

## Value Added Services

NKK's Value Added Services provides cost-competitive manufacturing solutions from rapid prototyping to ongoing volume production. Our Value Added facility is ISO 9001 certified, with experienced operators that deliver the highest caliber workmanship. Our diverse capabilities allow customers to utilize individual services or choose a combination to create a complete subassembly.

The Value Added & Custom Switches Kit contains only a sampling of solutions that we offer. Electronic assembly may include rapid prototyping, surface mount, through-hole or PCB assembly (our assemblers are IPC-A-610 Certified for surface mount, through-hole circuit card assembly). Electromechanical assembly may include cable and wire harnesses or rapid prototyping, and our knowledgeable assemblers are IPC/WHMA-A-620 Certified. Our wire harness assemblies are UL recognized. Mechanical assembly, machining of parts, sheet metal work, and various coatings are additional services offered.

We have a comprehensive selection of printing services to fit your solution. Screen printing is widely requested for flat surfaces when exceptional opacity is preferred, and we have a vast array of colors. For irregular surfaces including concave, convex or cylindrical, pad printing is recommended. Laser etching is favored for its permanency and works well either in front or on the back of a part, and is ideal for high volume capacity.

### HB 15X008 SUBMINIATURE ILLUMINATED PUSHBUTTON

## Characteristics & Specifications

#### HB Series Illuminated Pushbutton

- Value added option: 10" wire harness
- Bright red full face illumination with front panel relamping
- Compact design with .354" (9.0mm) round bezel
- Rear panel threaded mounting with behind panel depth of less than one inch; 8.0mm body diameter fits common size panel cutout
- Latchdown feature indicates circuit status; audible and tactile feedback deliver smooth, responsive operation
- Molded-in solder lug terminals, spaced .100" x .200" (2.54mm x 5.08mm), lock out flux, dust, other contaminants

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Power Level: 0.1A max @ 30V AC/DC

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Contact Resistance: 50 milliohms max

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Insulation Resistance: 100 megohms min @ 500V DC

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Dielectric Strength: 500V AC min for 1 minute min

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Mechanical Life: 100,000 operations min

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Electrical Life: 50,000 operations min

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Nominal Operating Force: 3.43N

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Travel: Pretravel .087" (2.2mm); Overtravel .031" (0.8mm);  
Total Travel .118" (3.0mm)

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Operating Temperature Range: -25°C ~ +50°C (-13°F ~ +122°F)

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### M21 12X004 MINIATURE LED TIPPED TOGGLE

## Characteristics & Specifications

#### M2100 Series Yellow LED Tip Illumination

- Value added option: wire assembly
- Industry's first LED illumination at tip of toggle switches
- Toggle with isolated LED circuit and 1/4-40 threaded bushing
- Antijamming feature protects contacts from damage due to excessive downward force on toggle
- High torque bushing prevents bushing from rotating or separating from metal frame during installation
- Stainless steel frame resists corrosion
- Solder lug terminals are molded in and epoxy sealed, locking out flux, dust and other contaminants

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Power Level: 6A @ 125V AC or 3A @ 250V AC

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Contact Resistance: 10 milliohms max

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Insulation Resistance: 1,000 megohms min @ 500V DC

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Dielectric Strength: 1,000V AC min between contacts for 1 minute min;  
1,500V AC min between contacts & case for 1 minute min

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Mechanical Life: 50,000 operations min

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Electrical Life: 25,000 operations min

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Nominal Operating Force: On-to-On Position 3.19N; Off-to-On 3.92N

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Angle of Throw: 20°

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Operating Temperature Range: -10°C ~ +55°C (+14°F ~ +131°F)

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## YB15Y007 MINIATURE ILLUMINATED PUSHBUTTON

### Characteristics & Specifications

#### YB Series Panel Seal Pushbutton

- Value added options: laser etched custom legend on inside of lens; wire harness with 4-position connector
- Bright amber LED with full face illumination; round body with bushing mount and combination bezel-barrier
- Dust and oil tight as well as splashproof panel seal qualifies to IP65 of IEC60529 Standards and includes exterior o-ring
- Design of snap-action contacts for shock resistance, long life
- Thermoplastic elastomer seal inside cap plus rolled sleeve of nitrile butadiene rubber at joining of housing and inner case gives added protection to interior mechanism
- Solder lug/quick connect terminals are epoxy sealed to lock out flux, dust, solvents and other contaminants

Power Level: 3A @ 125V AC or 3A @ 250V AC

Contact Resistance: 50 milliohms max

Insulation Resistance: 200 megohms min @ 500V DC

Dielectric Strength: 1,000V AC min between contacts for 1 minute min; 1,500V AC min between contacts & case for 1 minute min

Mechanical Life: 1,000,000 operations min

Electrical Life: 100,000 operations min

Nominal Operating Force: 1.67N

Travel: Pretravel .059" (1.5mm); Overtravel .059" (1.5mm); Total Travel .118" (3.0mm)

Operating Temperature Range: -25°C ~ +50°C (-13°F ~ +122°F)

## S1X004 MEDIUM CAPACITY TOGGLE

### Characteristics & Specifications

#### S Series Standard Size Toggle

- Value added options: wire leads and epoxy potting
- Large chrome plated bat lever with length of .689" (17.5mm)
- 12mm diameter threaded bushing with keyway and length of .394" (10.0mm)
- .492" (12.5mm) diameter panel cutout with a thickness of .158" (4.0mm) maximum
- Standard hardware includes Knurled Nut, Lockwasher, and Backup Hex Nut
- Optional splashproof boot assembly available

Power Level: 10A @ 125V AC or 5A @ 250V AC

Contact Resistance: 10 milliohms max

Insulation Resistance: 1,000 megohms min @ 500V DC

Dielectric Strength: 2,000V AC min for 1 minute min

Mechanical Life: 50,000 operations min

Electrical Life: 25,000 operations min

Mounting Torque: 2.94Nm (26 lb•in)

Angle of Throw: 25°

Operating Temperature Range: -10°C ~ +70°C (+14°F ~ +158°F)

## CKL12X001 HIGH SECURITY KEYLOCK

### Characteristics & Specifications

#### CK Series Keylock with 19mm Diameter Bushing

- Value added option: wire leads 18 AWG
- Rugged, die cast housing designed for higher security
- Nickel plated brass, tubular style key supplied with each switch
- Vertically rotating switching mechanism combines with sliding contacts for high reliability and long operating life
- Interior construction provides seal for contact area
- Solder lug, epoxy sealed terminals prevent entry of flux and other contaminants
- High dielectric strength of 1,500 volts between contacts and case

Power Level: 3A @ 250V AC

Contact Resistance: 20 milliohms max

Insulation Resistance: 1,000 megohms min @ 500V DC

Dielectric Strength: 1,000V AC min between contacts for 1 minute min; 1,500V AC min between contacts & case for 1 minute min

Mechanical Life: 30,000 cycles min

Electrical Life: 10,000 cycles min

Nominal Operating Torque: .07Nm (9.91 oz•in)

Angle of Throw: 90° (2-position)

Operating Temperature Range: -25°C ~ +70°C (-13°F ~ +158°F)

## SMVA001 ULTRA-MINIATURE SLIDE

### Characteristics & Specifications

#### SM Series Top Actuated Slide

- Value added option: pad print custom legend on actuator
- Visible indication of position by spot on top of red actuator and through window on side of switch body
- Compact size contributes to high density, side-by-side or end-to-end mounting within tight dimensional applications
- Detent mechanism provides positive actuation to indicate circuit status
- Twin sliding contact mechanism with self-cleaning action results in smooth actuation, high contact reliability
- .100" x .100" (2.54mm x 2.54mm) center-to-center inch terminal spacing enables standard PC board mounting in side-by-side or end-to-end arrangements
- Insert molded straight PC terminals prohibit entry of flux, dust, solvents and other contaminants

Maximum Level: 500mA @ 12V DC

Minimum Level: 1.0mA max @ 10mV AC/DC max

Contact Resistance: 30 milliohms max

Insulation Resistance: 100 megohms min @ 500V DC

Dielectric Strength: 500V AC for 1 minute min

Mechanical Life: 1,000 operations min

Electrical Life: 1,000 operations min

Nominal Operating Force: 2.0N

Total Travel: .063" (1.6mm)

Operating Temperature Range: -40°C ~ +85°C (-40°F ~ +185°F)

## CUSTOM PRINTING ON VARIETY OF SURFACES

### Characteristics & Specifications

NKK's Value Added Services provide cost-competitive manufacturing solutions from rapid prototyping to ongoing volume manufacturing. Our Value Added facility is ISO 9001 certified.

#### Value Added Printing Services

- Variety of caps for illuminated and nonilluminated push-button and rocker switches
- Printing methods include pad printing, laser etching or screen printing custom legends on cap or bezel surfaces
- Pad printing is suitable on both flat and irregular surfaces, such as concave, convex or cylindrical
- Laser etching technique is permanent and may be on top or inside of cap
- Screen printing is an economical method with excellent opacity and is best displayed on a flat, even surface
- Cost competitive printing solutions for plastic, metal, or painted surfaces, as an individual service or combined with a complete subassembly

#### Custom Value Added Services

##### Electronic Assembly

- Rapid prototyping
- Surface mount, through-hole and PCB assembly
- Highly trained, experienced assemblers with IPC-A-610 certification for surface mount, through-hole circuit card assembly

##### Electromechanical Assembly

- UL recognized for wire harness assemblies
- Rapid prototyping
- IPC/WHMA-A-620 certified assemblers

##### Mechanical Assembly

- Deciphering and interpretation of prints, bills of material
- Appropriate use of hand tools

##### Machining of Parts

##### Sheet Metal Work

##### Coatings