



# New NP/PNP/PLP16 Pushbuttons

March 2022



# C&K Corporate Fact Sheet



# C&K Product Lines – Broadest Offering in Industry



## Tactile Switches

- Surface mount, through-hole
- Sealed
- Top, side actuation
- 100,000 to 5,000,000 cycles



## Pushbutton Switches

- Miniature, subminiature, microminiature
- Surface mount, through-hole, bushing mount
- Illuminated
- Sealed



## Key Switches

- Surface mount, through-hole
- Illuminated
- Momentary, push-on/push-off



## Detect Switches

- Surface mount, through-hole, snap-in
- Pushbutton, snap-acting, lever actuation
- Sealed



## Navigation Switches

- Multi-direction
- Sphere, joystick, rotary, rocker, dome actuation



## Rotary Switches / Optical Encoders

- Multi-pole, multi-position
- Sealed



## Switchlocks (Keylock)

- Surface mount, through-hole
- Illuminated
- Momentary, push-on/push-off



## Toggle Switches

- Miniature, subminiature, ultraminiature
- Surface mount, through-hole, bushing mount
- Sealed



## Rocker Switches

- Snap-in, through-hole, panel mount
- Illuminated
- Washable



## Slide Switches

- Miniature, ultraminiature
- Sealed
- Surface mount, through-hole



## Snap Acting Switches

- Miniature, subminiature
- Sealed



## Smart Card Interconnect Devices

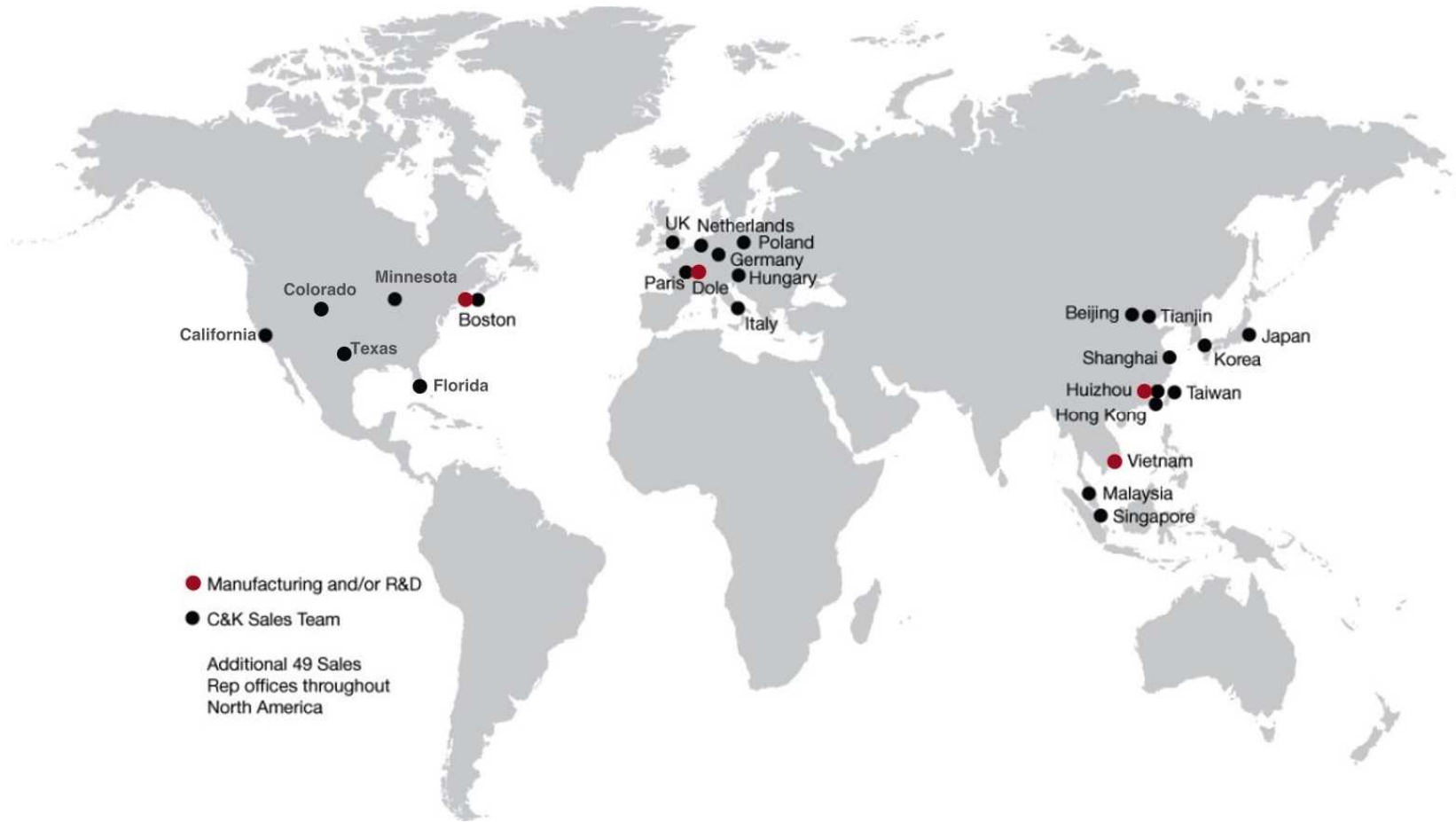
- ISO, SIM, SAM cards
- Low profile
- Anti-piracy



## High-Reliability Connectors

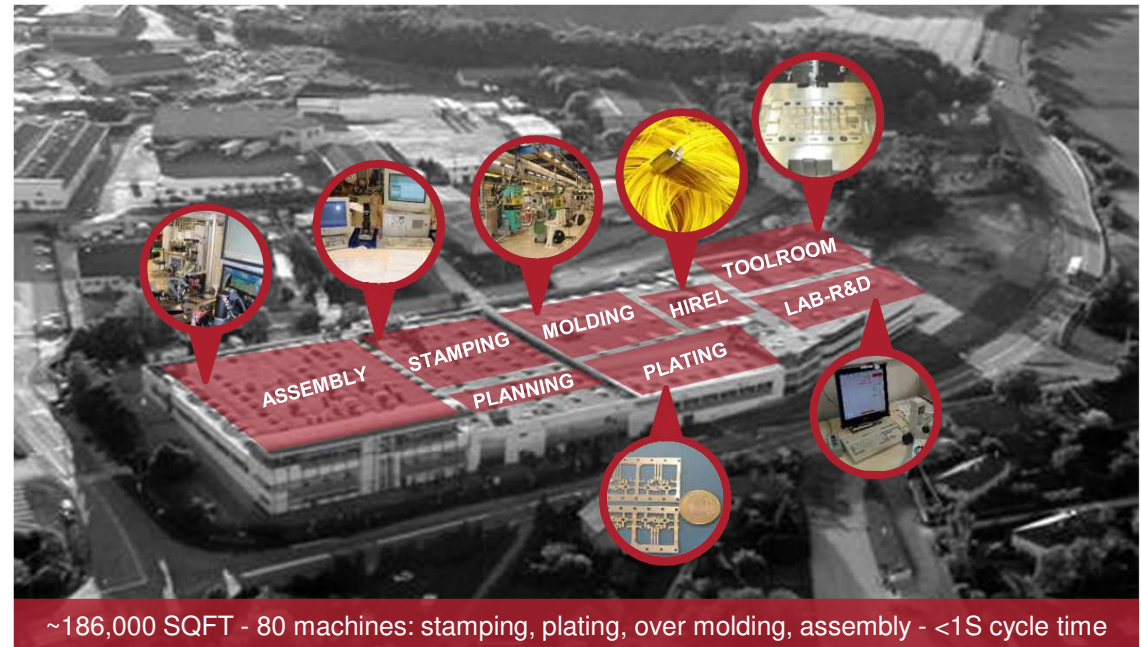
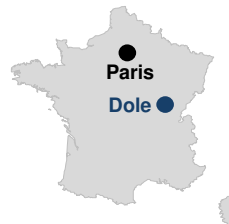
- Microminiature & D-sub
- Mil/Aero & medical
- Board-board, board-cable, cable-cable

# Global Footprint



# Dole, France—Vertically Integrated, Highly Automated

- Vertically-integrated, high-volume production with world-class R&D capabilities
  - 400 employees
  - Fully automated production lines
  - Defect rates below 0.5 ppm
- Proprietary production equipment and methods
- Design and build molds, dies, plating equipment and assembly machines
- Quality certifications
  - ISO 9001:2008
  - ISO 14001:2004
  - ISO 50001 energy management
  - IATF 16949:2009
  - EN9100
  - ESCC - MIL – NASA



# Huizhou, China — Broad Product Mix Expertise

- Vertically-integrated production with deep R&D resources and capabilities
  - 800 employees
  - Automated and semi-automated production lines with lean work cells
  - Defect rates below 2 ppm
- Produce customer-specific designs and product variants at flexible volumes
- Design and build molds, dies and assembly machines
- Quality certifications
  - ISO 9001:2008
  - ISO 14001:2004
  - IATF 16949:2009



# Hung Yen, Vietnam — Diversifying C&K's Footprint

- New facility built in 2019
  - 250 employees
  - Manual and semi-automated production lines
  - Defect rates below 2 ppm
- Lean production environment
  - Robust worker training system
  - In-line QA processes
- Quality certifications
  - ISO 9001:2015



# World-class Test Laboratories



C&K IQ

Innovation  
&  
Quality

[www.ckswitches.com](http://www.ckswitches.com)





**C&K**

**NP/PNP  
Pushbuttons**

## **NP series / PNP series with plastic body housing**

### **Key Product Features**

NP with 6061-T6 aluminum housing / PNP with PBT polyester housing

SPST and SPDT – Double Break Butterfly contact (redundant)

Snap-Action provide positive tactile feedback

Able to switch up to 5A, resistive load @ 32VDC

1,000,000 Electrical life cycles (at 10mA / 5Vdc)

Sealed to IP68

Multiple housing mounting styles

Wire Lead options for simple installation

Higher current (5A) with plastic housing

Optional with or without CAP installed – flexibility

NP actuation force 8N

PNP actuation force 3N/8N

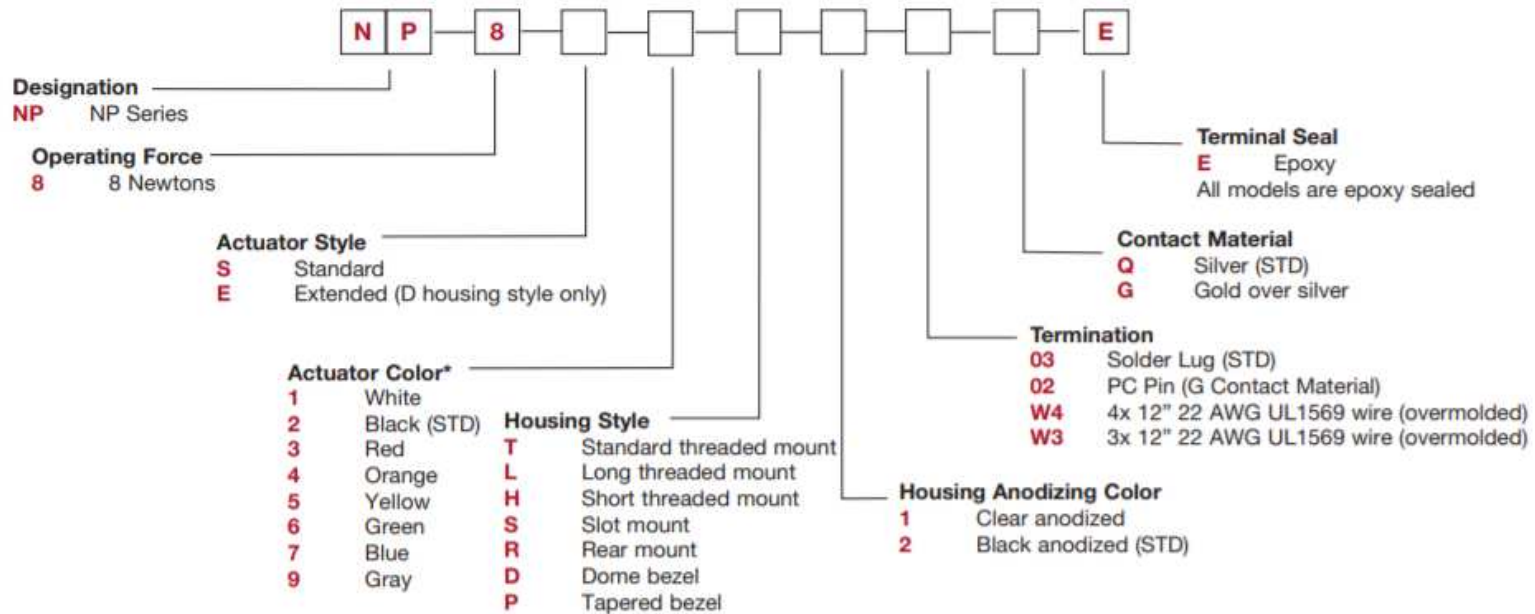


# NP Build A Switch



## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

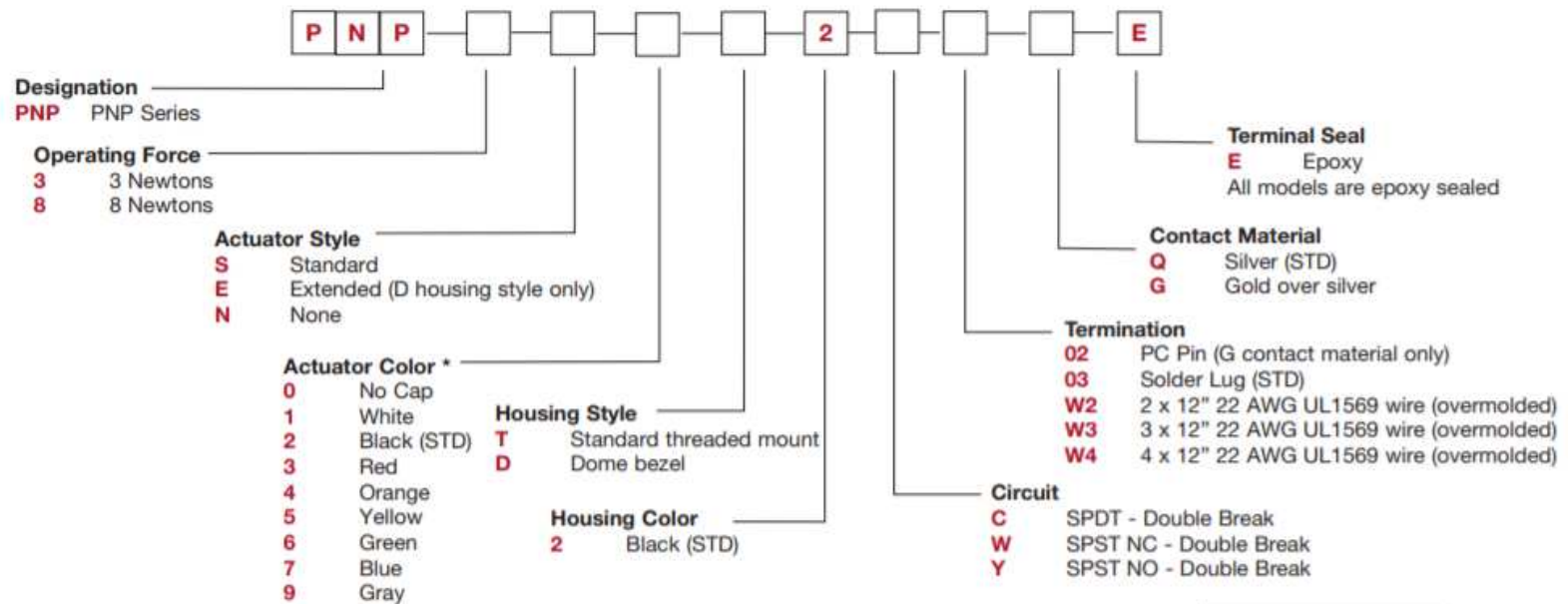


# PNP Build A Switch

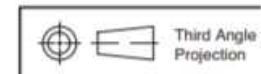


## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



\* Additional colors available, please contact Customer Service



## PNP8/3 additional options to NP

### 3/8 Newtons operating force

Lower force to meet the applications need  
Reduce the fatigue of the operator

### No CAP version

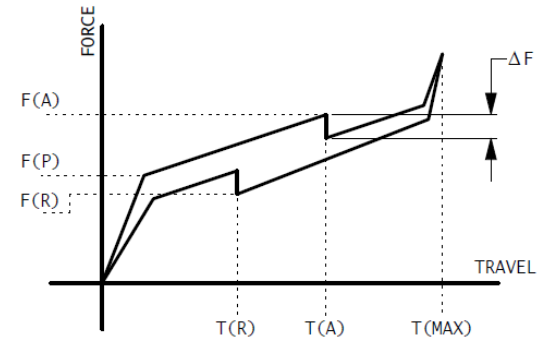
Flexible production design

- Add CAP colour post production
- Additional colors CAP are also available

Reduced channel inventory

- Lower stocking items

Increase flexibility and service level



No CAP version

# NP/PNP Market Overview

## ■ Target markets

- Main market target: Transportation, non-auto
- Secondary market target: Industrial Controls, Equipment, Automation

## ■ Typical application example

- Switch to operate hydraulics, lifts and power control panels and light platform
- Multiple switches per unit or panel
- Switch with specific features to be compliant with electrical ratings up to 5 amps, IP67/68 seal ratings

### Control Grips/Handles



### Hoist & Crane Remote Controls



### Scissor Lift Controls



### Off-road Vehicles



## NP/PNP Market Overview

### Target Market Segments

- Agriculture
- Construction
- Material Handling
- Industrial/Utility/Specialty




## NP /PNP Applications

### Applications

- Multi-function joystick buttons
- Instrument panels (outdoor exposure)
- Lift platform and hand control functions







**PLP16 series  
Panel Mount LED  
Sealed PB and  
Pilot Lights**

## Market Needs

- Electrical Control Panel and system require an illuminate & non-illuminate pushbutton come with positive tactile feedback on actuating, IP rated seal protection that can also withstand a high shock / vibration environment as well as Pilot Lights.
- A need for different cap sizes, shapes and colors with bright LED illumination for distinctive visual signaling, allowing easy customization with standard products



## PLP16 series Product Overview

- ✓ Expand the product coverage in the LED panel mount switches offering
- ✓ Added momentary and lock versions available for easy integration into customer designs
- ✓ Available in **pilot light**, SPDT and DPDT configuration
- ✓ Comes with various LED colors and CAP styles/sizes options
- ✓ Withstand high shock and vibration application needs

### Key Features


- Positive tactile feedback
- **Momentary or Lock/Latching** version with either SPDT or DPDT contact configuration
- Compact design save space
- Choices of color on LED illumination & various Cap colors / styles

### Benefits

- Meets the market requirements on haptic & sound, with clear “click” sound feedback
- Customer can standardise on panel cut out sizing and behind panel space saving time and money
- Small overall size (16mm) but able to carry up to 3A means the customer doesn't need to compromise
- Allow extra space for other components and added functionality in their designs
- Provide status of the switches positioning (on/off) and clear indication of its functioning. No confusion with end customers.

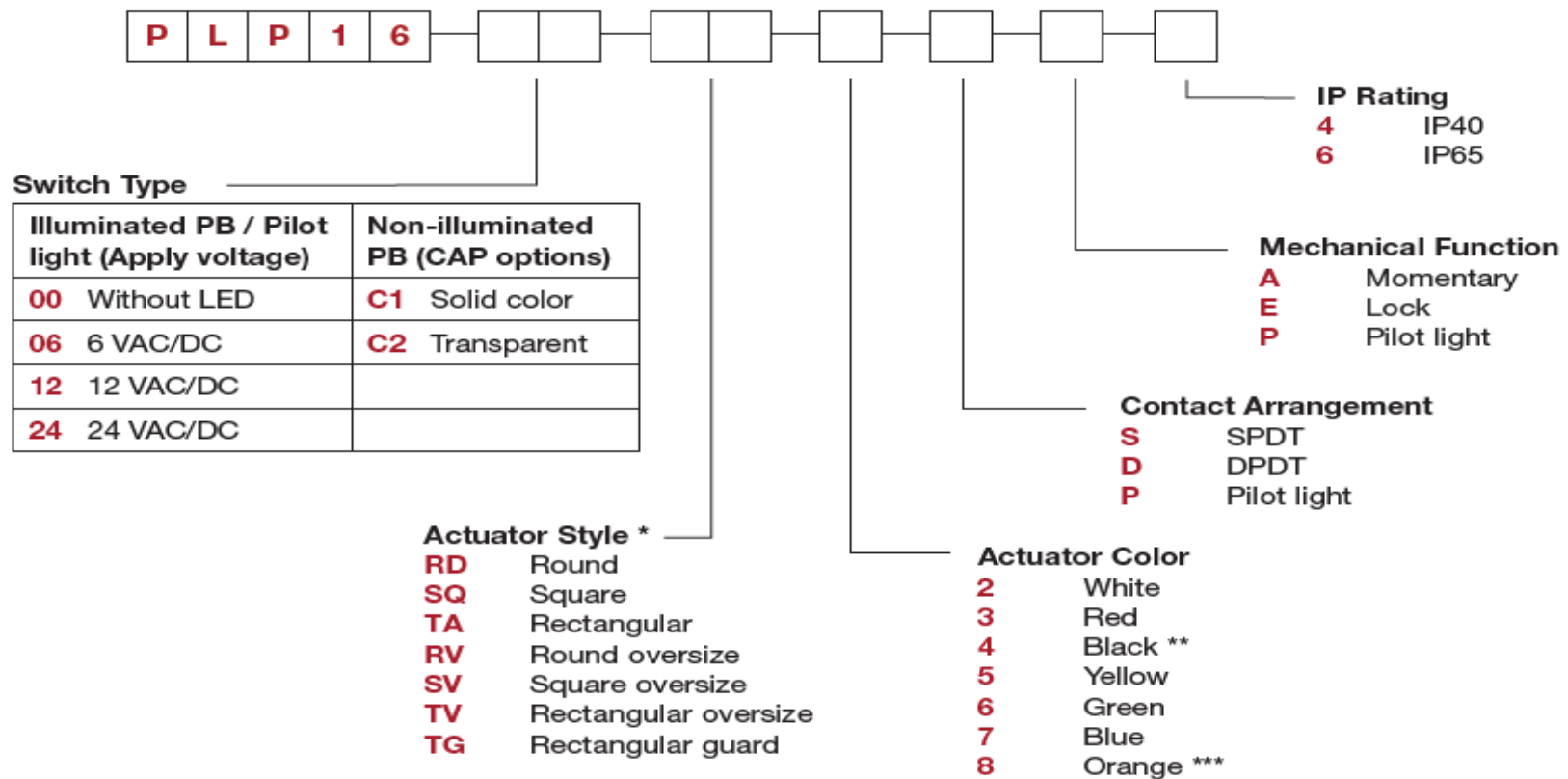


## PLP16 series – Specification Overview

	 <p><b>PLP16 series UL rated</b></p>
Circuit configurations	<b>SPDT / DPDT</b>
Rating	<b>3A / 250Vac or 1A / 30Vdc</b>
Electrical life (Mom / Lock)	<b>100,000 / 50,000 cycles</b>
Mechanical life (Mom / Lock)	<b>1,000,000 / 100,000 cycles</b>
Operating Temperature	<b>-25 to 55°C</b>
Operating force	<b>3.0 N max.</b>
Mechanical function	<b>Momentary / Lock</b>
LED illumination	<b>Multiple color or PB only</b>
CAP style / color	<b>Std or Oversize / Various (Transparent or solid)</b>

# PLP16 Build-A-Switch

## Understanding of product characteristic & functionality



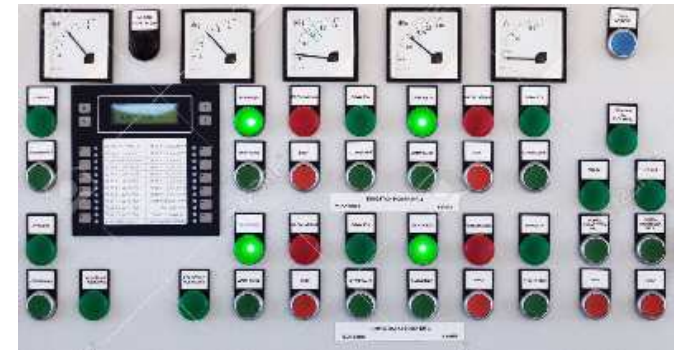
\* Pilot light & C2 CAP available on RD, SQ, or TA actuator style only

\*\* For C1 CAP only

\*\*\* Not available on C1 CAP

## Typical PLP16 series Applications

- Off-Road Transportation
  - Agriculture tractor joystick
  - Locomotive compartment
- Industrial electric control panel
  - Light indicators (Pilot Lights)
- Machinery & Equipment
  - Machinery control panel
  - Production line & assembly
- Utility & Energy
  - Wind and solar charging station
  - Power distribution panels



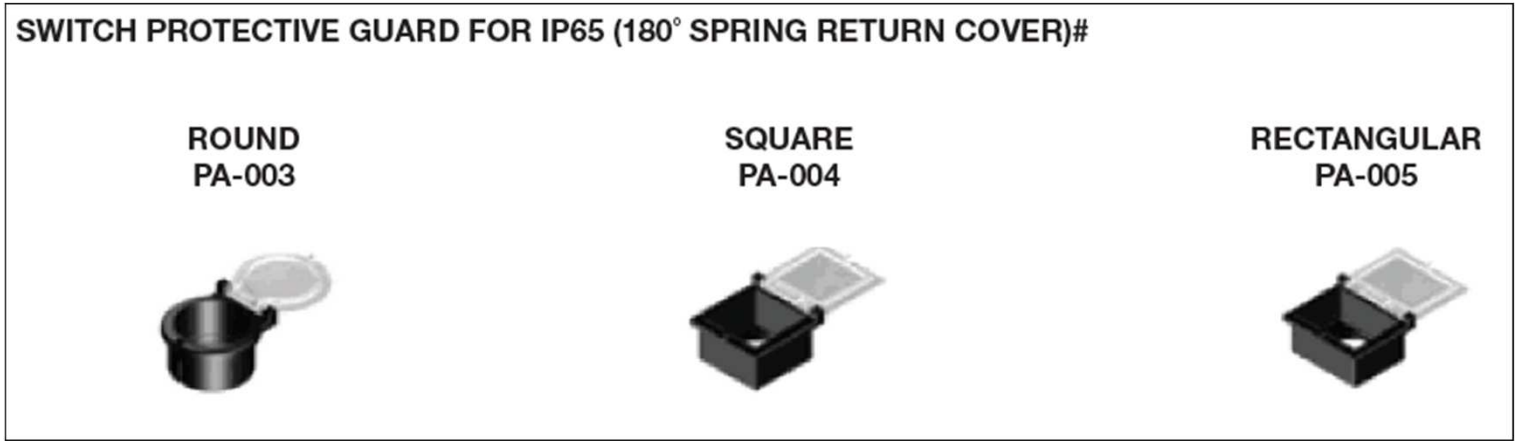
## PLP16 Series Positioning

- ❖ Special design of snap-actions contact which provide quick actuation, resist to shock and long life
- ❖ Providing SPDT or DPDT contacts in the one body size means customers can offer extra functionality without changing the physical size of the switch.
- ❖ IP40/IP65 rated protective guard with either manual or spring loaded for cover closing
- ❖ Replaceable LED lamp for on-the field repair and installation
- ❖ Anti-rotation ring prevents mis-alignment and twisting






# PLP16 Build-A-Switch

## Understanding of product characteristic & functionality



SWITCH PROTECTIVE GUARD FOR IP40 & IP65 #

Rated	Cover Opening	For Actuator Type	Ordering Code	Rated	Cover Opening	For Actuator Type	Ordering Code	
 IP40	90°	Round / Square	PA-006	 IP65	90°	Round / Square	PA-010	
		Rectangular	PA-007			Rectangular	PA-011	
	180°	Round / Square	PA-008			180°	Round / Square	PA-012
		Rectangular	PA-009				Rectangular	PA-013

# Refer to spec for panel cutout dimensions and mounting instruction



# Examples of Application Areas : Heavy Vehicle & Off Road Market



## Typical Applications

- Farm equipment
- Construction equipment
- Motorcycles
- Heavy trucks
- RV / camper
- ATV
- Snow mobile
- Pleasure boats
- Material handling
- Aerial lifts
- Cranes

## Typical Functions

- Joystick controllers
- Handle grip controls
- Remote control pendants
- GPS positioning
- Leveling controls
- Telematics
- Gages
- Instrument panels

C&K offers a wide portfolio of high performance switches for heavy duty applications such as construction and farm equipment, heavy trucks, marine and boating, and recreational vehicles

# Joystick Controllers: Farm Equipment



## Joystick Controller

Pushbutton and keyswitches are used on a variety of agriculture equipment joystick controllers for low/high transmission selection, leveling and GPS positioning controls, and programmable equipment specific function buttons

C&K offers a number of high performance pushbutton and key switch products for use on joystick controls found in farm equipment such as tractors, combines, and harvesters.

# Joystick Controllers: Construction Equipment



## Joystick Controller

Pushbutton and keyswitches are used on a variety of construction equipment joystick controllers for hydraulic power control, leveling and positioning, and programmable equipment specific functions



C&K offers a number of high performance pushbutton and key switch products for use on joystick controllers found in earth moving equipment such as excavators, graders, and bulldozers

## Joystick Controllers: Material Handling



### Joystick Controller

Pushbutton and key switches are used on moveable material handling equipment such as forklifts and stock pickers for horns, fork controls (extend/retract), and programmable application specific buttons



C&K offers a number of high performance push button and key switch products for material handling equipment such as reach forklifts and stock pickers

# Control & Instrument Panels: Farm & Construction Equipment



## Control Panels

Various pushbutton and key switches are used on control panels for agriculture equipment such as tractors and combines for throttle control, on-board computer menu navigation, and equipment specific functions.



C&K offers a number of high performance pushbutton, key switch, and tact switches for the control panels and on board computers used on farm equipment such as tractors and combines

## Control & Instrument Panels: Marine & Boating



### Control Panels

Watercraft such as motor boats use a variety of pushbutton, tact, rocker, and custom switch modules for ignition control, lights, horns, trim adjustment, pump control, menu navigation, and kill switches

C&K offers a wide portfolio of pushbutton, rocker, toggle, tact, and custom switch modules for use on the control and instrument panels found in marine and boating applications

## Control Panels: Cranes & Lifts

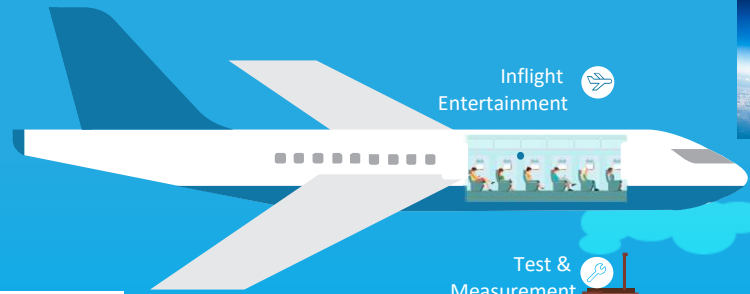


## Control Panels

A number of different switches such as toggle, pushbutton, tact, and key switches are used on the control panels for aerial lifts and overhead crane controls.

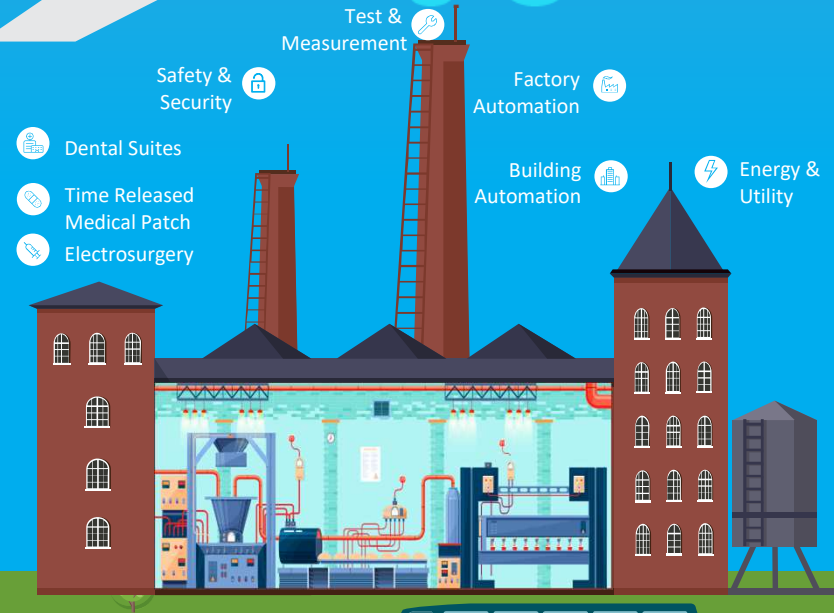
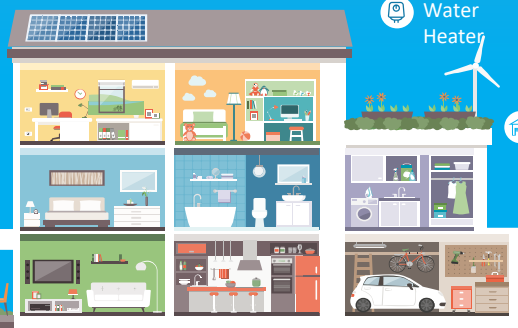
C&K offers a number of high performance key switch, tact, and toggle switches for us on aerial lifts and remote control of overhead cranes

# Every Touch, Every Where



Inflight Entertainment

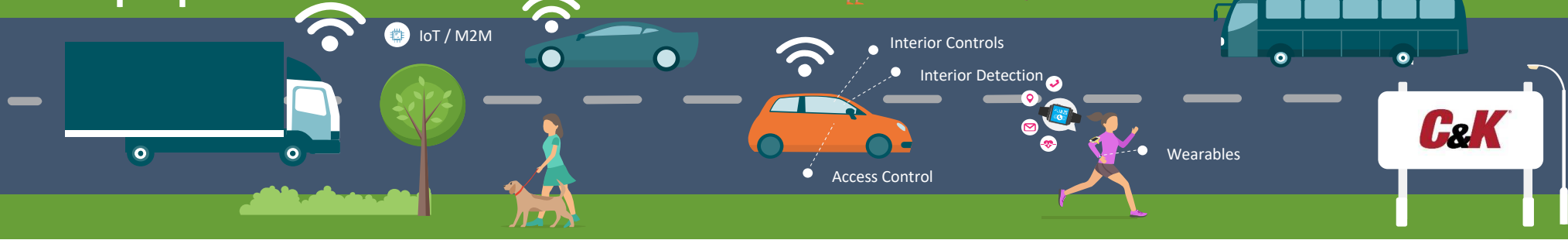
- Lighting Control System
- Appliance Control
- Smart Thermostat
- Smart Air Conditioner
- Energy Management
- White Goods
- Personal Care
- Water Heater
- Security System
- Smart Door Lock
- Garage Door Opener



- Test & Measurement
- Safety & Security
- Dental Suites
- Time Released Medical Patch
- Electrosurgery
- Factory Automation
- Building Automation
- Energy & Utility



Smart / LED Lighting



IoT / M2M

Interior Controls

Interior Detection

Access Control

Wearables

