push force</b>	N	32	32	
<b>max. pull force</b>	N	3	3	
<b>voltage range</b>	V	-20...+130	-20...+130	
<b>connector</b>	<b>voltage</b>	-	LEMO 0S.302	LEMO 0S.302
	<b>sensor</b>	-	-	LEMO 0S.304
<b>cable length</b>	m	1	1.2	
<b>material</b>	-	stainless steel/	stainless steel	
<b>dimensions (LxWxH)</b>	mm	28.5 x 14 x 14	28.5 x 14 x 14	28.5 x 28.5 x 28.5
<b>weight</b>	g	27	27	105

Specification of a single axis is mentioned for PU 40  
(part. no. T-506-00) already.  
This unit consist of 3 single actuators mounted together.

\* typical value measured with NV 40/3 and NV 40/3CLE controller

\*\* typical value for small electrical field strength

\*\*\* the resolution is only limited by the noise of the power amplifier and metrology

\*\*\*\* series PU XYZ with strain gage measurement systems available upon request

Rights reserved to change specifications as progress occurs without notice!

## PU 90

### Technical data:

PU series	unit	PU 90	PU 90 SG	PU XYZ 90****
<b>part no.</b>	-	T-501-00	T-501-01	T-504-00
<b>combinable up to 3-axes</b>	-	yes	yes	-
<b>motion in open loop (<math>\pm 10\%</math>)*</b>	$\mu\text{m}$	90	90	90 x 90 x 90
<b>motion in closed loop (<math>\pm 0,2\%</math>)*</b>	$\mu\text{m}$	-	72	72 x 72 x 72
<b>capacitance (<math>\pm 20\%</math>**</b>	$\mu\text{F}$	1.7	1.7	
<b>integrated measurement system</b>	-	-	strain gage	
<b>resolution in open loop***</b>	nm	0.18	0.18	
<b>resolution in closed loop***</b>	nm	-	1.8	
<b>resonant frequency</b>	Hz	350	350	
<b>typ. repeatability</b>	nm	-	59	
<b>stiffness</b>	N/ $\mu\text{m}$	1.5	1.5	
<b>max. push force</b>	N	135	135	
<b>max. pull force</b>	N	13	13	
<b>voltage range</b>	V	-20...+130	-20...+130	
<b>connector</b>	<b>voltage</b>	-	LEMO 0S.302	LEMO 0S.302
	<b>sensor</b>	-	-	LEMO 0S.304
<b>cable length</b>	m	1	1.2	
<b>material</b>	-	stainless steel	stainless steel	
<b>dimensions (LxWxH)</b>	mm	50.5 x 25 x 25	50.5 x 25 x 25	50.5 x 50.5 x 50.5
<b>weight</b>	g	72	74	165

Specification of a single axis is mentioned for PU 90  
 (part. no. T-501-00) already.  
 This unit consist of 3 single actuators mounted together.

- \* typical value measured with NV 40/3 and NV 40/3CLE controller
- \*\* typical value for small electrical field strength
- \*\*\* the resolution is only limited by the noise of the power amplifier and metrology
- \*\*\*\* series PU XYZ with strain gage measurement systems available upon request

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## PU 100

### Technical data:

PU series	unit	PU 100	PU 100 SG	PU XYZ 100****
<b>part no.</b>	-	T-502-00	T-502-01	T-505-00
<b>combinable up to 3-axes</b>	-	yes	yes	-
<b>motion in open loop (<math>\pm 10\%</math>)*</b>	$\mu\text{m}$	100	100	100 x 100 x 100
<b>motion in closed loop (<math>\pm 0,2\%</math>)*</b>	$\mu\text{m}$	-	80	80 x 80 x 80
<b>capacitance (<math>\pm 20\%</math>**</b>	$\mu\text{F}$	1.7	1.7	
<b>integrated measurement system</b>	-	-	strain gage	
<b>resolution in open loop***</b>	nm	0.2	0.2	
<b>resolution in closed loop***</b>	nm	-	2.0	
<b>resonant frequency</b>	Hz	340	340	
<b>typ. repeatability</b>	nm	-	59	
<b>stiffness</b>	N/ $\mu\text{m}$	1.54	1.54	
<b>max. push force</b>	N	135	135	
<b>max. pull force</b>	N	13	13	
<b>voltage range</b>	V	-20...+130	-20...+130	
<b>connector</b>	<b>voltage</b>	-	LEMO 0S.302	
	<b>sensor</b>	-	-	LEMO 0S.304
<b>cable length</b>	m	1	1.2	
<b>material</b>	-	stainless steel	stainless steel	
<b>dimensions (LxWxH)</b>	mm	50.5 x 25 x 25	50.5 x 25 x 25	50.5 x 50.5 x 50.5
<b>weight</b>	g	72	74	165

Specification of a single axis is mentioned for PU 100  
(part. no. T-502-00) already.  
This unit consist of 3 single actuators mounted together.

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- \*\*\*\* series PU XYZ with strain gage measurement systems available upon request

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