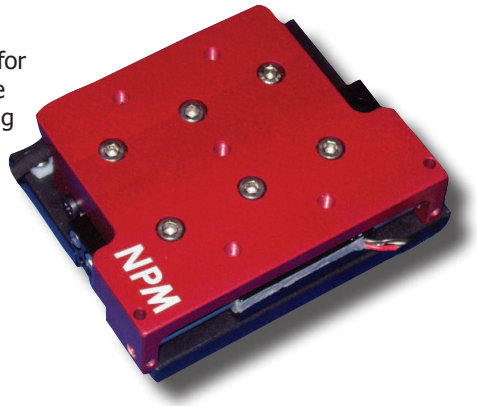
NPM Nippon Pulse
Your partner in motion control

SCR050
Nanopositioning Stage



The SCR050 stage utilizes a S040 Linear Shaft Motor, making it a compact, precise solution for small-scale stage applications. The encoder and motor cables are built into the stationary base and are designed so there is no need for them to bend and flex. All SCR stages utilize a moving magnet design. With a built-in optical linear encoder that provides sub-nanometer resolution, the SCR050 is a complete compact stage solution for small-scale precision movement.

Each SCR stage requires a servo driver to operate the stage. Any two SCR stages will bolt directly together to form a very stiff, compact X-Y assembly, without the need for adaptor plates. Two SCR stages can be supplied as an X-Y stage to insure true orthogonal orientation

Stage Specifications

Stage Specifications	Units	SCR050-020	SCR050-040
Travel/Stroke	mm	20	40
Accuracy	µm	2	2
Encoder Resolution	nm	1000, 500, 100, 50, 10	
Bi-Directional Repeatability[1]		±1 count	
Maximum Acceleration	m/s²	10	7
Maximum Velocity[2]	m/s	0.4	0.5
Load Capacity[3]	kg	10	
Moving Mass	kg	0.229	0.298
Total Mass	g	630	730
Straightness & Flatness	µm	2.5/25mm	
Home Limit Switches		Standard	
Home Switch Location		Center	
Limit Switch Over Travel	mm	1	
Hard Stop Over Travel	mm	2	
Bearing		Cross-roller Bearing	
Linear Shaft Motor		S040Q	

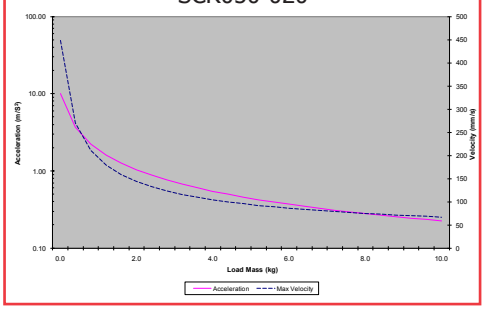
Note 1: Repeatability +/- 2 counts at sub 0.1 µm resolutions

Note 2: For 10nm (0.01µm) resolution, max velocity of encoder is limited to 135mm/sec; for 50nm (0.05µm), the limit is 675mm/sec; and for 100nm (0.1µm), the limit is 1350mm/sec

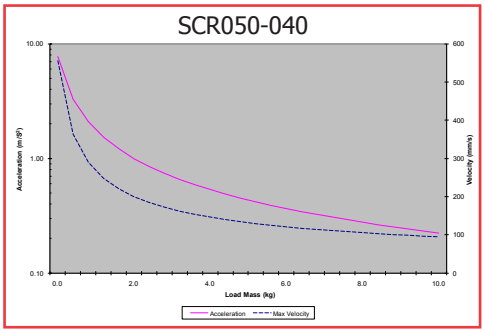
Note 3: Please contact our Applications Engineers for loads exceeding 10kg

Acceleration/Velocity Curves

SCR050-020

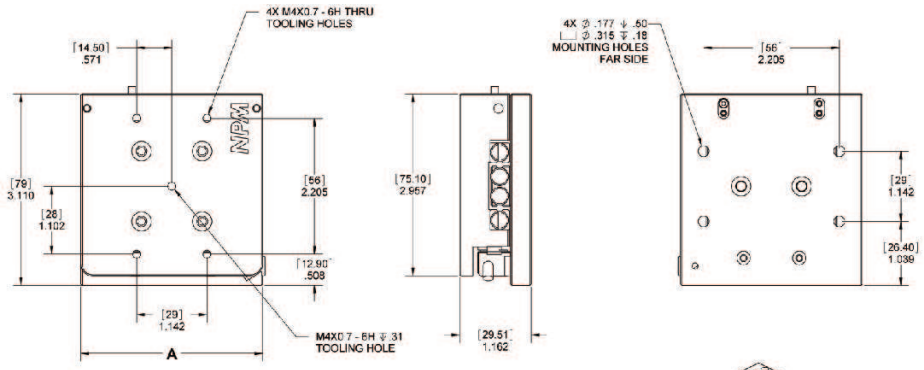


SCR050-040



Motor Cable UL1440
AWG 28
U–red
V–white
W–black
Length: 300mm (0.3m)
Encoder Cable Length: min. 1000mm

Dimensions



MODEL	TRAVEL mm	A
SCR050-020	20	75
SCR050-040	40	95

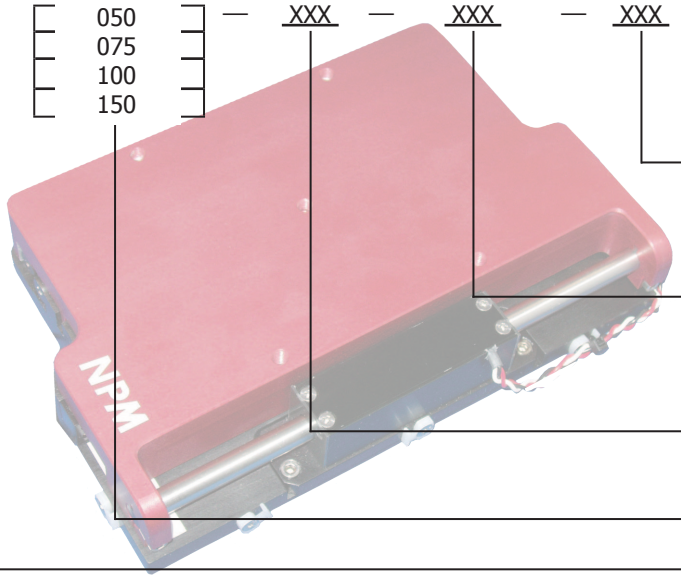
Linear Shaft Motor Specifications

Motor Specifications	S040Q (Units)
Fund. Motor Constant	0.41N/√W
Motor Force Constant	2.1N/Arms
Back-EMF Constant	0.7V/m/s
Coil Resistance @ 25°C	22.4Ω
Coil Inductance	1mH
Cont. Current @ 135°C	0.3Arms
Acceleration Current	1.1Arms
Cont. Force @ 135°C	0.58N
Acceleration Force	2.3N
Cont. Power Rating	2.016W
Thermal Resistance	62.6°C/W
Magnetic Pole Pitch (N-N)	18mm

info@nipponpulse.com | 1-540-633-1677

SCR Stage Part Numbering Guide

Example model number: SCR100-50-010-080Q



SCR — Stage Width (mm) 050 / 075 / 100 / 150 — Stroke (mm) XXX — Encoder* XXX — Motor Size XXX — Hall Effects XX

Blank = No Hall Effects
HA = Hall Effects

XXD = Motor Size with double winding
XXT = Motor Size with triple winding
XXQ = Motor Size with quadruple winding

100 = 1000nm
050 = 500nm
010= 100nm
005 = 50nm
001 = 10nm

50mm (1.97 in)	200mm (7.88 in)
100mm (3.94 in)	250mm (9.85 in)
150mm (5.91 in)	300mm (11.82 in)

XX Stage Width in mm

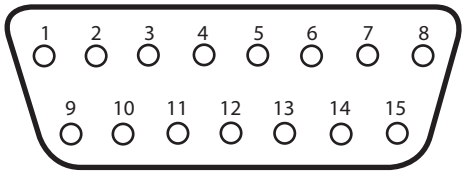
Stage Main Body Model

*SCR Encoder Upgrade Notice

As of September 1, 2010, all Nippon Pulse SCR Nanopositioning stages are available with a upgraded encoder. Any stage built after September 1, 2010, and beginning with unit SN#080210-001, comes standard with the Renishaw Tonic Encoder.

The previous encoder was the Renishaw RGH24, which used optional and separate read switch end-of-travel limits. The Tonic Encoder includes limit switches as a part of the new read head and makes end limits standard at no additional cost. This change optimizes performance and eliminates extra wiring needed with the optional limit switches. Other benefits of using the new encoder include improving interpolation feedback by four times, achieving 5nm resolution without the use of a large RGB interpolator, and increased resolution and speed options.

SCR Standard Pinout



Pin	Signal	Function
2	0V	Ground
4	Z-	Reference Mark
5	B-	Incremental Signal
6	A-	Incremental Signal
7	5V	Power
8	5V	Power
9	0V	Ground
10	Q	Limit
11	P	Limit
12	Z+	Reference Mark
13	B+	Incremental Signal
14	A+	Incremental Signal
15	shield	