

CONEX-NSR1

Rotator USER'S MANUAL



1.0 CONEX-NSR1 Motorized Rotator Stage

The CONEX-NSR1, with an integrated iPP stepper motor controller, is an economical and versatile rotary positioner that can be used as a filter wheel, neutral density rotator, polarized optic rotator, flipper mount or basic rotation platform.

To mount the rotator to an optical table either use the two cap screws (direct) or a bracket provided with the stage.

1.1 Specifications

Aperture Diameter	25.7 mm
Height of optical axis	76.2 mm (3.0")
Max speed of rotation, no load	120 °/s
Travel range	360° continuous
Motor	2-phase stepper motor
Reduction gear	7.5:1
Full-step	1.0°
Micro-step	0.016°
Minimum Incremental Motion	1.0°
Bi-directional repeatability, Typical	±1.5°
Wobble	±300 μrad over 360° travel
Home position repeatability	±1.5°
Size (H x W x D)	104.8 x 95.3 x 48.5 mm (4.125 x 3.750 x 1.910 in.)
Base material	Aluminum, black anodized
Cable length (pigtailed)	3 m (10 ft)

1.2 Environmental Specifications

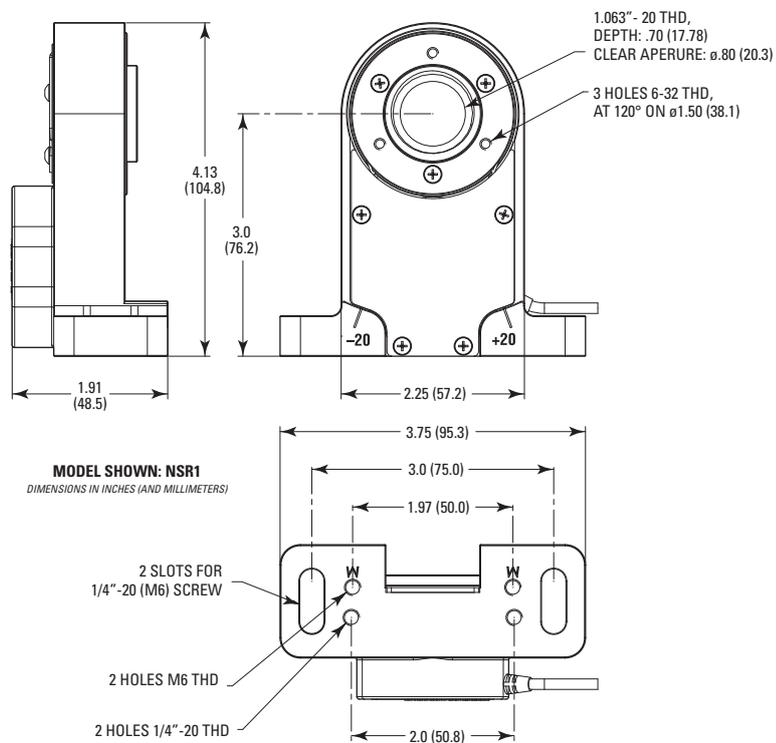


CAUTION

The CONEX-PP motion controller and positioners are high-precision laboratory instruments. Only use and store in a clean laboratory environment. Avoid mechanical shock to positioners.

Max operating temperature	5 °C to 40 °C
Recommended operating temperature	20 °C to 25 °C
Operating relative humidity	<85%, non-condensing
Storage temperature	0–60 °C
Storage relative humidity	<85%, non-condensing
Altitude	<2000 m (6,562 feet)
Installation	category II
Pollution	degree 2

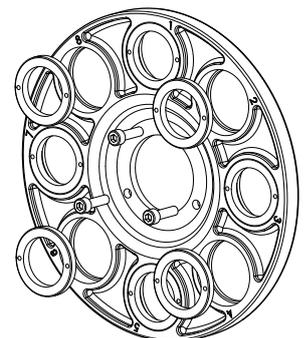
1.3 Dimensions



2.0 Accessories

2.1 NSFW-1 Filter Wheel

Model NSFW-1 is a 5" diameter wheel to hold up to 8 filters or other optical elements with a 1" (25.4 mm) diameter and thickness not exceeding 3 mm. When secured to the NSRI rotator stage, it provides an easy way to insert different elements into the optical path. Precise stepping 45° from one optical element to the next is easily achieved using the CONEX-PP utility. Intra-Filter positioning to 1° is also possible.

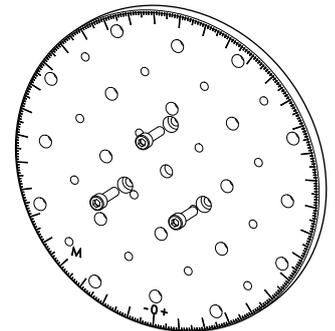


Specifications

Dimensions	Ø 127 mm x 7.94 mm thick (5" x 5/16")
Material	Aluminum, black anodized
Markings	Laser-etched optics numbers 1-8
Provision for securing to rotator	Three 6-32 x 0.5" socket head cap screws
Optics mounting positions	8 threaded holes spaced 45° apart
Optics dimensions, max	Ø 25.4 mm x 3 mm thick (1" x 0.12")
Mounting hole threads	1.063 x 20 (Ø 1-1/16" x 20/inch pitch)
Optics retainers	8 threaded retainer rings (included), Newport Model A-1.25-1RR
Tool to tighten retainer ring	Spanner wrench, Newport Model SW-0M or equivalent
Aperture through retainer ring	Ø 19.2 mm (0.755")

2.2 NSTP-1 Tool Plate

Model NSTP-1 is a 5" diameter optical plate with 1/4-20 threaded mounting holes spaced 1" apart plus M4 threaded mounting holes spaced 25 mm apart. When the NSR1 rotator stage is mounted to a right-angle bracket, the NSTP tool plate provides a horizontal optical table which can be precisely rotated under manual or computer control.

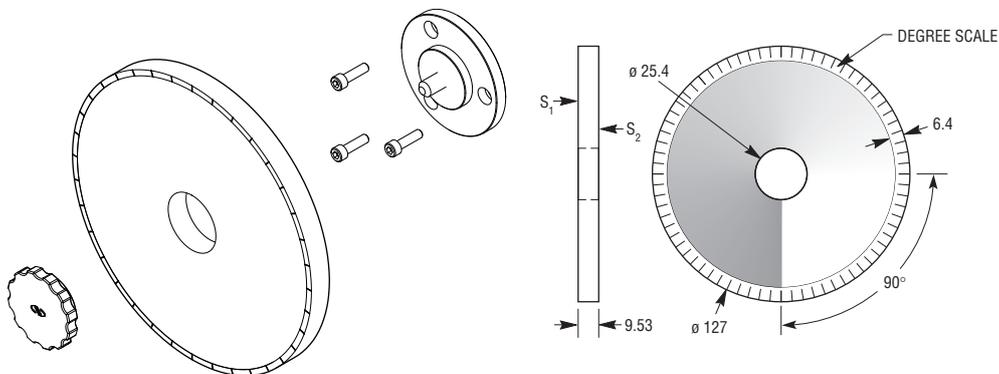


Specifications

Dimensions	Ø 127 mm x 7.6 mm thick (5" x 0.300")
Material	Aluminum, black anodized
Markings	Laser-etched 1° marks, zero index mark, letter M to indicate metric hole
Provision for securing to rotator	Three 6-32 x 0.5" socket head cap screws
Mounting hole locations, Imperial	21 threaded holes on 1" grid
Mounting hole threads, Imperial	1/4-20
Mounting hole locations, metric	16 threaded holes on 25 mm grid
Mounting hole threads, metric	M4
Recommended right-angle brackets for horizontal tool plate	Included with NSR1

2.3 NSND-1 Variable Neutral Density Filter

Model NSND-1 Variable Neutral Density Filters are assemblies which combine Newport's line of 127 mm diameter variable neutral density filters with mounting hardware for the NSR1 rotator stage. Rotating the filter assembly in the optical path provides precisely controlled variable attenuation. For detailed filter specifications, please see Newport Catalog or website for "Filters, neutral density, circular variable".



Specifications

Dimensions, optical filter	Ø 127 mm x 9.53 mm thick (5" x 3/8")
Optical material	BK7 optical glass (general applications) UV fused silica (UV applications)
Provision for securing to rotator	Ø 50.8 mm (2") adapter with provision for three 6-32 x 0.5" socket head cap screws, plus knob with threaded shaft
Optical gradient area	270° arc
Markings	Laser-etched 5° marks

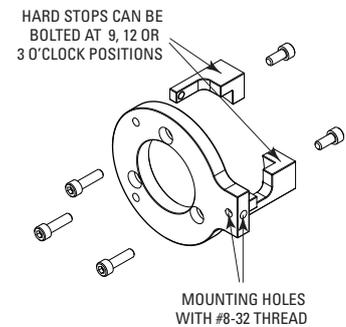
Ordering Information

Part No.	Filter No.	Optical Material	Optical Density	Surface Flatness	Scratch-Dig	Wedge (arc-sec)
NSND-3	50G02AV.1	BK7	0.05–1.0	<1λ	30–10	<4
NSND-4	50G02AV.2	BK7	0.05–2.0	<1λ	30–10	<4
NSND-5	50G04AV.1	UV fused silica	0.05–1.0	<2λ	30–10	<4
NSND-6	50G04AV.2	UV fused silica	0.05–2.0	<2λ	30–10	<4

2.4 NSFM-1 Flip Mount

Model NSFM-1 Flip Mount is a mechanical attachment to the NSR1 rotator stage which allows optical elements to be “flipped” in and out of the optical path. The optical elements can be attached via two #8-32 threaded holes at the end of a mounting arm. Mechanical stops are provided for precise 90° or 180° rotation.

The NSFM-1 kit includes all the mounting accessories shown at right. A U50-P1 and UPA 1 Optical Mounts for 1" mirrors is also included (not shown).



Specifications

Dimensions, circular portion	Ø 57.15 mm x 6.35 mm thick (2.25" x 0.25")
Dimensions, mounting arm	38.1 mm (1.5") from center, 19.1 mm (0.75") flat end
Material, main body	Aluminum, anodized black
Material, hard stops	Aluminum, anodized red
Provision for securing to rotator	Three 6-32 x 0.5" socket head cap screws
Provision for attaching optical assembly	Two #8-32 threaded holes at end of mounting arm
Hard stop locations	Two selectable positions: 9 o'clock, 12 o'clock, or 3 o'clock.
Travel	90° or 180° depending on choice of hard stop locations.
Maximum torque	0.06 Nm