

NR01 Series Rotary
Product Training Module



Introduction

Purpose:

- To introduce the NR01 Series Subminiature Process Sealed Rotaries

Objective:

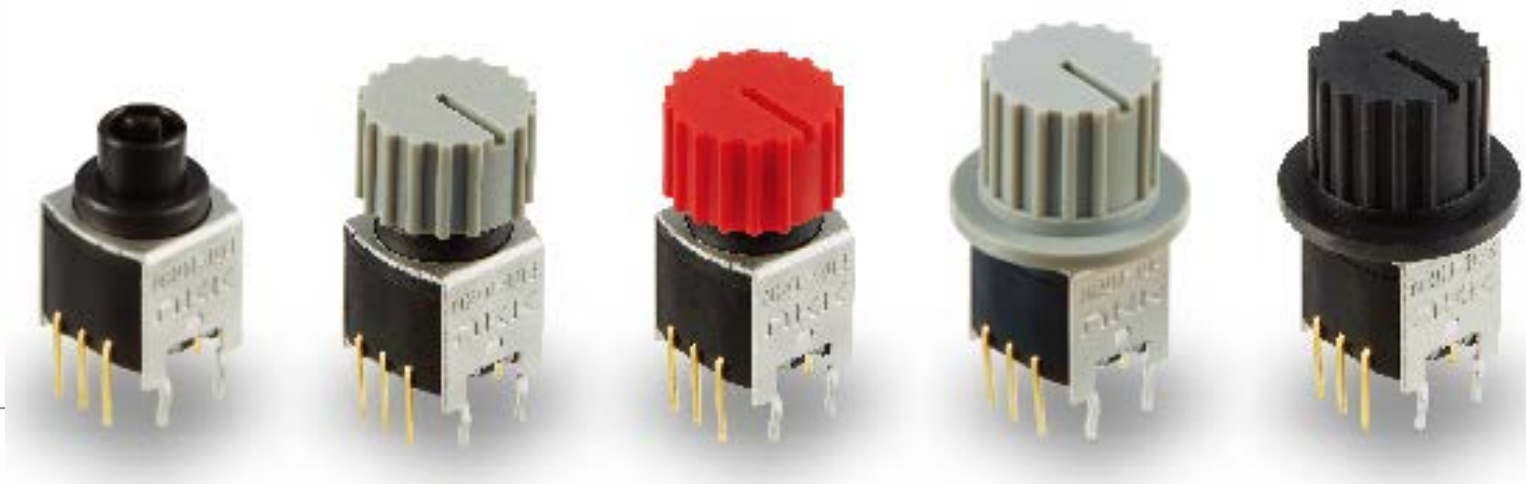
- Discuss the physical and electrical options available
- Present features and benefits with an overview of the part number breakdown
- Review applications

Contents

- 12 pages

NR01 Series Subminiature Process Sealed Rotaries

- Light Operating Feel
- Sliding Dual-Contact Mechanism for Improved Contact Reliability
- Anti-lifting Design with Crimped Bracket Feet for Secure PC Mounting
- Totally Sealed Construction
- Mechanical life: 30,000 cycles minimum
- Electrical life: 10,000 cycles minimum



Features

Provides Crisp Feedback in Miniature Body

Fully Washable

The switch contacts feature a sealed design enabling automated soldering and cleaning.

Light Operating Feel

The switching mechanism uses a steel ball to ensure light operation and positive feeling of actuation.

Locking Out Flux

Insert molded terminals and a sealed design lock out flux, solvent and other contaminants.

Sliding Contact Mechanism

The switch contacts are gold plated and equipped with a sliding dual-contact mechanism for improved contact reliability.

Improved Contact Reliability

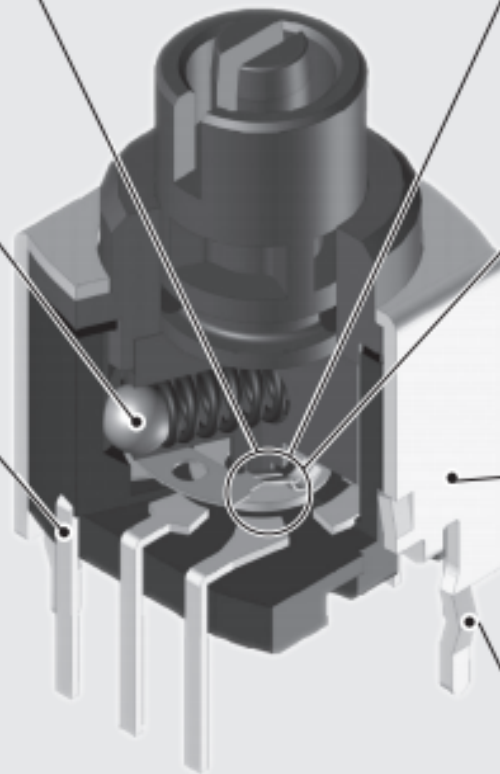
The switch contacts feature a sealed design to lock out water, gas, foreign particles, or dust and to ensure high contact reliability and consistent quality.

Enhanced Mounting Strength

Includes a bracket to enhance mounting strength on printed circuit boards.

Antilifting Design

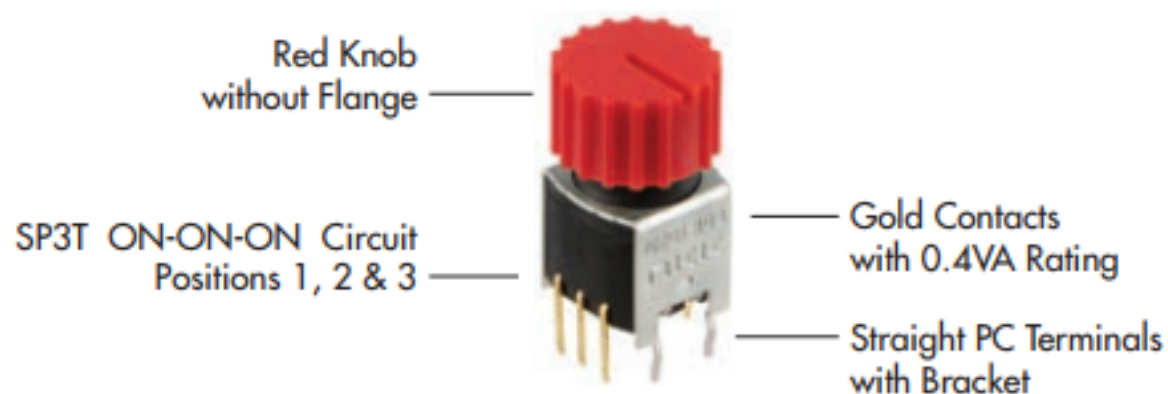
The bracket feet are crimped to ensure secure PC mounting and to prevent dislodging during soldering.



Features

NR01 Series Subminiature Process Sealed Rotaries

- Available features in the NR01 Series include the following:
 - Knob with or without flange
 - Without Knob
 - Black, Red, or Grey options available
 - 3, 4 or 5 positions
 - Gold plated contacts

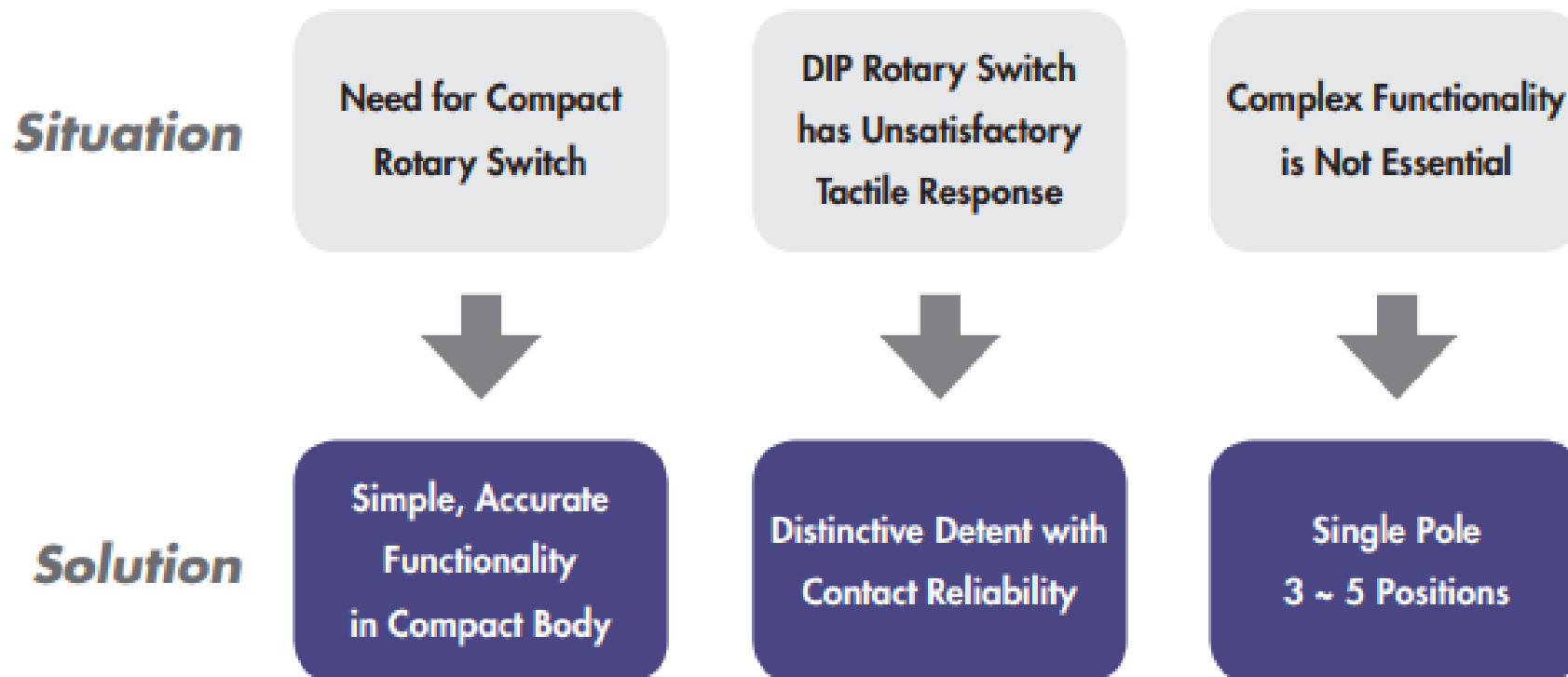


Product Overview

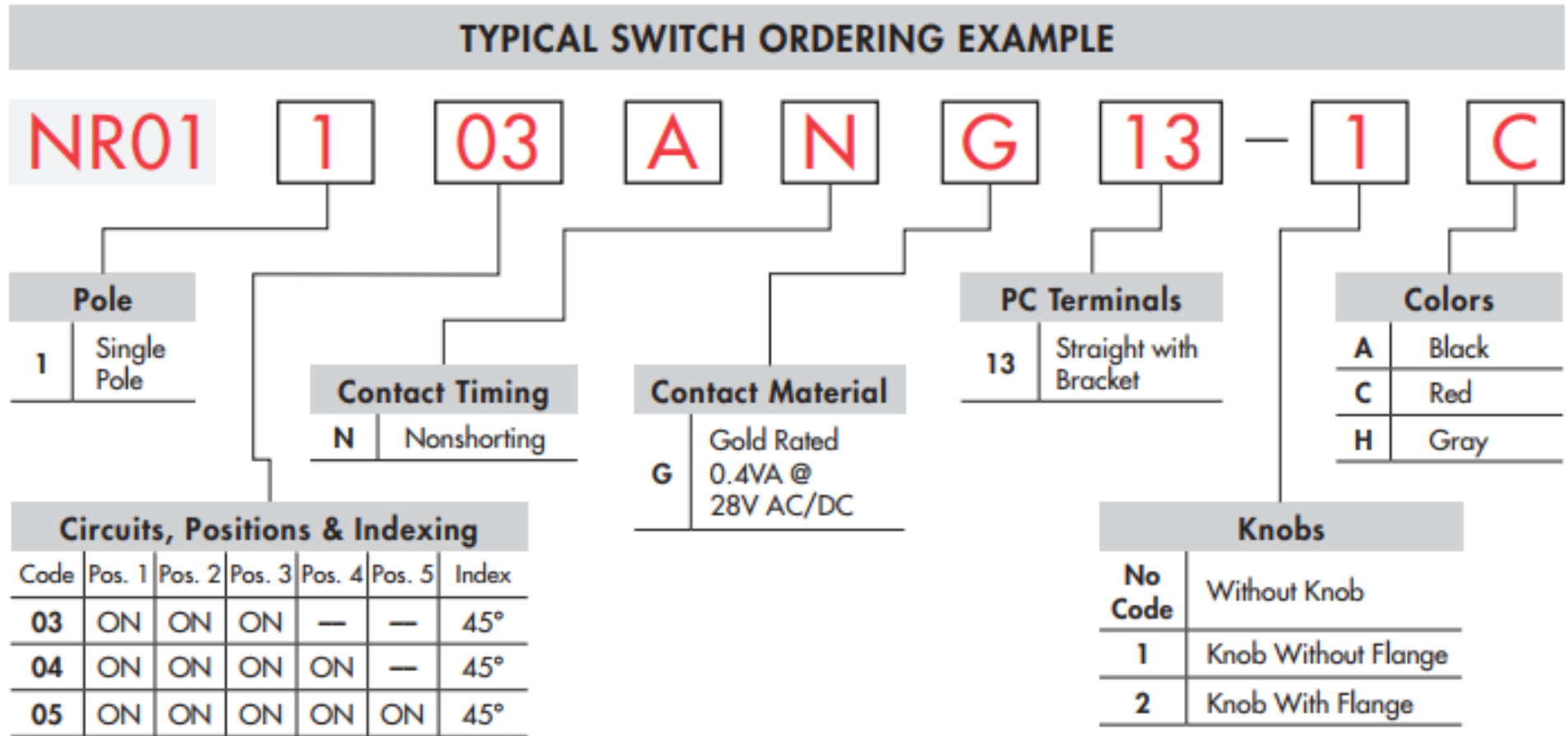
- 30,000 cycles minimum mechanical life
- 10,000 cycles minimum electrical life
- 45° for 3-position, 4-position & 5-position
- 0.4VA maximum @ 28V AC/DC maximum
- Operating temperature range of -25°C through +70°C for harsh conditions



NR01 Series Subminiature Process Sealed Rotaries Ideal for Applications that Require Small Sizes with Precision and Reliability



Nomenclature



Specifications

Electrical Capacity (Resistive Load)

Logic Level: 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Note: Find additional explanation of operating range in Supplement section

Other Ratings

Contact Resistance: 100 milliohms maximum
Insulation Resistance: 100 megohms minimum @ 500V DC
Dielectric Strength: 500V AC minimum for 1 minute minimum
Mechanical Life: 30,000 cycles minimum
Electrical Life: 10,000 cycles minimum
Nominal Operating Torque: 0.02Nm (0.177 lb·in)
Contact Timing: Nonshorting
Indexing: 45° for 3-position, 4-position & 5-position

Materials & Finishes

Housing: Glass fiber reinforced polyester (PBT)
Base: Glass fiber reinforced polyamide
Rotor: Polyacetal
Movable Contactor: Beryllium copper with gold plating
Stationary Contacts: Phosphor bronze with gold plating
Terminals: Phosphor bronze with gold plating
Mounting Bracket: Steel with tin plating

Environmental Data

Operating Temperature Range: -25°C through +70°C (-13°F through +158°F)
Humidity: 90 ~ 95% humidity for 96 hours @ 40°C (104°F)
Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
Shock: 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

PCB Processing

Soldering: Wave Soldering Recommended: Preheat temperature 110°C; Preheat time 40 seconds; Peak Temperature 270°C; Peak Time 6 seconds; Thickness of PCB 1.6mm; 2 Cycles.
Manual Soldering Recommended: Temperature 390°C for 4 seconds, 2 cycles.
Cleaning: Automated cleaning. See Cleaning Specifications in Supplement section.

Option Selections

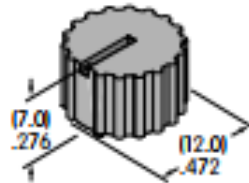
KNOBS

No Code

Without Knob

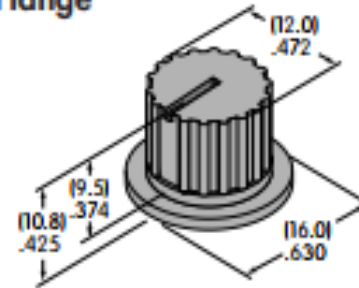
1 AT3008 Without Flange

Material:
Glass fiber reinforced polyamide



2 AT3009 With Flange

Material:
Glass fiber reinforced polyamide



Knob Colors

A

Black

C

Red

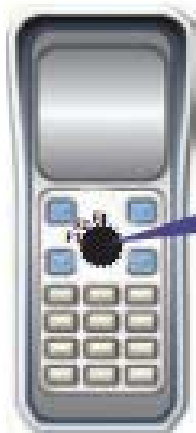
H

Gray

POLES & CIRCUITS

Pole	Model	Actuator Positions					Connected Terminals					Throw & Schematics
		Pos 1	Pos 2	Pos 3	Pos 4	Pos 5	Pos 1	Pos 2	Pos 3	Pos 4	Pos 5	Note: Terminal numbers are not actually on switch
SP3T	NR01103	ON	ON	ON	—	—	C-2	C-3	C-4	—	—	
SP4T	NR01104	ON	ON	ON	ON	—	C-2	C-3	C-4	C-5	—	
SP5T	NR01105	ON	ON	ON	ON	ON	C-1	C-2	C-3	C-4	C-5	

Typical Applications



Switching Function

F1, F2, F3, F4

Handheld Automation Devices



Input Switching

AC, DC, GND

Signal Mode Selection

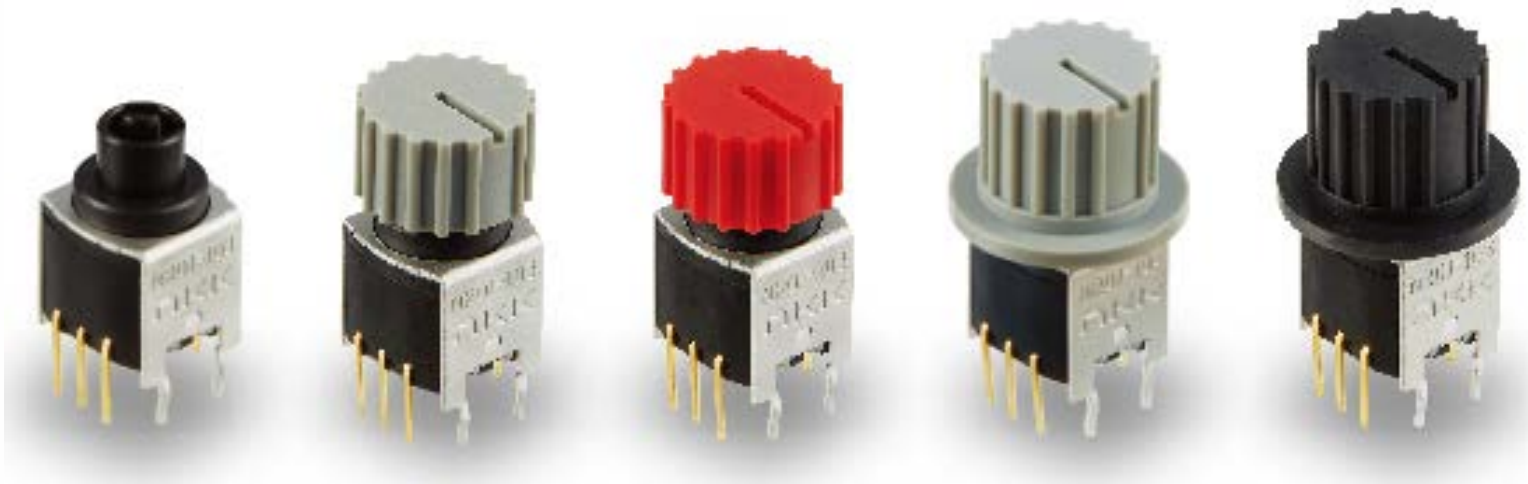
CH1, CH2, DUAL

Measuring Devices

- Designed for use in:
 - Communication Systems
 - Factory Automation
 - Measuring Equipment
 - Handheld Automation Devices

Summary

- Introduced the NR01 Subminiature Process Sealed Rotary switches
- Sliding dual-contact mechanism for improved contact reliability
- An anti-lifting design with crimped bracket feet ensures secure PC mounting.
- Switches may be purchased with knob, knob with flange, or without knob.
- Totally sealed construction, gold contacts and a minimum mechanical life of 30,000 cycles and electrical life of 10,000 cycles minimum.



Additional Resources

With over half of a century of passion for innovation, NKK has continued to elevate the standard for switch solutions while maintaining an unwavering emphasis on quality, stability and reliability.

For additional information visit the NKK Switches website:

www.nkkswitches.com

