

PZ 400

compact 1-axis translation stage

Concept:

The systems of the series PZ are ideally suited for nm-precise positioning of optic components such as mirrors and laser diodes, adjustment and mounting in semiconductor technologies and electronics, and applications in measurement technologies and quality assurance as well as microbiology.

The series PZ consist of piezo electrical actuator in stage design with a solid top and bottom plate for easily integration in optical setups.

Specials:

The systems of this series are available in vacuum and cryogenic temperature configurations.

As an option they may come equipped with strain gage or capacitive position sensors, depending on the system configuration, to achieve very accurate repeatability.

Interfaces:

The elements of the series PZ are actuators integrated with an inner lever transmission in housing. Since the lever mechanism works in both directions, excessive pressure on the top plate must be avoided. The stage is fixed to a base plate.

Components can be mounted on the top plate by two threaded diagonal holes and can be accurately affixed using the precise pin holes.



image: PZ 400

Product highlights:

- accurate parallel motion
- up to 400µm motion range
- without mechanical play
- easily combined with other piezo electrical systems
- precision pin holes for accurate adjustment
- high dynamic range

Applications:

- fiber positioning
- beam alignment
- semiconductor
- micro manipulation

PZ 400

Technical data

linear positioning stage	unit	PZ 400	PZ 400 SG
part no.		T-118-00	T-118-01
axes	-	Z	Z
motion open(±10%)/closed loop	µm	400/ -	400/320
capacitance (±20%)**	µF	5.2	5.2
resolution (open/closed loop)***	nm	0.8/ -	0.8/8
feed back sensor	-	-	strain gage
typ. repeatability	nm	-	±5
typ. non-linearity	%	-	0.06
resonant frequency (unloaded)	Hz	250	250
max. push/pull forces	N	80/8	80/8
stiffness	N/µm	0.2	0.2
voltage range	V	-20...130V	20...130V
connector (for additional connector configuration please see table below)****	-	LEMO 0S.302	LEMO 0S.302/ODU 4 pin
cable length	m	1	1.2
bending radius of cable	mm	15	15
operating temperature	°C	+5°C ... +35°C	+5°C ... +35°C
material	-	Aluminum/Stainless Steel	Aluminum/Stainless Steel
dimensions (LxWxH)	mm	52x48x28.5	52x48x28.5
weight		155	175

* typical value measured with NV 40/3 amplifier (closed loop: NV 40/3 CLE amplifier)

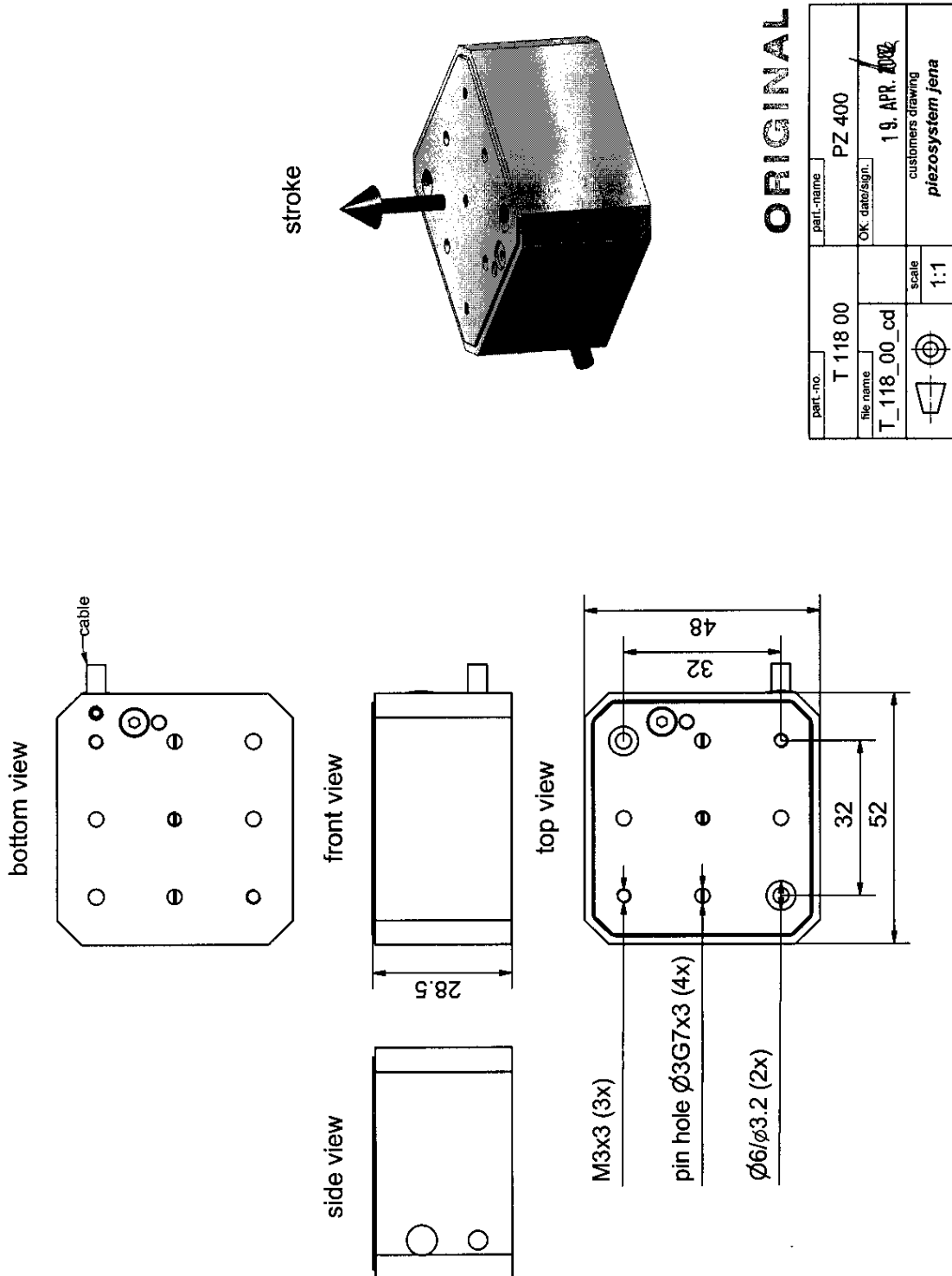
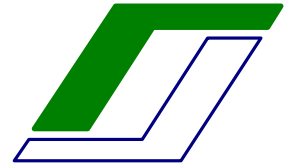
** typical value for small electrical field strength

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

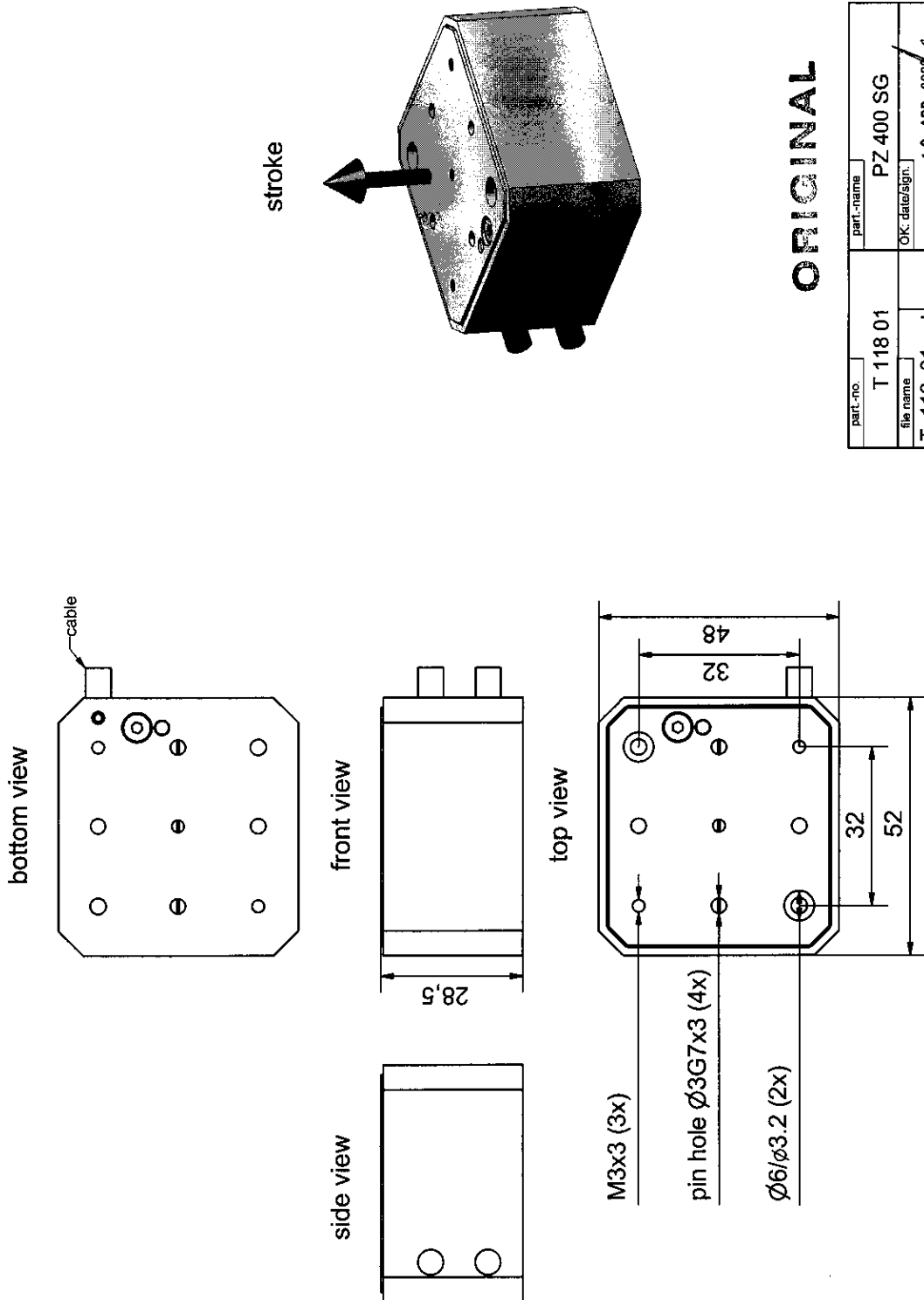
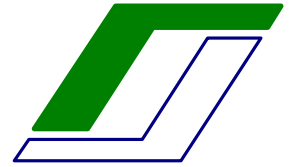
**** additional connector configurations

Product name	Description	Specials	Part. No Suffix.
PZ 400 SG Digital	Version for digital controller series d-Drive and 30DV50 in combination with additional functionalities: Interchangeability, ASI, ASC	Connector Sub-D 15	T-118-01D
PZ 400 SG Extern	Version with sensor pre-amplifier for the use with „CLE“ amplifier units and with the additional functionalities: Interchangeability, ASI	Connector Sensor: ODU 4pin	T-118-01E

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part-no.	T 118 01	part-name	PZ 400 SG
file name	T_118_01_cd	OK. date/sign.	19. APR. 2008
		scale	1:1
		customers drawing	piezosystem jena

instructions for using piezoelectrical elements and power supplies

- Piezoelectric actuators from **piezosystem jena** are controlled by voltages up to 150V. These values can be quite hazardous. Therefore read the installation instructions carefully and only authorized personal should handle the power supply.
- After transportation, piezoelectric actuators should be allowed to adapt for approximately 2 hours to the room temperature before being switched on.
- Piezoelectric actuators are made from ceramic materials with and without metallic casings. The piezo-ceramic is a relatively brittle material. This should be noted when handling piezoelectrical actuators. All piezo-elements are sensitive to bending or shock forces.
- Due to the piezoelectric effect piezo-actuators can generate electrical charges by changing the mechanical load or the temperature or such actions described above.
- Piezoelectric actuators are able to work under high compressive forces, only actuators with pre-load can be used under tensile loads (these tensile forces must be less than the pre-load, given in the data sheet).
- Please note that the acceleration of the ceramic material (e.g., caused by fall down, discharging or high dynamic application) can cause damage to the actuator.
- Heating of the ceramic material will occur during dynamic operation and is caused by structure conditional loss processes. This may cause failure if the temperature exceeds specified values cited below.
- With increasing temperature, up to the Curie temperature (usual values approx. 140°C - 250°C), the piezoelectric effect disappears.
- Piezoelectric actuators such stacks or various tables work electrically as a capacitance. These elements are able to store electrical energy over a long period (up to some days) and the stored energy may be dangerous.
- If the actuator remains connected to the drive electronics, it is discharged within a second after shutdown and quickly reaches harmless voltage values.
- Piezo-actuators can generate voltages by warming or cooling only. The discharge potential should not be ignored due to the inner capacitance. This effect is insignificant at usual room temperature.
- Piezo-actuators from **piezosystem jena** are adjusted and glued. Any opening of the unit will cause misalignment or possible malfunction and the guarantee will be lost.
- Please contact **piezosystem jena** or your local representative, if there are any problems with your actuator or power supply.
- **Caution!** Shock forces may damage the built-in ceramic element. Please avoid such forces, and handle the units with care, otherwise the guarantee will be lost.