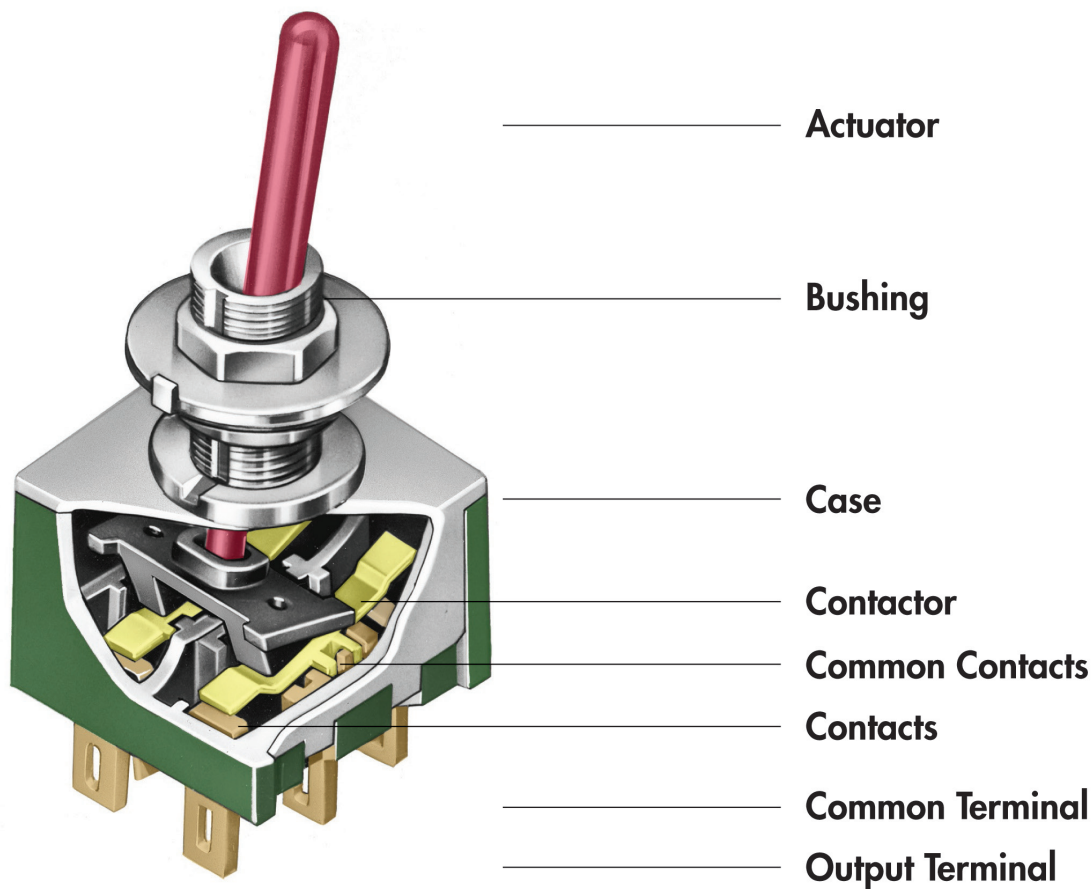


*everything starts here.*

# SWITCHES 101

## BASIC TRAINING

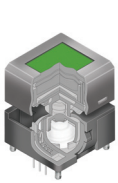


**NIKK**  
SWITCHES

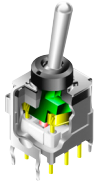
*everything starts here.*

## SEVEN QUESTIONS TO SPECIFY A SWITCH

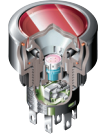
### 1. What type of switch (actuator)?



Programmable



Toggle



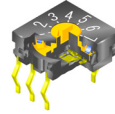
Pushbutton



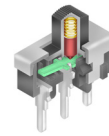
Rocker



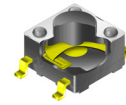
Keylock



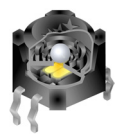
Rotary



Slide



Tactile



Tilt

### 2. What are the electrical requirements?

- Voltage
- Current (6A @ 125V AC)
- Logic Level
- Number of Poles/Throws
- Illumination
- Power Circuit
- Loads:
  - Resistive
  - Inductive
  - Motor

### 3. What size switch?

- Ultra-Miniature
- Subminiature
- Miniature
- Standard

### 4. What type of terminations?

- Solder Lug (wire harness)
- Screw Terminals
- PCB
- SMT
- Quick Connect

### 5. How is switch mounted into device?

- Panel Bushing Mount (threads)
- Snap-In Panel Mount
- PCB Mount
- SMT

### 6. What is the industry? For example:

- Broadcast
- Audio
- Automation
- Medical
- Telecom
- Security
- Computer

### 7. Are there any unique requirements? For example:

- Sealed
- IP Ratings
- Illuminated
- Standards
- Approvals
- Value-Added Services
  - Custom Printing
  - Legends
  - Wire Assembly

everything starts here.

## TOGGLES

| Maximum Rating    | Size       | MOUNTING |         |         |           | TERMINALS  |    |               |           |       |               |              | Series    |
|-------------------|------------|----------|---------|---------|-----------|------------|----|---------------|-----------|-------|---------------|--------------|-----------|
|                   |            | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC | Quick Connect | Wire Wrap | Screw | SMT Gull Wing | Process Seal |           |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       |               | •            | G         |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       |               | •            | G Illum   |
| 0.4VA @ 28V AC/DC | ultra-mini |          |         |         |           |            |    |               |           |       | •             | •            | G3T       |
| 0.4VA @ 28V AC/DC | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | A         |
| 0.4VA @ 28V AC/DC | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | B         |
| 0.4VA @ 28V AC/DC | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | B Illum   |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       |         |           | •          | •  | •             | •         |       |               |              | M         |
| 0.4VA @ 28V AC/DC | miniature  | •        |         |         |           |            | •  |               |           |       |               | •            | M2T       |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       |         |           | •          | •  | •             |           |       |               |              | M2100     |
| 0.4VA @ 28V AC/DC | miniature  |          | •       |         |           | •          |    |               |           |       |               |              | TL        |
| 6A @ 125V AC      | miniature  | •        | •       |         |           | •          | •  | •             | •         |       |               |              | M         |
| 6A @ 125V AC      | miniature  | •        |         |         |           |            | •  |               |           |       |               | •            | M2T       |
| 6A @ 125V AC      | miniature  | •        | •       |         |           | •          | •  | •             |           |       |               |              | M2100     |
| 6A @ 125V AC      | miniature  |          | •       |         |           | •          |    |               |           |       |               |              | TL        |
| 10A @ 125V AC     | standard   | •        | •       |         |           | •          | •  | •             |           |       |               |              | P         |
| 10A @ 125V AC     | standard   |          | •       |         |           | •          |    |               | wire lead | •     |               |              | WT        |
| 5A @ 125 V AC     | standard   |          | •       |         |           | •          |    |               |           |       |               |              | S Low Cap |
| 15-20A @ 125V AC  | standard   |          | •       |         |           | •          |    | •             |           |       |               |              | S Med Cap |
| 15-25A @ 125V AC  | standard   |          | •       |         |           | •          |    | •             |           | •     |               |              | S Med/Hi  |
| 30-50A @ 125V AC  | standard   |          | •       |         |           |            |    |               |           | •     |               |              | S Hi Cap  |
| 30A @ 125V AC/DC  | standard   |          | •       |         |           |            |    |               |           | •     |               |              | S AC/DC   |

everything starts here.

## ROCKERS

| Maximum Rating    | Size       | MOUNTING |         |         |           | TERMINALS  |    |               |           |       |              | Series     |
|-------------------|------------|----------|---------|---------|-----------|------------|----|---------------|-----------|-------|--------------|------------|
|                   |            | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC | Quick Connect | Wire Wrap | Screw | Process Seal |            |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       | •            | G          |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       |              | GW         |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       |              | GW Illum   |
| 0.4VA @ 28V AC/DC | submini    | •        |         |         |           |            | •  |               |           |       | •            | A          |
| 0.4VA @ 28V AC/DC | miniature  | •        |         | •       | •         | •          | •  | •             | •         |       |              | M          |
| 0.4VA @ 28V AC/DC | miniature  | •        |         |         |           |            | •  |               |           |       | •            | M2T        |
| 0.4VA @ 28V AC/DC | miniature  | •        |         | •       | •         | •          | •  | •             |           |       |              | M2100      |
| 3A @ 250V AC      | miniature  |          |         | •       |           | •          |    |               |           |       |              | CWT        |
| 5A @ 125V AC      | miniature  |          |         | •       |           | •          |    |               |           |       |              | MLW        |
| 6A @ 125V AC      | miniature  |          |         | •       |           | •          |    |               |           |       |              | CWT        |
| 6A @ 125V AC      | miniature  | •        |         | •       | •         | •          | •  | •             | •         |       |              | M          |
| 6A @ 125V AC      | miniature  | •        |         |         |           |            | •  |               |           |       | •            | M2T        |
| 6A @ 125V AC      | miniature  | •        |         | •       | •         | •          | •  | •             |           |       |              | M2100      |
| 6A @ 125/250V AC  | miniature  |          |         | •       |           | •          |    | •             |           |       |              | JWS        |
| 6A @ 250V AC      | miniature  | •        |         | •       |           | •          | •  | •             |           |       |              | CWS        |
| 9A @ 125V AC      | miniature  |          |         | •       |           | •          |    | •             |           |       |              | CWSB Illum |
| 9A @ 125V AC      | miniature  |          |         | •       |           | •          |    | •             |           |       |              | CWSC Illum |
| 10A @ 125V AC     | standard   |          |         |         | •         | •          | •  | •             |           |       |              | P          |
| 10A @ 125V AC     | standard   |          |         | •       |           | •          |    |               |           |       |              | LW         |
| 10A @ 125/250V AC | miniature  |          |         | •       |           | •          |    | •             |           |       |              | JWS        |
| 10A @ 125/250V AC | standard   |          |         | •       |           | •          |    | •             |           |       |              | JWM        |
| 15A @ 125/250V AC | standard   |          |         | •       |           | •          |    | •             | wire lead | •     |              | WR         |
| 16A @ 125/250V AC | standard   |          |         | •       |           | •          |    | •             |           |       |              | JWL        |
| 20A @ 110V AC     | standard   |          |         |         | •         | •          |    |               |           |       |              | LW         |
| 15-20A @ 125V AC  | standard   |          |         |         | •         | •          |    |               |           |       |              | SW Med     |
| 30A @ 125V AC/DC  | standard   |          |         |         | •         |            |    |               |           | •     |              | SW Hi Cap  |

everything starts here.

## PUSHBUTTONS

| Maximum Rating    | Size       | MOUNTING |         |         |           | TERMINALS  |        |               |           |       |               |              | Series |
|-------------------|------------|----------|---------|---------|-----------|------------|--------|---------------|-----------|-------|---------------|--------------|--------|
|                   |            | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC     | Quick Connect | Wire Wrap | Screw | SMT Gull Wing | Process Seal |        |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •      |               |           |       |               | •            | GB     |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •      |               |           |       |               |              | GB2    |
| 0.4VA @ 28V AC/DC | ultra-mini |          |         |         |           |            |        |               |           |       |               | •            | G3B    |
| 0.4VA @ 28V AC/DC | submini    | •        |         |         |           |            | •      |               |           |       |               | •            | AB     |
| 0.4VA @ 28V AC/DC | submini    | •        |         |         |           |            | •      |               |           |       |               | •            | BB     |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       | •       |           | •          | •      |               |           |       |               |              | EB     |
| 0.4VA @ 28V AC/DC | submini    |          | •       |         |           |            | turret |               |           |       |               |              | FB     |
| 0.4VA @ 28V AC/DC | miniature  | •        |         |         |           |            | •      |               |           |       |               | •            | M2B    |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       | •       |           | •          | •      | •             | •         |       |               |              | MB2000 |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       | •       |           | •          | •      |               | •         |       |               |              | MB2400 |
| 0.4VA @ 28V AC/DC | miniature  |          | •       |         |           | •          |        |               |           |       |               |              | SB4011 |
| 500mA @ 125V AC   | submini    |          | •       |         |           |            | turret |               |           |       |               |              | FB     |
| 1A @ 125V AC      | miniature  | •        |         |         |           |            | •      |               |           |       |               | •            | M2B    |
| 3A @ 125V AC      | miniature  | •        | •       | •       |           | •          | •      |               |           |       |               |              | EB     |
| 3A @ 125V AC      | miniature  | •        | •       | •       |           | •          | •      |               | •         |       |               |              | MB2400 |
| 3A @ 125V AC      | miniature  |          | •       |         |           | •          |        |               |           |       |               |              | SB4011 |
| 6A @ 125V AC      | miniature  | •        | •       | •       |           | •          | •      | •             | •         |       |               |              | MB2000 |
| 6A @ 125V AC      | standard   |          | •       |         |           | •          |        |               | wire lead | •     |               |              | WB     |
| 10A @ 125/250V AC | standard   |          |         | •       |           | •          |        | •             |           |       |               |              | JPM    |
| 15A @ 125V AC     | standard   |          | •       |         |           | •          |        |               |           | •     |               |              | SB     |
| 15A @ 125V AC     | standard   |          | •       |         |           |            |        | •             |           |       |               |              | SCB    |
| 16A @ 125/250V AC | standard   |          |         | •       |           | •          |        | •             |           |       |               |              | JPL    |

everything starts here.

## ILLUMINATED PUSHBUTTONS

|                      |            | MOUNTING |         |         |           | TERMINALS  |    |               |           |       |              |        |
|----------------------|------------|----------|---------|---------|-----------|------------|----|---------------|-----------|-------|--------------|--------|
| Maximum Rating       | Size       | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC | Quick Connect | Wire Wrap | Screw | Process Seal | Series |
| 0.4VA @ 28V AC/DC    | ultra-mini | •        |         |         |           |            | •  |               |           |       |              | GB     |
| 0.4VA @ 28V AC/DC    | submini    | •        |         |         |           |            | •  |               |           |       |              | HB2    |
| 0.4VA @ 28V AC/DC    | submini    | •        |         |         |           |            | •  |               |           |       |              | NP01   |
| 0.4VA @ 28V AC/DC    | miniature  | •        | •       | •       |           | •          | •  |               |           |       |              | KB     |
| 0.4VA @ 28V AC/DC    | miniature  | •        |         | •       |           | •          | •  |               |           |       |              | UB     |
| 0.4VA @ 28V AC/DC    | miniature  | •        |         | •       |           | •          | •  |               |           |       |              | UB2    |
| 0.4VA @ 28V AC/DC    | miniature  |          | •       | •       |           | •          | •  | •             |           |       |              | YB     |
| 0.4VA @ 28V AC/DC    | standard   | •        | •       | •       |           | •          | •  | •             |           |       |              | LB     |
| 0.4VA @ 28V AC/DC    | standard   |          | •       |         |           | •          |    | •             |           |       | •            | YB2    |
| 0.1VA @30V AC/DC     | submini    |          | •       |         |           | •          |    |               |           |       |              | HB     |
| 100mA @ 12V DC       | miniature  | •        |         |         |           |            | •  |               |           |       |              | KP     |
| 1A @ 125/250V AC     | miniature  | •        | •       | •       |           | •          | •  |               |           |       |              | KB     |
| 3A @ 125/250V AC     | miniature  |          | •       | •       |           | •          | •  | •             |           |       |              | YB     |
| 3A @ 125/250V AC     | miniature  |          | •       | •       |           | •          |    | •             |           |       |              | LP01   |
| 3A @ 125/250V AC     | standard   | •        | •       | •       |           | •          | •  | •             |           |       |              | LB     |
| 3A @ 125/250V AC     | standard   |          | •       |         |           | •          |    | •             |           |       | •            | YB2    |
| 5A @ 125/250V AC     | miniature  | •        |         | •       |           | •          | •  |               |           |       |              | UB     |
| 5A @ 125/250V AC     | miniature  | •        |         | •       |           | •          | •  |               |           |       |              | UB2    |
| 5V Photo Interrupter | standard   |          |         | •       |           |            |    |               |           |       |              | FP01   |

## KEYLOCKS

| Maximum Rating    | Size      | Mounting | Indexing | Terminals  | Positions | Process Seal | Series |
|-------------------|-----------|----------|----------|------------|-----------|--------------|--------|
| 0.4VA @ 28V AC/DC | submini   | PC Board | 45°      | PC         | 3         | •            | SK     |
| 0.4VA @ 28V AC/DC | submini   | PC Board | 45°      | PC         | 5         | •            | SK     |
| 0.4VA @ 28V AC/DC | miniature | PC Board | 90°      | PC         | 2         | •            | SK     |
| 0.4VA @ 28V AC/DC | miniature | PC Board | 45°      | PC         | 3         | •            | SK     |
| 3A @ 125V DC      | miniature | Bushing  | 45°      | Solder Lug | 3         |              | SK     |
| 3A @ 125V DC      | miniature | Bushing  | 90°      | Solder Lug | 2         |              | SK     |
| 3A @ 250V DC      | standard  | Bushing  | 90°      | Solder Lug | 2         |              | CK     |
| 3A @ 250V DC      | standard  | Bushing  | 45°      | Solder Lug | 3         |              | CK     |

everything starts here.

## TILT SWITCH

| Maximum Rating       | Size      | MOUNTING |         |         |           | TERMINALS  |    |               |           |       |              | Series |
|----------------------|-----------|----------|---------|---------|-----------|------------|----|---------------|-----------|-------|--------------|--------|
|                      |           | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC | Quick Connect | Wire Wrap | Screw | Process Seal |        |
| 0.1VA @ 12V DC       | miniature | •        |         |         |           |            | •  |               |           |       |              | DSA    |
| 5V Photo Interrupter | submini   | •        |         |         |           |            | •  |               |           |       | •            | DSB    |

## ROTARIES

|                   |            | MOUNTING |         | INDEXING    | TERMINALS  |        |       |               |              |        |
|-------------------|------------|----------|---------|-------------|------------|--------|-------|---------------|--------------|--------|
| Maximum Rating    | Size       | PC Board | Bushing | Step Size   | Solder Lug | PC     | Screw | SMT Gull Wing | Process Seal | Series |
| 0.4VA @ 28V AC/DC | miniature  | •        |         | 30°         |            | •      |       |               | •            | MRF    |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       | 30°         |            | •      |       |               | •            | MRK    |
| 0.4VA @ 28V AC/DC | miniature  | •        | •       | 45° & 90°   |            | •      |       |               | •            | MRB    |
| 0.4VA @ 28V AC/DC | miniature  |          | •       | 60°         |            | turret |       |               |              | MRY    |
| 100mA @ 5/50V DC  | ultra-mini | •        |         | 22.5° & 36° |            | •      |       |               | •            | ND     |
| 100mA @ 5/50V DC  | ultra-mini |          |         | 22.5° & 36° |            |        |       | •             | •            | ND3    |
| 100mA @ 5/50V DC  | submini    | •        | •       | 22.5° & 36° |            | •      |       |               |              | FR01   |
| 100mA @ 5/50V DC  | submini    |          |         | 22.5° & 36° |            |        |       | •             |              | FR02   |
| 250mA @ 125V AC   | miniature  | •        | •       | 30°         |            | •      |       |               | •            | MRA    |
| 1A @ 30V DC       | miniature  |          | •       | 45°         |            | turret |       |               |              | MRX    |
| 2A @ 30V DC       | miniature  |          | •       | 60°         |            | turret |       |               |              | MRY    |
| 2A @ 125V DC      | miniature  |          | •       | 45°         |            | turret |       |               |              | MRX    |
| 3A @ 30V DC       | miniature  |          | •       | 60°         | •          |        |       |               |              | MRT23  |
| 3A @ 125V DC      | miniature  |          | •       | 60°         |            | turret |       |               |              | MRY    |
| 4A @ 30V DC       | miniature  |          | •       | 120°        | •          |        |       |               |              | MRT22  |
| 5A @ 125V DC      | miniature  |          | •       | 60°         | •          |        |       |               |              | MRT23  |
| 6A @ 125V DC      | standard   |          | •       | 45°         |            |        | •     |               |              | HS13   |
| 6A @ 125/250V AC  | standard   |          | •       | 30°         |            |        | •     |               |              | TS     |
| 10A @ 125V DC     | miniature  |          | •       | 120°        | •          |        |       |               |              | MRT22  |
| 12A @ 125V DC     | standard   |          | •       | 30°         |            |        | •     |               |              | HS16   |
| 30A @ 125/250V AC | standard   |          | •       | 30°         |            |        | •     |               |              | PS     |

everything starts here.

## SLIDES

| Maximum Rating     | Size       | MOUNTING |         |         |           | TERMINALS  |    |               |           |       |               |              | Series     |
|--------------------|------------|----------|---------|---------|-----------|------------|----|---------------|-----------|-------|---------------|--------------|------------|
|                    |            | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC | Quick Connect | Wire Wrap | Screw | SMT Gull Wing | Process Seal |            |
| 0.4VA @ 28V AC/DC  | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | SS         |
| 0.4VA @ 28V AC/DC  | ultra-mini |          |         |         |           |            |    |               |           |       | •             |              | SS3        |
| 0.4VA @ 28V AC/DC  | submini    | •        |         |         |           |            | •  |               |           |       |               |              | AS         |
| 0.4VA @ 28V AC/DC  | miniature  | •        |         |         |           |            | •  |               |           |       |               |              | FS         |
| 0.4VA @ 28V AC/DC  | miniature  | •        |         |         | •         | •          | •  |               |           |       |               |              | MS         |
| 1.0mA @ 10mV AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | SM         |
| 25mA @ 24V DC      | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | JS01, JS03 |
| 25mA @ 24V DC      | ultra-mini |          |         |         |           |            |    |               |           |       | •             |              | JS02, JS04 |
| 0.1A @ 12V DC      | ultra-mini |          |         |         |           |            |    |               |           |       | •             |              | SS3        |
| 0.1A @ 30V DC      | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | SS         |
| 0.1A @ 30V DC      | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | SS Illum   |
| 0.1A @ 50V DC      | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | JS01, JS03 |
| 0.1A @ 50V DC      | ultra-mini |          |         |         |           |            |    |               |           |       | •             |              | JS02, JS04 |
| 500mA @ 12V DC     | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | SM         |
| 3A @ 125V AC       | miniature  | •        |         |         |           |            | •  |               |           |       |               |              | CS         |
| 6A @ 125V AC       | miniature  | •        |         |         | •         | •          | •  |               |           |       |               |              | MS         |
| 6A @ 125V AC       | miniature  | •        |         |         | •         | •          | •  |               |           |       |               |              | MS Illum   |

## TACTILES

| Maximum Rating    | Size       | MOUNTING |         |         |           | TERMINALS  |    |               |           |       |               |              | Series   |
|-------------------|------------|----------|---------|---------|-----------|------------|----|---------------|-----------|-------|---------------|--------------|----------|
|                   |            | PC Board | Bushing | Snap-In | Two Screw | Solder Lug | PC | Quick Connect | Wire Wrap | Screw | SMT Gull Wing | Process Seal |          |
| 0.4VA @ 28V AC/DC | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | HP02     |
| 0.4VA @ 28V AC/DC | ultra-mini |          |         |         |           |            |    |               |           |       | •             |              | HP03     |
| 3VA @ 28V DC      | ultra-mini | •        |         |         |           |            | •  |               |           |       |               |              | HP02     |
| 3VA @ 28V DC      | ultra-mini |          |         |         |           |            |    |               |           |       | •             |              | HP03     |
| 50mA @ 24V DC     | ultra-mini | •        |         |         |           |            | •  |               |           |       |               | •            | CB       |
| 50mA @ 24V DC     | ultra-mini |          |         |         |           |            |    |               |           |       | •             | •            | CB3      |
| 50mA @ 24V DC     | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | JF       |
| 50mA @ 24V DC     | submini    | •        |         |         |           |            | •  |               |           |       |               |              | JF Illum |
| 50mA @ 24V DC     | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | JB       |
| 50mA @ 24V DC     | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | JB Illum |
| 50mA @ 24V DC     | submini    | •        |         |         |           |            | •  |               |           |       |               |              | JL       |
| 125mA @ 24V DC    | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | JB       |
| 125mA @ 24V DC    | submini    | •        |         |         |           |            | •  |               |           |       |               | •            | JB Illum |

everything starts here.

## SMARTSWITCH PROGRAMMABLE

| Maximum Rating | Size     | LCD | OLED | Resolution (Pixels) | MOUNTING |         | TERMINALS |        |
|----------------|----------|-----|------|---------------------|----------|---------|-----------|--------|
|                |          |     |      |                     | PC Board | Snap-In | PC        | Series |
| PUSHBUTTON     |          |     |      |                     |          |         |           |        |
| 100mA @ 12V DC | standard |     | •    | 64 x 48             | •        |         | •         | IS     |
| 100mA @ 12V DC | standard | •   |      | 64 x 32             | •        |         | •         | IS     |
| 100mA @ 12V DC | compact  | •   |      | 64 x 32             | •        |         | •         | IS     |
| 100mA @ 12V DC | standard | •   |      | 36 x 24             | •        | •       | •         | IS     |
| 100mA @ 12V DC | compact  | •   |      | 36 x 24             | •        |         | •         | IS     |
| DISPLAY        |          |     |      |                     |          |         |           |        |
|                | standard |     | •    | 52 x 36             |          |         |           | IS     |
|                | standard | •   |      | 64 x 32             |          |         |           | IS     |
|                | standard | •   |      | 36 x 24             |          |         |           | IS     |
| ROCKER         |          |     |      |                     |          |         |           |        |
| 3VA maximum DC |          |     | •    | 96 x 64             |          | •       |           | IS     |

## TOUCH SCREENS

| Maximum Rating               | Technology       | Input Method                    | Standard Screen Sizes | Series |
|------------------------------|------------------|---------------------------------|-----------------------|--------|
| 5.5V DC                      | 5-Wire Resistive | Finger, Gloved Finger or Stylus | 10.4" - 15.0"         | FT     |
| 1mA @ 5V DC (resistive load) | 4-Wire Resistive |                                 | 5.7" - 15.0"          | FT     |
| 1mA @ 5V DC (resistive load) | Digital          | Finger                          | 5.7"                  | FT     |

## MEMBRANE SWITCH KEYPADS

| Maximum Rating | Illumination                 | Number of Keys | SURFACE SHEET |      | Overlay                                                        | Series |
|----------------|------------------------------|----------------|---------------|------|----------------------------------------------------------------|--------|
|                |                              |                | Black         | Gray |                                                                |        |
| 20mA @ 24V DC  | Nonilluminated               | 4              | •             |      |                                                                | FM     |
| 20mA @ 24V DC  | Nonilluminated               | 4              |               | •    |                                                                | FM     |
| 20mA @ 24V DC  | Nonilluminated               | 16             | •             |      |                                                                | FM     |
| 20mA @ 24V DC  | Nonilluminated               | 16             |               | •    |                                                                | FM     |
| 20mA @ 24V DC  | Dot Illuminated with Overlay | 12             |               |      | Gray surface sheet with embossed white keypad and gray legends | FM     |
| 20mA @ 24V DC  | Dot Illuminated with Overlay | 16             |               |      |                                                                | FM     |

*everything starts here.*

## TOGGLES



### A SERIES SUBMINIATURE

- Single and double pole
- Logic level
- 11 circuit options
- STC contact mechanism
- Process sealed



### B SERIES SUBMINIATURE

- Single and double pole
- Logic level
- Antistatic
- Locking lever option
- STC contact mechanism
- Illuminated option available
- Process sealed



### G SERIES ULTRA-MINIATURE

- Single and double pole
- Straight, right angle, vertical options
- STC contact mechanism
- Process sealed
- Illuminated option available



### M SERIES MINIATURE

- 1-4 pole
- Antijamming actuator design
- 1/4-40, 6mm and 12mm bushing options
- Multiple actuator, cap and color choices



### M2T SERIES MINIATURE

- Single and double pole
- 5 circuit options
- Antijamming actuator design
- Smooth, double flatted bushing
- Process sealed



### P SERIES STANDARD

- Single and double pole
- 6mm or 12mm bushing
- Solder lug, straight PC or quick connect
- Actuator, cap and color choices
- Internationally approved



### S SERIES STANDARD AND HIGH CAPACITY

- 1-4 pole
- Solder lug, screw or quick connect
- Low, medium, medium/high or high capacity
- Locking lever or panel seal options
- Inductive ratings



### WT SERIES STANDARD

- Single and double pole
- 6 circuit choices
- Solder lug, screw lug or wire leads
- IP60 and IP67 of IEC60529

*everything starts here.*

## ROCKERS



### A SERIES SUBMINIATURE

- Single and double pole
- Logic level
- Ten circuit options
- STC contact mechanism
- Process sealed



### CW SERIES MINIATURE

- Single and double pole
- Molded snap-in rocker
- Solder lug, quick connect or right angle PC
- CWT: dust proof construction
- CWS: inscription options, illuminated models available



### G AND GW SERIES ULTRA-MINIATURE

- Single and double pole
- G: process sealed, optional actuator colors
- GW: rocker or paddle option, illuminated models available



### JW SERIES JW STANDARD; JWS MINIATURE

- Single and double pole
- JWM TV-5 rated; JWL TV-8
- Internationally approved
- Optional barrier and rocker colors



### M SERIES MINIATURE

- 1-2 pole (straight mount), 1-3 pole (right angle), 1-4 pole (vertical)
- Stainless steel frame
- Snap-in mount, bracket PC or flat frame
- Solder lug, straight PC (bracket option), right or vertical PC, quick connect
- Optional caps, colors, bezels with LEDs



### M2T SERIES STANDARD

- Single and double pole
- Straight, right angle or vertical PC
- Process sealed
- Optional actuators, caps and colors



### P SERIES STANDARD

- Single and double pole
- Solder lug, straight PC or quick connect
- Internationally approved
- Optional actuators and colors



### SW SERIES STANDARD AND HIGH CAPACITY

- Single, double and three pole
- Solder lug or screw
- Two screw mounting
- Low/medium and high capacity ratings



### WR SERIES STANDARD

- Single and double pole
- Solder lug, screw lug, quick connect or wire lead
- IP60 and IP67 of IEC60529

*everything starts here.*

## PUSHBUTTONS



### AB AND BB SERIES SUBMINIATURE

- Single and double pole
- Logic level
- STC contact mechanism
- Process sealed
- BB: antistatic



### EB SERIES MINIATURE

- Single and double pole
- Power and logic level
- Solder lug or straight PC
- Bushing and snap-in mount
- Case meets UL94V-0
- Optional actuators, caps, bezels, LEDs and colors



### FB AND SB4011 SERIES MINIATURE

- Single pole
- Power and logic level
- SB40 inch or metric bushings
- Rear panel bushing mount
- Optional cap colors



### GB AND GB2 SERIES ULTRA-MINIATURE

- Momentary circuit
- PC terminals
- High density mounting
- Optional caps and colors
- GB: process sealed, illuminated available



### JP SERIES STANDARD AND HIGH CAPACITY

- Single and double pole
- TV-5 and TV-8 ratings
- Optional actuators and cap colors
- Solder lug/quick connect terminals
- Internationally approved



### MB20 SERIES MINIATURE

- Single, double and four pole
- Momentary and alternate action
- Antijamming actuator design
- Optional actuators, caps, shrouds and colors
- Splashproof option



### M2B SERIES MINIATURE

- Single and double pole
- Momentary circuit
- Snap-acting contacts
- Plunger length options
- Optional caps and colors
- Process sealed



### MB24 SERIES MINIATURE

- Single and double pole
- Smooth actuation
- Stainless steel frame
- Snap-in frame, caps, bezels, LEDs and colors



### SB AND SCB SERIES STANDARD

- Single and double pole
- 12mm bushing
- Options for caps and shrouds
- Low/medium/high capacity
- SB: solder lug
- SCB: solder lug, screw lug or quick connect



### WB SERIES STANDARD

- Single pole
- 12mm bushing
- Solder lug, screw lug or wire lead
- Optional caps and colors
- Internationally approved
- IP60 and IP67 of IEC60529

*everything starts here.*

## SLIDES



### AS SERIES SUBMINIATURE

- Single and double pole
- Logic level
- STC contact mechanism



### CS SERIES MINIATURE

- Single and double pole
- Power rated
- Antistatic
- Cover and case UL94V-0 flammability rated



### FS SERIES MINIATURE

- Double pole
- Logic level
- High frequency applications
- Actuator length options
- Straight PC terminals



### JS01 SERIES ULTRA-MINIATURE

- Single pole
- Through hole mounting
- Gold plated contacts
- Slide actuator
- Four or eight positions
- Stick-tube packaging



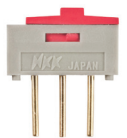
### JS03 SERIES ULTRA-MINIATURE

- Single pole
- Through hole mounting
- Gold plated contacts
- Piano actuator
- Four or eight positions
- Stick-tube packaging



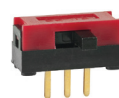
### MS SERIES MINIATURE

- Single and double pole
- Panel, PCB and bracket mount options
- Solder lug, straight PC (bracket option), right angle or vertical PC
- Two actuator sizes
- Illuminated models available



### SM SERIES ULTRA-MINIATURE

- Single pole
- STC contact mechanism
- High density mounting
- Through hole



### SS SERIES ULTRA-MINIATURE

- Single and double pole
- Top or side actuation
- STC contact mechanism
- 3-ON and illuminated models available
- Metric or inch terminal spacing

*everything starts here.*

## TACTILES



### CB SERIES FLAT BUTTON

- 6mm
- Nonilluminated
- Process sealed



### HP02 SERIES FLAT BUTTON

- 6mm
- Nonilluminated



### JB SERIES FLAT BLUE BUTTON

- 10mm
- Nonilluminated
- Process sealed



### JB SERIES FRAMED CAP

- 10mm
- Extended actuator,  
high operating force
- Illuminated
- Process sealed



### JB SERIES FLAT CAP

- 10mm
- Short actuator, std.  
operating force
- Illuminated
- Process sealed



### JB SERIES RIGHT ANGLE FLAT BUTTON OR CAP

- 10mm
- Nonilluminated
- Process sealed



### JB SERIES SCULPTURED, FRAMED OR FLAT CAPS

- 10mm
- Nonilluminated
- Process sealed



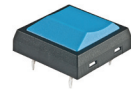
### JF SERIES PIANO ACTUATOR

- 18mm
- Nonilluminated
- Process sealed



### JF SERIES ROUND OR SQUARE ACTUATORS, ROUND ACTUATOR/SQUARE BODY

- 18mm
- Nonilluminated
- Process sealed



### JF SERIES SCULPTURED ACTUATOR

- 18mm
- Nonilluminated
- Process sealed



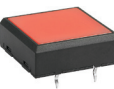
### JF SERIES SQUARE, ROUND OR SCULPTURED ACTUATORS

- 18mm
- Spot illuminated
- Process sealed



### JF SERIES SQUARE ACTUATOR

- 18mm
- Full face illuminated
- Process sealed

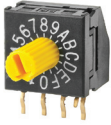


### JL SERIES SQUARE ACTUATOR

- 22mm
- Full face illuminated

*everything starts here.*

## ROTARIES



### FR01 SERIES SUBMINIATURE

- 10mm binary coded DIP rotary
- Screwdriver, plastic shaft, dial or metal shaft actuation
- Straight or right angle PC
- Decimal or hexadecimal positions
- Stick-tube packaging



### MR SERIES MINIATURE - PROCESS SEALED

- Single, double and four pole
- Self-cleaning contact mechanism
- MRF: low profile
- MFA and MRK: metal bushing and housing
- MRK: IP67 of IEC60529



### MR SERIES MINIATURE - POWER LEVEL

- Single, double and four pole
- 2-8 position settings
- PC turret, turret or solder lug
- Plain or color tipped knobs



### MRB SERIES MINIATURE

- Single or double pole
- Straight or right angle with bracket PC
- Double flatted bushing
- Self-cleaning contact mechanism
- Process sealed
- Optional knobs



### ND SERIES ULTRA-MINIATURE

- 8mm binary coded DIP rotary
- Screwdriver or shaft actuated
- Decimal or hexadecimal positions
- Real or complement coded
- Straight or right angle PC
- SMT model available
- Process sealed



### HS SERIES STANDARD

- 6A or 12A @ 125V AC
- 1-6 poles
- 30° or 45° indexing
- Round, D-flat or knurled shaft
- 2-11 position settings



### PS SERIES STANDARD - HIGH CAPACITY

- 30A @ 125/250V AC
- 1-5 poles
- 30° indexing
- Knurled or D-flat shaft
- 2-11 position settings



### TS SERIES STANDARD

- 6A @ 125/250V AC
- 1-5 poles
- 30° indexing
- D-flat shaft
- 2-11 position settings

*everything starts here.*

## KEYLOCKS

### CKM SERIES FLAT KEY



- High security
- 16mm threaded bushing
- Insulated key and switch housing
- Epoxy sealed solder lug terminals
- 2 or 3 lock positions
- Single pole
- Antistatic



### CKM SERIES TUBULAR KEY

- High security
- 16mm threaded bushing
- Insulated key and switch housing
- Epoxy sealed solder lug terminals
- 2 or 3 lock positions
- Single pole
- Antistatic



### CKL SERIES FLAT KEY

- High security
- 19mm threaded bushing
- Rugged, die cast housing
- Epoxy sealed solder lug terminals
- 2 or 3 lock positions
- Single pole

### CKL SERIES TUBULAR KEY



- High security
- 19mm threaded bushing
- Rugged, die cast housing
- Epoxy sealed solder lug terminals
- 2 or 3 lock positions
- Single pole



### SK SERIES LOW SECURITY

- 12mm threaded bushing
- 2 or 3 lock positions
- Single pole
- Epoxy sealed solder lug terminals
- Dust resistant interior



### SK SERIES MEDIUM SECURITY

- 12mm threaded bushing
- 2 or 3 lock positions
- Single pole
- Epoxy sealed solder lug terminals
- Dust resistant interior



### SK SERIES SUBMINIATURE - ANTISTATIC PROCESS SEALED

- 9mm smooth bushing
- High density mounting
- Molded-in terminals
- 3 or 5 lock positions
- Single pole
- Straight or right angle PC

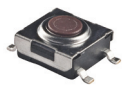


### SK SERIES MINIATURE - PROCESS SEALED

- 12mm smooth bushing
- Insulated key
- Low security
- Logic level
- Molded-in terminals
- Disposable boot
- 2 or 3 lock positions
- Single and double pole
- Straight or right angle PC

*everything starts here.*

## SURFACE MOUNT DEVICES



### **CB3 SERIES** **TACTILES - PROCESS SEALED**

- Single pole
- Dome contact
- Insert molded terminals
- Common bus and X-Y matrix
- Tape-reel and tray packaging



### **FR02 SERIES** **ROTARIES - PROCESS COMPATIBLE**

- Real or complement coded
- Decimal or hexadecimal
- Screwdriver actuated
- Upright mounting
- Tape-reel and stick-tube packaging



### **G3T SERIES** **ULTRA-MINIATURE TOGGLES - PROCESS SEALED**

- Single and double pole
- STC contact mechanism
- Upright (bracket option) and right angle mounting
- Molded-in, epoxy sealed terminals
- Tape-reel, stick-tube and tray packaging



### **G3B SERIES** **ULTRA-MINIATURE PUSHBUTTONS - PROCESS SEALED**

- Single and double pole
- STC contact mechanism
- Momentary action
- Upright (bracket option) and right angle mounting
- Molded-in, epoxy sealed terminals
- Tape-reel, stick-tube and tray packaging



### **HP03 SERIES** **TACTILES - PROCESS COMPATIBLE**

- Single pole
- Common bus and X-Y matrix
- Tape-reel and stick-tube packaging



### **JS02 SERIES** **ULTRA-MINIATURE SLIDES - PROCESS COMPATIBLE**

- 4 or 8 positions
- Extended actuator
- Tape-reel and stick-tube packaging



### **JS04 SERIES** **ULTRA-MINIATURE SLIDES - PROCESS COMPATIBLE**

- 4 or 8 positions
- Flush actuator
- Tape-reel and stick-tube packaging



### **ND3 SERIES** **ULTRA-MINIATURE DIP ROTARIES - PROCESS SEALED**

- Real or complement coded
- Decimal or hexadecimal
- Screwdriver or shaft actuated
- Upright (bracket option) and right angle mounting
- Epoxy sealed terminals
- Tape-reel and tray packaging



### **SS3 SERIES** **ULTRA-MINIATURE SLIDES - PROCESS COMPATIBLE**

- Single pole, double pole and three throw
- 3-on model
- Side actuated
- Tape-reel and tray packaging

*everything starts here.*

## ILLUMINATED PUSHBUTTONS



### FP01 SERIES MINIATURE

- LED illumination
- Photo interrupter
- Rugged construction
- Snap-in
- Connector socket available



### GB SERIES ULTRA-MINIATURE

- Single pole
- Logic level
- Full face illumination
- Bicolor LEDs
- STC contact mechanism



### HB SERIES SUBMINIATURE

- Single pole
- Round or square
- Front panel relamping
- LED, cap and color options



### HB2 SERIES SUBMINIATURE

- Single pole
- Logic level
- Full face illumination
- Bicolor LEDs
- Compact, square body



### KB SERIES MINIATURE

- Single and double pole
- Bright or super bright LEDs
- Bushing or snap-in
- Square, round or rectangular



### KP SERIES MINIATURE

- Single pole
- Bicolor or RGB LEDs
- Flat, sculptured and home key caps in 3 sizes
- Tactile, nontactile, tactile/audible
- Silent actuation



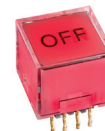
### LB SERIES STANDARD

- Single and double pole
- LED, neon and incandescent
- Round, square or rectangular
- Panel seal option
- Cap, protective guard, dust cover and splash cover options



### LP SERIES MINIATURE

- Single and double pole
- Snap-acting
- LED color options
- Solder lug/quick connect terminals
- Bushing or snap-in



### NP01 SERIES SUBMINIATURE

- Single pole
- Full-face LED illumination
- Smooth actuation
- Single or bicolor LEDs
- Standard or high operating force
- Alternating legends
- Stick-tube packaging



### UB SERIES MINIATURE

- Single and double pole
- Bright or super bright LEDs
- Full face or spot illumination
- Square or rectangular, PCB or snap-in
- Solder lug or straight PC



### UB2 SERIES MINIATURE

- Single and double pole
- PCB or snap-in
- Flat, beveled or sculptured caps
- Alternating legends
- Cap, protective guard, dust cover and barrier options
- Bright or super bright, LED bicolor options



### YB SERIES MINIATURE

- Single and double pole
- Bushing or snap-in
- Full face or spot illumination
- Bright or super bright, LED bicolor options
- Round, square or rectangular



### YB2 SERIES MINIATURE

- Single and double pole
- IP65 rated
- Bright or super bright LEDs
- Solder lug/quick connect terminals
- 22mm round or 24mm square
- Black or silver bezel
- Tamper resistant

*everything starts here.*

## ILLUMINATED TOGGLES, ROCKERS AND SLIDES



### B SERIES SUBMINIATURE

- Single pole
- Fully illuminated clear toggle and bushing
- Single or bicolor LEDs
- Straight, right angle or vertical PC
- Isolated LED terminals



### G SERIES ULTRA-MINIATURE

- Single pole
- Logic level
- Full face illumination
- Bicolor LED options
- STC contact mechanism



### LW SERIES STANDARD

- Power rated
- Double pole
- Dual incandescent or neon lamps
- Cap, lamp cover, filter, bezel and color options
- Snap-in



### MLW SERIES MINIATURE

- Single and Double pole
- Rugged stainless steel housing
- Snap-in
- Front panel relamping
- Incandescent, neon or LEDs



### SS SERIES ULTRA-MINIATURE

- Single and double pole
- Compact dimensions
- Sliding twin contact mechanism
- Top or side actuation
- LED color options
- Optional slide cap



### CWSB AND CWSC SERIES MINIATURE

- Single and double pole
- Power level
- Full face, neon or LED
- Snap-in
- Offset terminals



### GW SERIES ULTRA-MINIATURE

- Single pole
- Fully illuminated paddle
- Single or bicolor LEDs
- Crisp actuation
- Straight, right angle or vertical PC
- STC contact mechanism



### M2100 SERIES MINIATURE

- Single and double pole
- Toggle, rocker and paddle
- Single and bicolor LEDs
- Solder lug, quick connect, straight PC (bracket option) or right angle PC
- Optional bezels and colors



### MS SERIES MINIATURE

- Power level
- Single pole
- LED color options
- 2-screw flange or PC mounting
- Solder lug or straight PC
- Antijamming design



### TL SERIES MINIATURE

- Double pole
- Antistatic, fully illuminated toggle
- Short or long toggle
- Bright or super bright LEDs
- UL94V-0 flammability rated base
- Interior o-ring protects contacts

*everything starts here.*

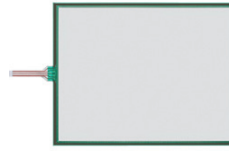
## SMARTSWITCH



### PROGRAMMABLE SWITCHES OLED AND LCD

- Smallest off-the-shelf devices in the industry
- Re-configure switches and panel functions instantly
- Display industry specific graphics and moving images
- Simplifies complex, multi-decision operations
- In-house design engineering support

## TOUCH SCREEN



### FT SERIES RESISTIVE TOUCHSCREENS

- Superior durability & flexibility
- 4 and 5 wire analog
- Digital
- Contact reliability with connector
- ANR film
- Non-glare and hard coated surface

## TILT SWITCHES



### DSA SERIES MINIATURE

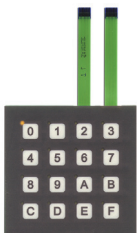
- Ball contacts
- Sealed body
- Triggered when tilted beyond +/- 10° of the horizontal
- Contains no mercury
- PC adaptor accessory option



### DSB SERIES SUBMINIATURE

- Normally closed (on) status
- Photo interrupter
- Straight and right angle PC terminals
- Totally sealed construction
- Triggered when tilted beyond +/- 30° of the horizontal

## MEMBRANE



### FM SERIES MEMBRANE

- Easy integration
- Crisp actuation
- Adhesive backing for easy mounting
- Nonilluminated options: 4 or 16 keys
- Illuminated options: 12 or 16 keys, legends on embossed keypads