NKK
SWITCHES

SWITCHES
FOR TOUGH
ENVIRONMENTS

Industrial &
IP-Rated Switches

Reliable Switches for the Toughest Jobs in the Roughest Places

Harsh Environments

NKK's vast array of industrial and IP rated devices range from 3A to 30A with ratings from IP50 to IP68, and meet IEC 60529 Standards. Rugged conditions with heat, cold, humidity and exposure to elements are no challenge for NKK's environmentally sealed switches, several of which have UL and CSA approvals. Actuation styles include toggle, rocker, pushbutton, keylock, rotary, touch screen and programmable, many with accessories that optimize the switch's functions and capabilities.

Value Added Services

NKK's full suite of customizable solutions and value added services are cost-competitive and personalized to fit individual needs or combined to create complete assemblies, from rapid prototyping to ongoing volume manufacturing. The Scottsdale, Arizona facility is ISO 9001 certified with skilled, accredited operators providing services such as printing, surface mount, through-hole and PCB assembly, cable and wire harness assembly, machining of parts, sheet metal work and coatings.
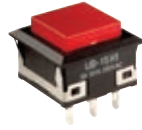
IP Codes for Ingress Protection Rating

The IP code, IEC 60529 Standard (EN 60529), rates the degree of protection against solid objects or materials (e.g., fingers and dust) and is designated by the first number. The second number indicates the level of liquid (water) protection.

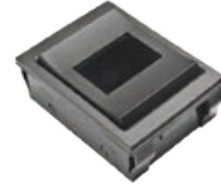|			
		IP50	Dust protected but not against water
		IP60	Dust tight but not protected against water
		IP64	Dust tight and protected against splashing water from any direction
		IP65	Dust tight and protected against water jets from any direction
		IP67	Dust tight and protected against effects of temporary immersion
		IP68	Dust tight and protected against effects of immersion in water under pressure for long periods

Applications

Military

UB
PUSHBUTTON

S
TOGGLE

IS
OLED ROCKER

Medical

LB
PUSHBUTTON

MB2000
PUSHBUTTON

YB2
PUSHBUTTON

JWM
ROCKER

Industrial

CW
ROCKER

B
TOGGLE

LB
PUSHBUTTON

TP01
TOUCH
SCREEN

Transportation
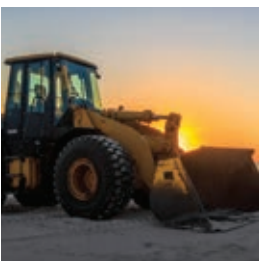
UB
PUSHBUTTON

M
TOGGLE

JWL
ROCKER

MR
ROTARY

Construction

CK
KEYLOCK

M
TOGGLE

S
TOGGLE

Industrial & IP Rated Switches

Toggles

Many of NKK's Toggle Switches are suitable for harsh environments and challenging conditions. Since the introduction of the flagship M Toggles Series in 1974, a multitude of others have joined the group, including the dual sealed IP68 rated toggles in both M and S Series.

Features

- Sizes from ultra-miniature to standard
- Power levels through 30A
- Panel sealed and IP rated options
- Various terminal and bushing choices
- Award-winning contact mechanism
- UL recognized and CSA certified models available

Benefits

- Configurable to application-specific needs
- Environmental sealing for severe conditions
- Improved performance and length of life
- Structure design protects damage to contacts
- Skilled technical support available for assistance

Images are for reference only. For complete information, see NKK Switches full line product catalog.

Toggles	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series B	**IP65** Panel Seal Models with A1 Bushing	Logic Level: 0.4VA Max @ 28V AC/DC Max	−30 ~ +85°C −22 ~ +185°F	PC	6mm Bushing Cutout: 6mm with Double Flat	Subminiature Antistatic
Series M Dual Seal	Waterproof Dual Seal **IP68**	Power Level: 6A @ 125V AC; 3A @ 250V AC; 3 ~ 4A @ 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	−30 ~ +85°C −22 ~ +185°F	Solder Lug	12mm Bushing with D Flat Cutout: 12.5mm with D Flat	Miniature Waterproof Boot at Base of Toggle Wire Assembly Available
Series M AT401 AT4181 AT402S AT402 AT428	**IP67** with Bushings D3 D8 B3 L3 L8	Power Level: 6A @ 125V AC; 3A @ 250V AC; 3 ~ 4A @ 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	−30 ~ +85°C −22 ~ +185°F	Quick Connect PC Wirewrap Solder Lug	6mm, 1/4-40 Thd or 12mm Bushing Cutouts: 6.5mm with D Flat 12.5mm with D Flat	Miniature Wire Assembly Available

Toggles	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series M2100 **LED Tipped** **Illuminated**	—	Power Level: 6A @ 125V AC; 3A @ 250V AC; 3A @ 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	−10 ~ +55°C +14 ~ +131°F	Quick Connect PC Solder Lug	6mm, 1/4-40 Thd Cutout: 6.5mm with Keyway or Locking Ring	Miniature Wire Assembly Available
Series S **Quick Connect** AT401 AT402	**IP65** 12mm Bushing with Boots AT401 AT402	6 ~ 20A Medium Capacity Power Level: 15 ~ 20A @ 125V AC; 6 ~ 20A @ 250V AC; 20A @ 30V DC	−10 ~ +70°C +14 ~ +158°F	Screw Lug Quick Connect Solder Lug	12mm Bushing Cutout: 12.5mm with Locking Ring	Standard Wire Assembly Available
S821D and S822D	—	4 ~ 30A DC High Capacity Power Level: 20A @ 125V DC; 15A @ 250V DC; 30A @ 30V or 48V DC; 4A @ 400V DC; (10A @ 400V DC) ( ) Capacity Due to Series Wiring	−10 ~ +70°C +14 ~ +158°F	Screw Lug	12mm Bushing Cutout: 12.5mm Dia, 12.5mm Dia with Locking Ring or Keyway	Standard 30A @ 30V DC; 15A @ 125V DC
Series S **Panel Seal** AT401 AT4181	**IP67** Panel Seal Model with AW Bushing	6 ~ 20A Medium Capacity Power Level: 15 ~ 20A @ 125V AC or 30V DC; 6 ~ 15A @ 250V AC	IP-Rated Models: −30 ~ +70°C −22 ~ +158°F Non-splashproof Models: −10 ~ +70°C +14 ~ +158°F	Quick Connect Solder Lug	12mm Bushing Cutout: 12.5mm with D Flat	Standard Wire Assembly Available
Series S **Locking Lever &** **Panel Seal**	**IP67** Panel Seal Model with AL Bushing for Locking Lever	6 ~ 20A Medium Capacity Power Level: 15 ~ 20A @ 125V AC or 30V DC; 6 ~ 15A @ 250V AC	IP-Rated Models: −30 ~ +70°C −22 ~ +158°F Non-splashproof Models: −10 ~ +70°C +14 ~ +158°F	Quick Connect Solder Lug	12mm Bushing Cutout: 12.2mm with D Flat	Standard Wire Assembly Available

Industrial & IP Rated Switches

Toggles	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series S **High Capacity** AT401	**IP65** with AT401 Boot 15 ~ 30A Models Only	15 ~ 30A High Capacity Power Level: 30A @ 125V AC or 30V DC; 15 ~ 30A @ 250V AC; 30A @ 48V DC Motor Load: 400 ~ 750W @ 125V AC	−10 ~ +70°C +14 ~ +158°F	Screw Lug	12mm Bushing Cutout: 12.5mm with or without Keyway	Standard
Series S **Dual Seal**	Waterproof Dual Seal **IP68**	Power Level: 15A @ 125V AC; 6 ~ 15A @ 250V AC; 15 ~ 20A @ 30V DC	−30 ~ +70°C −22 ~ +158°F	Solder Lug	12mm Bushing with D Flat Cutout: 12.5mm with D Flat	Standard Waterproof Boot at Base of Toggle Wire Assembly Available
Series TL **Illuminated**	**IP65** with AT401P O-ring	Power Level: 6A @ 125V AC; 3A @ 250V AC; 6A @ 12V DC	−10 ~ +55°C +14 ~ +131°F	Solder Lug	12mm Bushing Cutout: 12.5mm with Keyway	Miniature Fully Illuminated Wire Assembly Available
Series WT AT401 AT4181	Front Panel **IP67** Behind Panel **IP60** for Screw Lug and Solder Lug Behind Panel **IP67** for Wire Lead	Power Level: 10A @ 125V AC; 6A @ 250V AC; 10A @ 30V DC	−30 ~ +70°C −22 ~ +158°F	Screw Lug Wire Lead Solder Lug	12mm Bushing Cutout: 12.5mm with D Flat	Standard Wire Assembly Available

Rockers

Rockers with protective barriers, legends, illumination and environmental certifications are available. Some of the rockers are IP rated and readily handle inclement conditions.

Features

- Variety of sizes, power levels and terminations
- Power-rated snap-in models
- High capacity screw mount models
- Internationally approved 10A and 16A power levels
- IP Code ratings from IP50 to IP67
- UL recognized and CSA certified models available

Benefits

- Quick and easy panel installation
- Capable of handling large inrush current
- Wire assembly available with solder lug terminations
- Designed to break light contact welds
- Ingress protection for challenging environments
- Dust resistant construction

Images are for reference only. For complete information, see NKK Switches full line product catalog.

Rockers	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series CWS	—	Power Level: 6A @ 250V AC	−10 ~ +70°C +14 ~ +158°F	Quick Connect PC Solder Lug	Snap-in Cutout: 19.2 x 12.9mm	Miniature Wire Assembly Available
Series CWSB **Illuminated**	—	Power Level: 9A @ 125V AC	−20 ~ +85°C −4 ~ +185°F	Quick Connect .187" (4.75mm)	Snap-in Cutout: 19.2 x 12.9mm	Miniature Full Face Neon Wire Assembly Available
Series CWT	—	Power Level: 6A @ 125V AC: 3A @ 250V AC; 4A @ 30V DC	−25 ~ +70°C −13 ~ +158°F	Solder Lug	Snap-in Cutout: 19.2 x 6.8mm	Miniature Wire Assembly Available

Industrial & IP Rated Switches

Rockers	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series JWS **Illuminated**	—	Power Level: 5 ~ 10A @ 125/250V AC	Nonilluminated: −25 ~ +70°C −13 ~ +158°F Illuminated: −25 ~ +50°C −13 ~ +122°F	Solder Lug .187" (4.75mm) Quick Connect	Snap-in Cutout: 19.2 x 12.9mm	Miniature LED Spot Illumination Wire Assembly Available
Series JWLW	JWLW: **IP67**	Power Level: 16A @ 125V/250V AC; 5A @ 72V DC	−25 ~ +85°C −13 ~ +185°F	Solder Lug .187" (4.75mm) Quick Connect	Snap-in Cutout: 30.7 x 20.5mm	Standard Wire Assembly Available
Series JWL	—	Power Level: 16A @ 125V/250V AC; 5A @ 72V DC (Telecommunication Applications) TV-8 Rated High Inrush (117A)	−25 ~ +70°C −13 ~ +158°F	Solder Lug .187" (4.75mm) Quick Connect	Snap-in Cutout: 29.5 x 20.5mm	Standard Wire Assembly Available
Series JWMW	**IP67**	Power Level: 10A @ 125/250V AC; 10A @ 30V DC	−25 ~ +85°C −13 ~ +185°F	Solder Lug .110" (2.8mm) Quick Connect	Snap-in Cutout: 25.0 x 15.4mm	Standard Wire Assembly Available
LW3021A **Illuminated**	—	Power Level: 20A @ 110V AC	−10 ~ +50°C +14 ~ +122°F	Solder Lug	2-screw Panel or Subpanel Mount Cutout: 28.0 x 14.0mm	Standard/High Capacity Neon Spot Illumination Wire Assembly Available

NKK SWITCHES

Rockers	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series SW	—	Medium Capacity Power Level: 15 ~ 20A @ 125V AC or 30V DC 6 ~ 10A @ 250V AC	−10 ~ +70°C +14 ~ +158°F	Solder Lug	2-screw Panel or Subpanel Mount Cutout: 28.0 x 14.5mm	Standard Wire Assembly Available
Series SW	—	High Capacity Power Level: 30A @ 125/250V AC or 30V DC	−10 ~ +70°C +14 ~ +158°F	Screw Lug	2-screw Panel or Subpanel Mount Cutout: 37.0 x 23.0mm	Standard
SW3821D SW3822D	—	DC High Capacity Power Level: 20A @ 125V DC; 15A @ 250V DC; 30A @ 30V or 48V DC 4A @ 400V DC; (10A @ 400V DC) ( ) Capacity Due to Series Wiring	−10 ~ +70°C +14 ~ +158°F	Screw Lug	2-screw Panel or Subpanel Mount Cutout: 37.0 x 23.0mm	Standard 30A @ 125/250V AC or 30V DC
Series WR	Front panel **IP67** Behind Panel **IP60** for Screw Lug, Quick Connect and Solder Lug	Power Level: 15A @ 125/250V AC or 30V DC	−25 ~ +85°C −13 ~ +185°F	Screw Lug Quick Connect Solder Lug	Snap-in Cutout: 34.2 x 17.2mm	Standard Wire Assembly Available
Series WR Wire Lead	Front Panel and Behind panel **IP67**	Power Level: 15A @ 125/250V AC or 30V DC	−25 ~ +85°C −13 ~ +185°F	Wire Lead	Snap-in Cutout: 34.2 x 17.2mm	Standard

Industrial & IP Rated Switches

Pushbuttons

NKK's industrial and IP rated pushbuttons are customizable in sizes ranging from miniature to standard, with various power levels and mounting options, actuators of all types and colors, and protective barriers that hinder accidental actuation.

Features

- 10A or 16A power levels
- Panel sealed and illuminated models available
- Large bushing, small bushing or bracket mount options
- Splashproof boot installation increases rating to IP65
- Shapes and mounting types in space-saving designs
- UL recognized and CSA certified models available

Benefits

- Manages large inrush current
- Relevant for harsh environments with dust resistant construction and interior seal between actuator and contacts
- Greater flexibility in panel design variations
- Enables use in rugged conditions with adverse elements
- Space efficiency lends to more configuration possibilities

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Pushbuttons	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series JPL	—	Power Level: 16A @ 125/250V AC TV-8 Rated High Inrush (117A)	−10 ~ +70°C +14 ~ +158°F	Solder Lug .187" (4.75mm) Quick Connect	Snap-in Cutout: 28.0 x 21.2mm	Standard Wire Assembly Available
Series JPM	—	Power Level: 10A @ 125/250V AC TV-5 Rated High Inrush (78A)	−10 ~ +70°C +14 ~ +158°F	Solder Lug .187" (4.75mm) Quick Connect	Snap-in Cutout: 28.0 x 21.2mm	Standard Wire Assembly Available
Series LB **Illuminated**	**IP65** Panel Seal Models **IP60** with Dust Covers AT4001 AT4002 AT4011	Power Level: 3A @ 125/250V AC or 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	Nonilluminated −25 ~ +70°C −13 ~ +158°F Illuminated: −25 ~ +50°C −13 ~ +122°F	Solder Lug .110" (2.8mm) Quick Connect PC Adaptors Available	Bushing Cutouts Panel Seal: 22.0mm with Keyway Square: 16.2mm Round 22.0mm Rectangular: 22.4 x 16.2mm with Dust Cover	Standard Neon, LED; LED Spot Illumination Wire Assembly Available

Pushbuttons	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series GP01	—	Logic Level: 0.4VA Max @ 28V AC/DC Max (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)	–40 ~ +85°C –40 ~ +185°F	J Bend	Right Angle SMT	Ultra-miniature Greaseless Condition Enables Wider Temperature Range Single-unit Cap & Plunger are Heat Resistant Resin
Series SB	—	Power Level: 3 ~ 15A @ 125V; 1.5 ~ 9A @ 250V AC	–10 ~ +70°C +14 ~ +158°F	Solder Lug	12mm Bushing Cutout: 12.5mm with Keyway	Standard Wire Assembly Available
Series MB2000 AT4041 AT4042 AT4043	**IP67** with Bushings B3 D3 **IP65** with Boots AT4041 AT4042 AT4043	Power Level: 6A @ 125V AC; 3A @ 250V AC or 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	–30 ~ +85°C –22 ~ +185°F	Quick Connect PC Wirewrap Solder Lug	Bushing Cutouts: 6.5mm without Keyway 12.5mm without Keyway	Miniature Wire Assembly Available
Series UB **Illuminated**	—	Power Level: 5A @ 125/250V AC; 5A @ 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	Nonilluminated: –20 ~ +70°C –4 ~ +158°F Illuminated: –25 ~ +50°C –13 ~ +122°F	PC Solder Lug	Snap-in Cutouts: Square: 16.2mm Rectangular: 22.4 x 16.2mm	Miniature LED Illumination Wire Assembly Available
Series UB2 **Illuminated**	—	Power Level: 5A @ 125/250V AC or 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	Nonilluminated: –25 ~ +70°C –13 ~ +158°F Illuminated: –25 ~ +50°C –13 ~ +122°F	PC Solder Lug	Snap-in Cutout: 17.4mm Square	Miniature LED Illumination Wire Assembly Available
Series WB AT4043	Front panel **IP67** Behind Panel **IP60** for Screw Lug and Solder Lug Behind panel **IP67** for Wire Lead	Power Level: 6A @ 125V AC or 30V DC; 3A @ 250V AC	–30 ~ +70°C –22 ~ +158°F	Screw Lug Wire Lead Solder Lug	12mm Bushing Cutout: 12.5mm with D Flat	Standard Wire Assembly Available

Industrial & IP Rated Switches

Pushbuttons	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series YB Illuminated	**IP65** with Panel Seal Bushing Mount **IP60** with AT4115 Dust Cover	Power Level: 3A @ 125/250V AC or 30C DC Logic Level: 0.4VA Max @ 28V AC/DC Max	Nonilluminated: −25 ~ +70°C −13 ~ +158°F Illuminated: −25 ~ +50°C −13 ~ +122°F	Solder Lug .110" (2.8mm) Quick Connect	Bushing Snap-in Cutout: 16.0mm without Keyway	Miniature Round, Square and Rectangular Models LED Illumination Wire Assembly Available
Series YB2 Illuminated	**IP65** Panel Seal Flush Mount	Power Level: 3A @ 125/250V AC or 30V DC Logic Level: 0.4VA Max @ 28V AC/DC Max	Nonilluminated −25 ~ +70°C −13 ~ +158°F Illuminated: −25 ~ +50°C −13 ~ +122°F	Solder Lug .110" (2.8mm) Quick Connect	Bushing Cutouts: Round: 22.0mm with Keyway Square: 21.0mm	Standard Round and Square Models LED Illumination Wire Assembly Available

Keylocks

NKK offers an array of keylock switches, from miniature to standard sizes, with low to high security options, PC or solder lug terminals, smooth or threaded bushings: choices to meet your specific application. The CK Series rugged, die cast housing is suitable for challenging environments where high reliability and security are crucial.

Features

- Diverse family of keylocks includes high, medium and low security models, in PC board or panel mount models
- 12mm, 16mm, 19mm threaded bushing sizes
- Totally sealed construction with internal o-ring and gasket
- Bifurcated, self-wiping contact mechanism
- Solder lug or PC terminals
- Rotating mechanism and self-cleaning sliding contacts
- High insulating material withstands 15 kilovolts+ of electrostatic discharge
- UL recognized and CSA certified models available

Benefits

- Space-saving, behind panel dimensions
- Easy panel cutout preparation and high density mounting
- Contact area guarded against dust particles
- Protection for automated processing techniques
- Logic-level reliability, smoother positive detent actuation
- Sealed terminals prevent entry of flux, other contaminants
- Dependability and long operating life
- Antistatic assurance

Images are for reference only. For complete information, see NKK Switches full line product catalog.

Keylocks	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series CK	—	High Security Power Level: 3A @ 250V AC	−25 ~ +70°C −13 ~ +158°F	Solder Lug	Bushing Cutout for CKM: 16.0mm with Double Flat Cutout for CKL: 19.0mm with Double Flat	Standard Wire Assembly Available
Series SK	—	Low and Medium Security Power Level: 1 ~ 3A @ 250V AC	−25 ~ +70°C −13 ~ +158°F	Solder Lug	12mm Bushing Cutout: 12.0mm with Double Flat	Miniature Wire Assembly Available

Rotaries

NKK has rotaries from 8mm square process sealed to bushing mount power level models. Process sealed models are available as well as some with IP ratings. FR02, with the slimmest profile in the industry, or ND3 with totally sealed construction and protection from automated processing, are SMT DIP options.

Features

- Logic level, ultra-miniature to 10A power levels
- Low profiles and compact bodies
- Crisp, positive detent mechanism
- Metal bushing and housing construction
- Self-cleaning contact mechanism
- Interior housing seal, shaft rubber o-ring
- Optional exterior o-ring installation
- UL recognized models available

Benefits

- More choices to suit diverse applications
- Accommodates space limitations for PCB mounting
- Distinctive feel and audible feedback
- Increased durability and endurance
- High contact reliability
- Permits cleaning after automated soldering
- Achieves panel seal and IP67 rating

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Industrial & IP Rated Switches

Rotaries	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series MRB	**IP67** with AT535 O-ring	Logic Level: 0.4VA Max @ 28V AC/DC Max	−10 ~ +70°C +14 ~ +158°F	PC	Panel Mount 6mm Bushing Cutout: 6.2mm with Double Flat	Miniature Process Sealed Optional Knobs
Series MR (MRK)	**IP67**	Logic Level: 0.4VA Max @ 28V AC/DC Max	−10 ~ +70°C +14 ~ +158°F	PC	Panel Mount 6mm Bushing Cutout: 6.2mm with Double Flat	Miniature Optional Knobs Optional Support Bracket AT543 Needed When Mounted Only to PC Board and Bushing is Not Through a Panel
Series MR MRT22	—	Power Level: 10A @ 125V AC	−10 ~ +70°C +14 ~ +158°F	Solder Lug	6mm Bushing Cutout: 6.35mm	Miniature Optional Knobs Wire Assembly Available MRT22: 10A @ 125V AC MRT23: 5A @ 125V AC ®RU ℅RU
Series FR02	—	Switching Rating: 100mA @ 5V DC Nonswitching Rating: 100mA @ 50V DC	−25 ~ +85°C −13 ~ +185°F	Gull-wing for Upright Mount	SMT	Subminiature Screwdriver or Shaft Actuated Real Coded or Complement Coded
Series ND3	—	Switching Rating: 100mA @ 5V DC Nonswitching Rating: 100mA @ 50V DC	−25 ~ +85°C −13 ~ +185°F	Gull-wing for Upright, Upright with Bracket, or Right Angle Mount	SMT	Ultra-miniature Sealed Construction Screwdriver or Shaft Actuated Real Coded or Complement Coded

NKK SWITCHES

Resistive Touch Screens

Where mission-critical efficiency is essential, NKK's resistive touch screens have earned a reputation in the industrial field. A variety of types and sizes are offered in 4- and 5-wire analog, (including with the FPC tail), digital, and 4-wire multi-touch. The two resistive touch screen series featured below are examples that have proven successful adaptation to tough environments with superior integrity of materials and design.

Features

- FT Series 5-wire and TP01 Series incorporate FPC tail

- Non-glare film surface

- Incorporates Anti-Newton Ring (ANR) technology and hard resin coating on film surface

- Choices for method of input

- TP01 touch panel ensures reliable input and sense of control

Benefits

- Provides reliability of contact to the connector

- Suppresses glare under fluorescent lighting or sunlight

- Eliminates visible interference while providing durable protection against scratches or damage

- Flexibility of options with finger, gloved hand or stylus

- Highly responsive to smooth, light and multi-touch operation (facilitated by combining with controller board)

Images are for reference only. For complete information, see NKK Switches full line product catalog.

Touch Screens	Electrical Rating	XY Resistive Value	Linearity	Insulation Impedance	Temperature	Expected Operational Life	Light Transmission	Screen Size/ Features
Series FT 5-Wire	Power Level: 1mA @ 5.5V DC (Resistive Load)	20 ~ 80Ω	±2.0% Max	10MΩ Min @ 25V DC	Operating: −20 ~ +70°C −4 ~ +158°F Storage: −40 ~ +80°C −40 ~ +176°F	Writing: 50,000 Operations Min Tapping: 10,000,000 Operations Min	80% Standard (Touch Panel Portion)	10.4" 12.1" 15.0" Narrow Frames & Custom Sizes Available Surface Hardness: 2H Min
Series TP01 4-Wire Multi-Touch	Power Level: 1mA @ 5.5V DC (Resistive Load)	250 ~ 850Ω Wide Type: 120 ~ 1,500Ω	±1.5% Max	10MΩ Min @ 25V DC	Operating: −20 ~ +70°C −4 ~ +158°F Storage: −40 ~ +80°C −40 ~ +176°F	Writing: 50,000 Operations Min Tapping: 1,000,000 Operations Min	80% Standard (Touch Panel Portion)	10.4" 10.6" 12.1" 15.0" 15.6" 19.0" Custom Sizes Available Surface Hardness: 3H Min

Industrial & IP Rated Switches

Programmables

The SmartDisplay™ is a programmable device that combines a pushbutton or rocker with a graphic OLED or LCD display. NKK offers an extensive lineup, from a full-screen OLED pushbutton to compact LCD.

Features

- Organic LED technology
- Snap-in panel mount
- Merge panel functions with fewer devices
- Long life OLED and one million actuations minimum
- Rocker conforms to IP64 of IEC60529 on panel surface

Benefits

- High resolution and exceptionally sharp contrast
- Quick and easy installation, secure mounting
- Greater flexibility in compact spaces
- Highly dependable mechanical and electrical life
- Dust tight construction and improved contact reliability

Images are for reference only. For complete information, see NKK Switches full line product catalog.

Programmable	IP Rating	Electrical Rating	Operating Temperature	Terminal Options	Mounting Type & Panel Cutout	Size/Features
Series IS OLED Rocker	**IP64** Front Panel	Switch: 3VA Max DC Logic Voltage: +2.7 ~ +3.6V Max Current: 0.36mA Supply Voltage for OLED: 14.5 ~ 15.5V Max Max Current: 8.3mA	−20 ~ +70°C −4 ~ +158°F	Connector	Snap-in 14.6mm Behind Panel Cutout: 35.4 x 48.6mm	Standard 37.9 x 50.7mm 96 x 64 Pixels Monochrome White 3 Switches (Top, Middle, Bottom) Switch Life: 1,000,000 Operations
Series IS Frameless OLED	—	100mA @ 12V DC 200 Milliohms Max @ 20mV 10mA	−20 ~ +70°C −4 ~ +158°F	PC	Snap-in Standoff	Standard 23.13 x 20.59mm 96RGB x 64 Pixels Over 65,000 Colors Video Capability Low Energy Usage Dust Tight Switch Life: 1,000,000 Operations
Series IS Compact LCD	—	100mA @ 12V DC 200 Milliohms Max @ 20mV 10mA	−15° ~ +50°C +5° ~ +122°F	PC	Snap-in Standoff	Compact 19.0 x 18.0mm 64 x 32 Pixels SPI Communications Low Energy Usage Dust Tight Switch Life: 1,000,000 Operations

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Accessories

NKK offers an assortment of accessories and hardware for added protection or customization. Protective rubber boots increase the panel seal qualities of toggles or pushbuttons and further defend against environmental elements. Protective guards and covers reinforce water resistance and add security against external elements for pushbuttons or rockers.

Features

- Multiple colors available for some accessories

- Protective boots offered in various types of rubber materials suited to different environments

- Protective guards and covers available for extra protection

Benefits

- Variety of options enable customization

- Extend life of protective boot by choosing appropriate rubber for environment

- Achieve environmental rating while securing increased protection

Images are for reference only. For complete information, see NKK Switches full line product catalog.

SmartDisplay™ Splashproof Overlay

IP65 Rated Protection for Programmable Switches

	Part Number	IS-SPA4X4A	IS-SPA2X2A	IS-SPA1X2A	IS-SPA1X1A
Number of Switches	**Rows**	4	2	1	1
	Columns	4	2	2	1
Dimensions	**Width**	125mm	80mm	80mm	55mm
	Height	115mm	74mm	53mm	53mm

The SmartDisplay overlay provides increased protection for SmartDisplay or any products where additional safeguarding is required. Installing over the switch cutout opening is sufficient to make the cutout splashproof. To achieve an IP65 rating, a supporting bezel is ideally used to reinforce the adhesive tape.

Products come in a package of two individual overlays in several standard sizes that cover typical size configurations of the SmartDisplay. For custom sizes, contact engineering@nkkswitches.com.

Industrial & IP Rated Switches

Knobs & Bracket for Rotary Switches

AT433, AT4103 & AT4104 for Models with D-flat Shaft

Part Number	AT433 Plain Black Knob	AT4103 Small Color Tipped Knob	AT4104 Large Color Tipped Knob	AT543 Support Bracket
Material	Polyacetal	Polyester with Polyamide Tip	Polyester with Polyamide Tip	Steel with Tin Plating
Color	Black with White Indicator Line	Base: Black with White Indicator Line Tip: Black, White, Red, Yellow, Green, Blue or Gray	Base: Black with White Indicator Line Tip: Black, White, Red, Yellow, Green, Blue or Gray	Silver
Series	FR01 MR	FR01 MR	FR01 MR	MRK

Panel Seal Boots

The splashproof boots seal switches to achieve IP65 rating or greater at the front panel.

Part Number	AT401 Half Boot	AT402 & AT402S Full Boots	AT428 Full Boot	AT4041 & AT4042 Full Boots	AT4043 Full Boot	AT4181 Full Boot
Material	**AT401A for Oil Resistance:** Nitrile Butadiene Rubber **AT401H for Dust & Ozone Resistance:** Ethylene Propylene Rubber **AT401S for Flexibility, Resilience, Tensile Strength over Wide Temp Range:** Silicone Rubber	**AT402:** Silicone Rubber for Black, Red, Yellow or Green Ethylene Propylene Rubber for Gray **AT402S:** Silicone Rubber	Silicone Rubber	**AT4041:** For Momentary **AT4042:** For Alternate Silicone Rubber	Silicone Rubber	Silicone Rubber
Color	**AT401A:** Black **AT401H:** Gray **AT401S:** Black	**AT402:** Black, Red, Yellow, Green or Gray **AT402S:** Black	Black	Black	Black	Black
Bushing	12mm	12mm	M6 or 1/4–40 Thd	M6 or 1/4–40 Thd	12mm	12mm
Series	M S WT	**AT402:** M S **AT402S:** M	D2 M	MB	MB SB WB	M S WT

Protective Guards & Covers

Part Number	AT499 Protective Guard	AT4001 Dust Cover	AT4002 Dust Cover	AT4072 Protective Guard
	(8.0) .315 (20.0) .787 (21.0) .827	(4.8) .189 (2.5) .098 (24.0) Sq .945	(4.8) .189 (2.5) .098 (30.0) Dia 1.181	(11.2) .441 (6.6) .260 (23.9) .941 (22.9) .902
Material	Cover: Polycarbonate Base: Polyamide	Lid: Polyvinyl Chloride Gasket: Polyethylene	Lid: Polyvinyl Chloride Gasket: Polyethylene	Cover: Polycarbonate Base: Glass Fiber Reinforced Polycarbonate
Notes	Opens 90°, Closes Manually. Reduces Depth of Switch Behind Panel by .020" (0.5mm)	Reduces Depth of Switch Behind Panel by .020" (0.5mm)	Reduces Depth of Switch Behind Panel by .020" (0.5mm)	Opens 90°, Closes Manually. Reduces Depth of Switch Behind Panel by .047" (1.2mm)
Series	LB	LB UB	LB	YB

Part Number	AT4115 Dust/Splash Cover	AT4126 Dust Cover	AT4173 Protective Guard	AT9410 Splash Cover
	(16.2) .638 (5.9) .232 (5.2) .205 (23.2) .913 (29.2) 1.150	(22.2) .874 (6.0) .236 (2.6) .102 (33.0) 1.299 (42.0) 1.654	(20.5) .807 (20.4) .803 (6.0) .236 (9.0) .354	(4.8) .189 (3.0) .118 (0.5) .020 (31.3) Dia 1.232
Material	Lid: Polyvinyl Chloride Base: Polyamide	Lid: Polyvinyl Chloride Base: Polyamide	Cover: Polycarbonate Base: Polyamide Coil Spring: Stainless Steel	Lid: Polyvinyl Chloride Base: Polyethylene O-ring: Nitrile Butadiene Rubber
Notes	For Snap-in or Bushing Mount. Reduces Depth of Switch Behind Panel by .047" (1.2mm)	Rocker is Operable with Dust Cover in Place. Reduces Depth of Switch Behind Panel by .024" (0.6mm)	For Snap-in Model. Opens 180°, Closes Automatically	Reduces Depth of Switch Behind Panel by .020" (0.5mm)
Series	YB	JWL	UB	LB Panel Seal

Part Number	AT4142 Protective Guard	AT4145 Dust Cover	AT4172 Protective Guard	AT4175 Protective Guard
	(6.5) .256 (21.5) .846 (21.7) .854	(3.9) .154 (2.5) .098 (25.2) Sq .992	(7.5) .295 (26.6) 1.047 (20.5) .807	(11.2) .441 (23.9) .941 (22.9) .902
Material	Cover: Polycarbonate Base: GFR Polyamide Coil Spring: Stainless Steel	Lid: Polyvinyl Chloride Gasket: Polyethylene	Cover: Polycarbonate Base: GFR Polyamide Coil Spring: Stainless Steel	Cover: Polycarbonate Base: GFR Polyamide Coil Spring: Stainless Steel
Notes	For Snap-in Model. Opens 180°, Closes Automatically. Reduces Depth of Switch Behind Panel by .020" (0.5mm)	Not for Use with Barriers. Reduces Depth of Switch Behind Panel by .028" (0.7mm)	For Snap-in Model. Opens 180°, Closes Automatically. Reduces Depth of Switch Behind Panel by .020" (0.5mm)	Opens 180°, Closes Automatically. Reduces Depth of Switch Behind Panel by .047" (1.2mm)
Series	UB2	UB2	LB UB	YB

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