

Piezo Phase Shifter

HIGH- SPEED PIEZO PHASE SHIFTERS WITH DIRECT METROLOGY OPTION



S-303

- + Resonant frequency 25 kHz for sub- millisecond dynamics
- + Capacitive sensor option for highest linearity and stability
- + 3 μm travel range
- + Compact size: \varnothing 30 mm \times 10 mm
- + Open- loop versions with aperture
- + Invar option for highest thermal stability

Specifications

	S-303.CDx	S-303.0Lx	Unit	Tolerance
Active axis	Z	Z		
Open- loop travel, at -20 to 120 V	3	3	μm	$\pm 20\%$
Closed- loop travel	2	–	μm	
Integrated feedback sensor	Capacitive	–		
Resolution, closed- loop / open- loop*	0.03 / 0.03	0.03 / –	nm	
Linearity error, closed- loop**	1.0		%	typ.
Repeatability	0.7		nm	typ.
Stiffness			N/ μm	$\pm 20\%$
Push / pull force capacity	0.5	0.5	N	max.
Electrical capacitance	0.9	0.9	μF	$\pm 20\%$
Dynamic operating current coefficient (DOCC)***	50	50	$\mu\text{A}/ (\text{Hz} \times \mu\text{m})$	
Resonant frequency, no load	25	25	kHz	$\pm 20\%$
Operating temperature range	-20 to 80	-20 to 80	$^{\circ}\text{C}$	
Voltage connection	E	VL		
Sensor connection	E	–		
Mass	100	30	g	$\pm 5\%$
Casing material	Al (Invar optional)	Al (Invar optional)		
Recommended amplifiers / controllers	E-665.CR E-610.C0 E-661.CP E-625.CR E-753 E-750	E-663 E-610.00 E-500 / E-501 E-503 Optional: E-515 / E-516		

* The resolution of PI piezo nanopositioners is not limited by friction or stiction. Value given is noise equivalent motion with E-503 amplifier or E-710 controller.

** With digital controller, analog controllers will provide a linearity of typ. 1 nm.

*** Dynamic Operating Current Coefficient in μA per Hz and μm . Example: Sinusoidal scan of 1 μm at 10 Hz requires approximately 0.5 mA drive current.

Order Information

S-303.0L

Piezo Phase Shifter, 3 μm , Open- Loop

S-303.CD

Piezo Phase Shifter, 3 μm , Capacitive Sensor

S-303.0Li

Piezo Phase Shifter, 3 μm , Open- Loop, Invar

S-303.CDi

Piezo Phase Shifter, 3 μm , Capacitive Sensor, Invar

Controllers / Drivers / Amplifiers

[E-509 Signal Conditioner / Piezo Servo Module](#)

[E-621 Piezo Servo- Controller & Driver](#)

[E-753 Digital Piezo Controller](#)

[E-500 • E-501 Modular Piezo Controller](#)

[E-503 Piezo Amplifier Module](#)

[E-515 Display Module for Piezo Controllers](#)

[E-665 Piezo Amplifier / Servo Controller](#)

[E-625 Piezo Servo- Controller & Driver](#)

[E-663 Three- Channel Piezo Driver](#)

[E-610 Piezo Amplifier / Controller](#)

Related Products

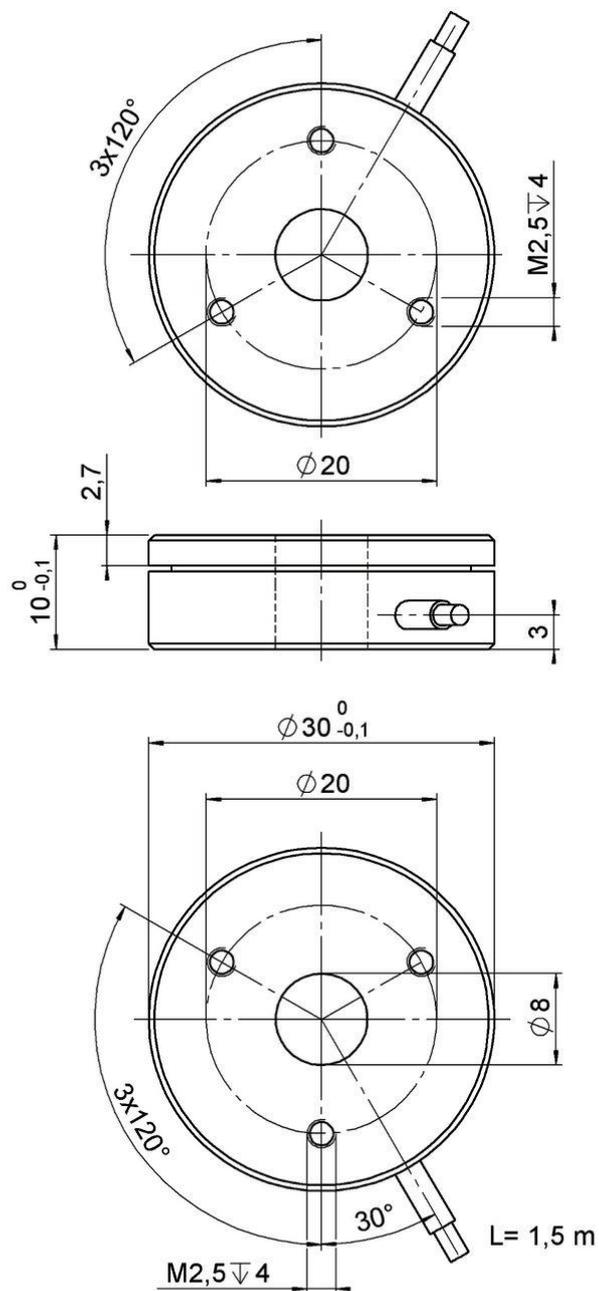
[S-310 – S-316 Piezo Z / Tip / Tilt Scanner](#)

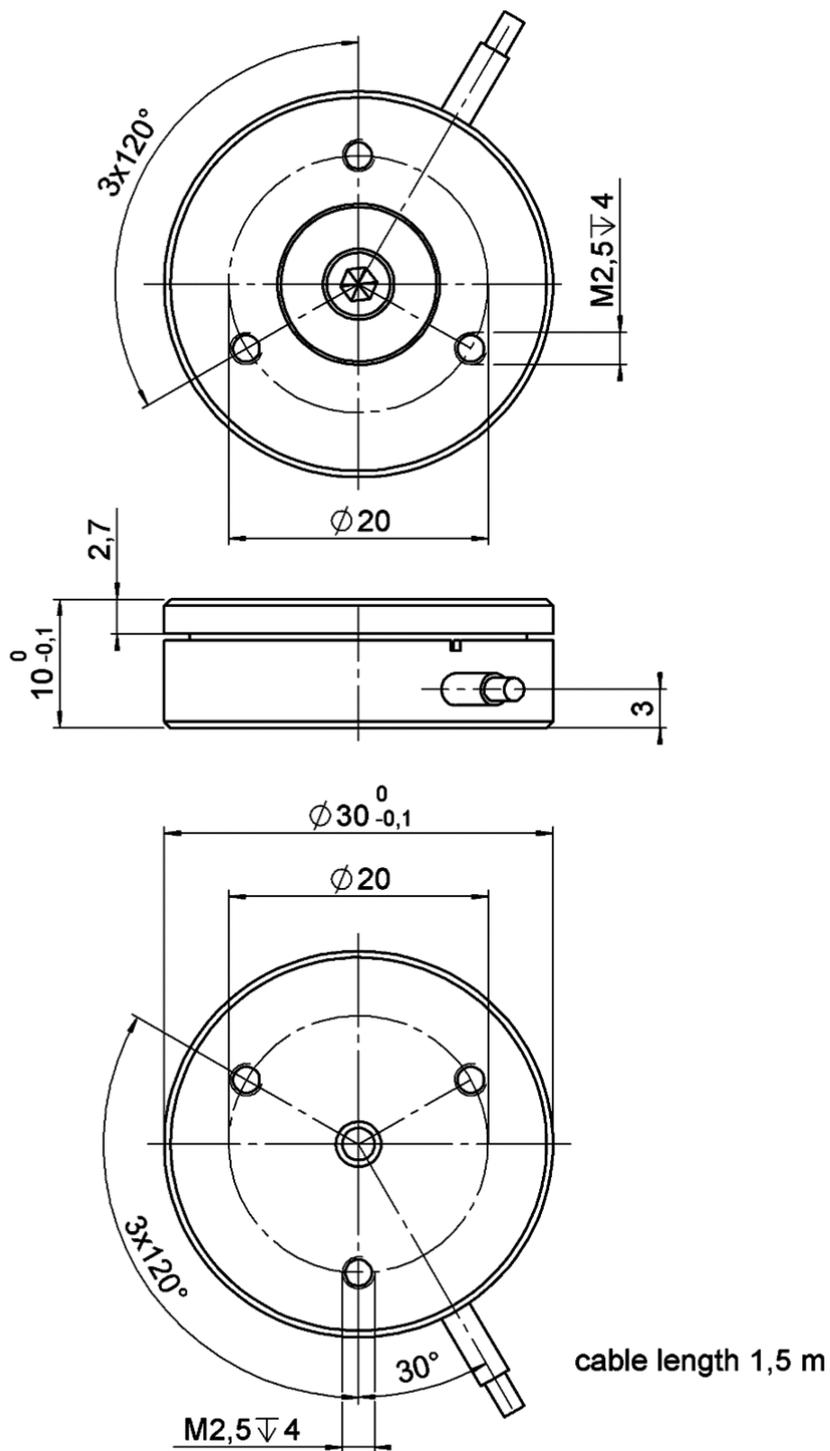
[S-325 Piezo Z / Tip / Tilt Platform](#)

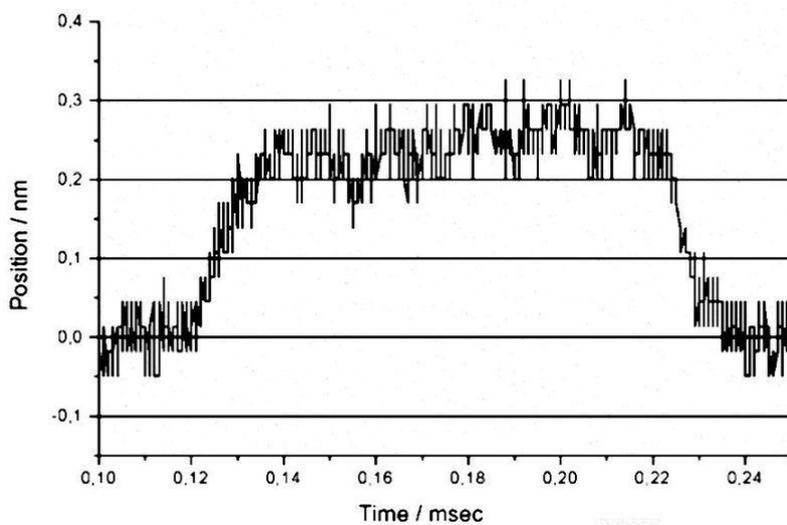
[S-330 Piezo Tip / Tilt Platform](#)

[S-334 Piezo Tip/ Tilt Mirror](#)

Drawings / Images







A 250 picometer step (0.25 nm) of the S-303 platform, controlled by an E-503 amplifier module and an E-509.C1A servocontroller module. Measured with special ultra-high-resolution capacitive gauge, ± 0.02 nm resolution.