



# Nanopositioner Driver

High precision position reporting with high voltage slip-stick drive

## NP-Drive

- Bipolar Slip-Stick Drive
- Voltage range: 10-300V (-10 V to +10 V minimum; -300 V to +300 V maximum)
- Frequency range: 10-2000 Hz
- Drives up to 9 independent axes, multiplexed, open-loop
- Drives up to 3 independent axes, multiplexed, closed-loop
- Touchscreen interface
- Python script ready
- 19" Rack mount 4U

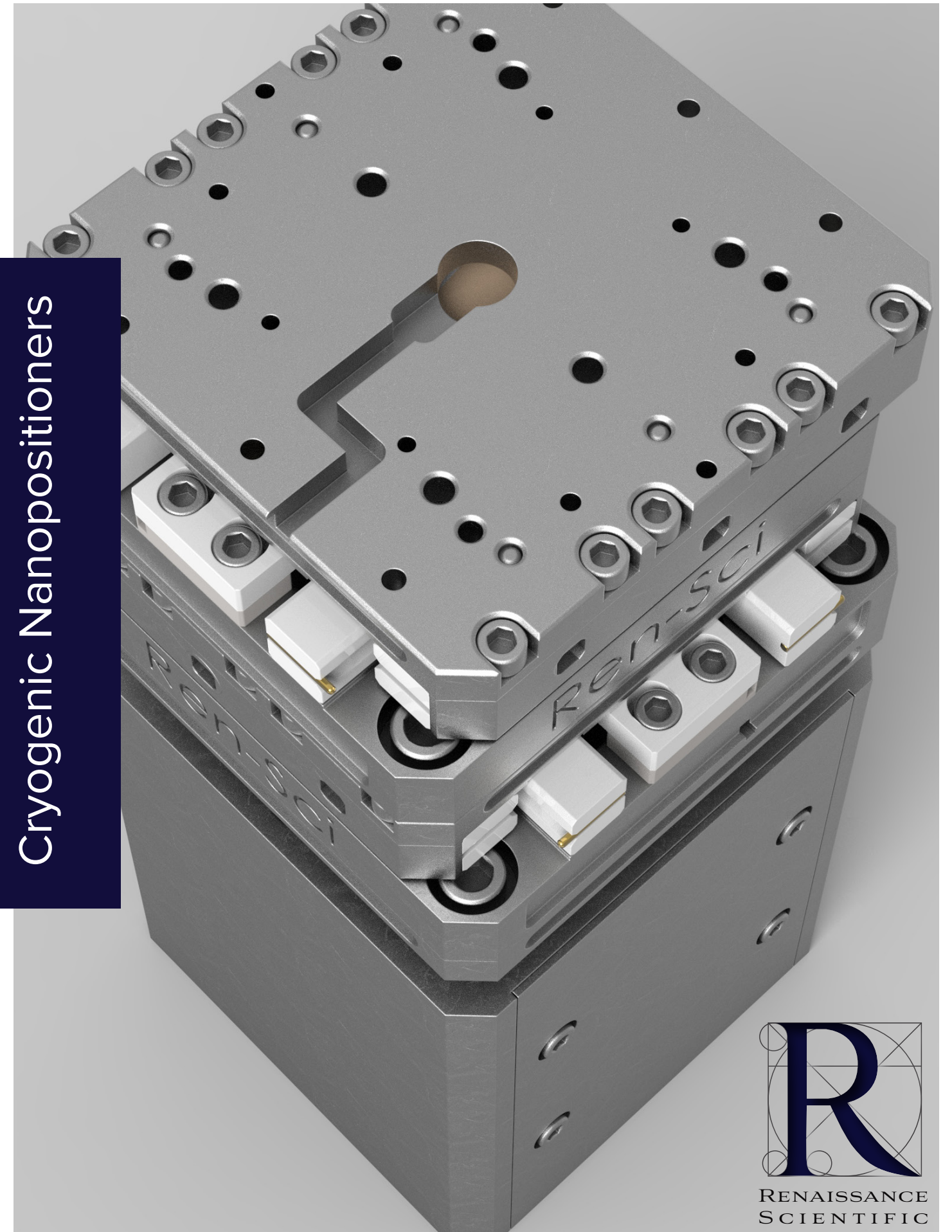


The NP-Drive is an FPGA based controller with a dedicated processor and temperature controlled zones for sensitive measurements. It provides high-voltage slip-stick drive and position readouts for our capacitive encoded motors. Multiple options are available for control and readout, including our large and intuitive touchscreen, a handset, a PC, or any combination of the three.



ren-sci.com

Cryogenic Nanopositioners



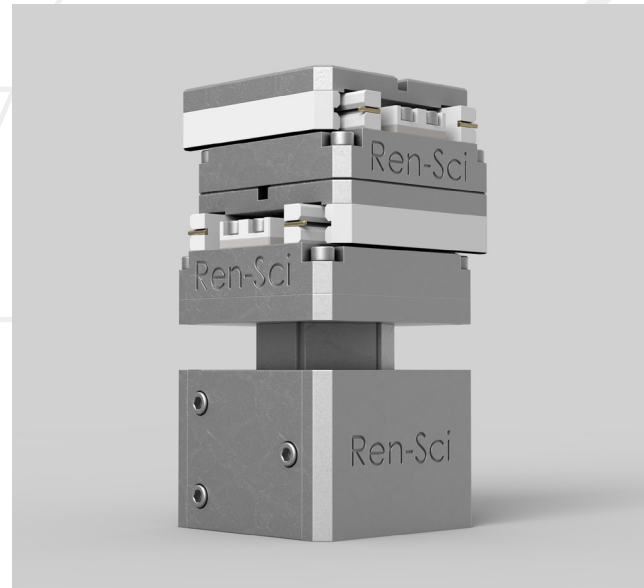


# Cryogenic Nanopositioners

Precision positioning even in the most extreme environments

## NP-240 Series

- NP-240-X single x-axis longitudinal
- NP-240-Z single z-axis transverse
- NP-240-XYZ 3-axis Cartesian

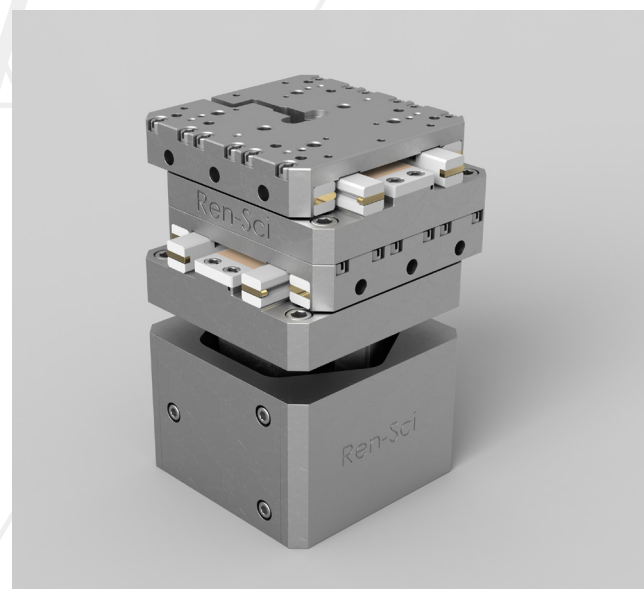


Footprint: 24mm x 24mm

Technical Specifications	
Range (mm)	5(x) x 5(y) x 5(z) (12 with -LRZ option)
Capacitance (300K / 4K)	X: 10 nF / 1.8 nF Z: 20 nF / 3.8 nF
Actuation	Shear PZT Ceramic
Drive Amplitude (Volts; bipolar)	+/-10 to +/-300
Drive Frequency (Hz)	10 to 4000
Materials	Ti(CP), BeCu, PZT Ceramic
Magnetization	< 10 nT
UHV Capatability	To $1.0 \times 10^{-11}$ mBar
Bakeout	To 120° C
Interface	Touchscreen; specify voltage, frequency, no. steps, axis select

## NP-340 Series

- NP-340-X single x-axis longitudinal
- NP-340-Z single z-axis transverse
- NP-340-XYZ 3-axis Cartesian

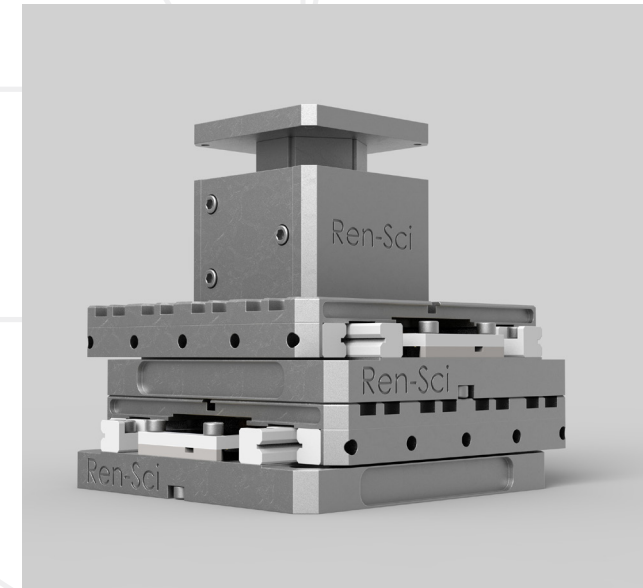


Footprint: 34mm x 34mm

Technical Specifications	
Range (mm)	10(x) x 10(y) x 5(z) (12 with -LRZ option)
Capacitance (300K / 4K)	X: 10 nF / 1.8 nF Z: 20 nF / 3.8 nF
Actuation	Shear PZT Ceramic
Drive Amplitude (Volts; bipolar)	+/-10 to +/-300
Drive Frequency (Hz)	10 to 4000
Materials	Ti(CP), BeCu, PZT Ceramic
Magnetization	< 10 nT
UHV Capatability	To $1.0 \times 10^{-11}$ mBar
Bakeout	To 120° C
Interface	Touchscreen; specify voltage, frequency, no. steps, axis select

## NP-450 Series

- NP-450-X single x-axis longitudinal
- NP-450-XYZ 3-axis Cartesian



Footprint: 45mm x 45mm

Technical Specifications	
Range (mm)	20(x) x 20(y) x 5(z) (12 with -LRZ option)
Capacitance (300K / 4K)	X: 10 nF / 1.8 nF Z: 20 nF / 3.8 nF
Actuation	Shear PZT Ceramic
Drive Amplitude (Volts; bipolar)	+/-10 to +/-300
Drive Frequency (Hz)	10 to 4000
Materials	Ti(CP), BeCu, PZT Ceramic
Magnetization	< 10 nT
UHV Capatability	To $1.0 \times 10^{-11}$ mBar
Bakeout	To 120° C
Interface	Touchscreen; specify voltage, frequency, no. steps, axis select

Our patent-pending nanopositioners were designed to eliminate the most common frustrations encountered in cryogenic environments. We, too, have shared these frustrations and wanted an option that could offer low heat dissipation, high-precision, and minimal downtime due to maintenance at an affordable price. Dilution refrigerators and cryostats with limited cooling power struggle to combat the high heat dissipation inherent to nanopositioners. At Ren-Sci we know that this heat dissipation is primarily due to bearing friction heat, as well as Joule heating and dielectric/hysteretic losses. This is why we precision-designed our motors to significantly reduce friction and operate a low capacitance (meaning low current, high voltage). Want serious precision and accuracy at an affordable cost? Our nanopositioners provide near-interferometric precision at a fraction of the cost due to high-precision encoding and capacitive sensors. When cryogenic nanopositioners fail, it is most often the piezoelectric actuator that has failed. As such, we have intentionally designed our motors to include user exchangeable actuators. Your days of sending motors back for a 6-week repair or replacing motors entirely due to failed actuators are over. We even ship our nanopositioners with two extra actuators per axis. Need more? Just call us and we'll overnight another actuator. Why? Because we're nice.

