CAM SWITCHES
You were made to build

Remember when you were a kid? How you used your dad’s tools to build a go-cart, a tree house, to install an intake in your first hot car? You started with LEGO® and now you build machines for a living. You’ve always built things. And building machines isn’t just a living to you, it’s what gets you up in the morning. Building things is what you’ve loved ever since the day you said to someone who cared for you, “I made this,” and heard him or her respond with, “Well done.”

We all know that when you make things for a living you’re wired a little differently than other folks. You notice stuff that others miss. You ask questions that don’t occur to other people. You ask questions about design and construction that other people don’t even consider important.

But you know it’s important. You build machines that people rely on. Often, the safety of others turns upon your attention to detail and what some may consider an obsession over “getting it right.”

You’re conscientious. You’re thorough. To those less conscientious and thorough you’re what’s politely known as a “details person.” But as someone once said, “The details are not the details. They make the product.” Some might say you’re a control freak.

But you know that’s not a bad thing.

You make promises. People depend on you. Every time you finish a build you put your reputation on the line. Why shouldn’t you have control?

c3controls understands. We’re control freaks too.
Cam Switches

c3controls offers a comprehensive line of Cam Switches, just one of our extensive product lines designed and manufactured to meet the needs of the machine builder. We promise durable products at a price that gives you an edge, and we guarantee same-day shipping. Check out the Series CS product line offering below!
NFPA 70 - National Electrical Code (NEC)

Our cam switches align with Article 430 of NFPA 70 Part VII, Motor Controller and Part VI, Motor Control Circuits, in the National Electrical Code.
Product Range

Cam switches can be configured with as many as 6 positions and up to 10 poles, able to meet nearly any control and load break switch application.

Switch Types

- On-Off (1 – 10 Poles)
- Changeover (1 – 6 Poles)
- Multi-Step (1 – 4 Poles)
- Ammeter
- Voltmeter
- Motor Reversing (2 & 3 Poles)

Current Ratings

Our Cam Switches are rated from 10A to 32A up to 690V AC.

Operators

Our spring returned operators are rated Type 1, 3, 3R, 12 and IP65 to withstand the most punishing environments. Our maintained operators share the same ratings with the addition of the 4/4X rating and come with your choice of lever, padlockable, and keylock handle styles. They’re also available in a variety of colors.

CONFORMITY TO STANDARDS

Cam Switches
UL 508
CSA C22.2 No. 14
IEC 60947-1, 60947-3, 60947-5-1

CERTIFICATIONS

UL File #: E187641 (Guide NLRV, NLRV7)
CE Marked (per EU Low Voltage Directive 2006/95/EC and RoHS Directive 2011/65/EU)

Visit www.c3controls.com to download certifications.
Key Features

Our cam switches open up options for panel design and optimal machine function.

Reduced Inventory

Pair a variety of operators with different switch types to customize the appearance of your switch and reduce your inventory.

Clear Markings

Markings on the front plate will never wear off.

Padlockable Switch

You can lock the operator in the OFF position with a padlock or key switch to prevent accidental or unauthorized operation.

Manual Motor Controller

Our cam switches are certified as Manual Motor Controllers per UL standards.

Easy Installation

The latching mechanism allows you to wire the switch before you attach it to the operator that’s already mounted in the control panel.
Fast Wiring

Combination head terminal screws with captive terminal clamps and clearly marked terminals speed up wiring.

Simple Customization

Choose our round operator without a front plate and pair it with standard or custom legend plates.

Multiple Switching Angles

Available in 45°, 60°, and 90° switching angles with up to 6 positions for a variety of applications.

Heavy-Duty

High-grade engineering plastics like nylon, celcon, and glass filled polyamide provide outstanding mechanical strength and electrical insulating properties.

Long Electrical Life

We design our cam for quick make—slow break operation with built-in latching. Two double-break positive drives open the circuit at two places, improving heat dissipation which extends the life of silver alloy contacts.
Convenient

Configure the cam switch you need and order it under a single part number.

Advanced Safety

Switches are available with IP20 guarded terminals to protect against accidental contact with live parts.

Easy Mounting

Operators and cam switches install in a standard, round, 22.5mm (7/8”) mounting hole, interchangeable with standard pilot devices and control switches.

Front Plates

Front plates come in two sizes: 32mm x 32mm and 48mm x 48mm and in four colors: yellow, grey, black and aluminum.

Extended Line

On a minimum order of 50 pieces, c3controls offers an extended line of custom cam switches that feature increased switch ampere ratings and switch programs, a broader range of installation options, and enclosed cam switches.
Specifications

### ELECTRICAL UL APPLICATIONS
- **Rated Operating Voltage, V**: 460, 600, 600, 600
- **Rated Operating Current, Ie**: 10, 15, 20, 30

### RATED 3 PHASE POWER, Pe
- @ 240V AC: HP 1, 2, 5, 5
- @ 480V AC: HP 2, 3, 10, 10
- @ 600V AC: HP —, 5, 15, 15

### RATED SINGLE PHASE POWER, Pe
- @ 120V AC: HP 1/3, 1/3, 1, 1
- @ 240V AC: HP 3/4, 1, 3, 3

### SHORT CIRCUIT RATINGS
- With Class J and CC Fuses: kA 1, 5, 5, 5
- Maximum Fuse Size: A 10, 25, 50, 50
- Electrical Endurance at Maximum Ie: 10,000, 10,000, 10,000, 10,000
- Maximum Operating Rate: 120, 120, 120, 120

### ELECTRICAL IEC APPLICATIONS
- **Rated Insulation Voltage, Ui**: 440, 690, 690, 690
- **Rated Isolation Voltage, Uiso**: 250, 415, 415, 415
- **Rated Impulse Voltage, Uimp**: kV 4, 6, 6, 6
- **Rated Operating Voltage, V**: 440, 690, 690, 690
- **Rated Uninterrupted Current, If**: A 12, 20, 32, 40

### RATED OPERATING CURRENT, Ie
- **AC-21A**: A 10, 16, 25, 32
- **DC-1 @ 48V DC**: A 10, 16, 25, 32
- **DC-13 @ 24V DC**: A 6, 16, 25, 32

### RATED 3 PHASE POWER, AC-23A, Pe
- @ 220 – 240V AC: kW 1.8, 3, 5.5, 7.5
- @ 380 – 440V AC: kW 3, 7.5, 11, 15
- @ 500 – 690V AC: kW —, 7.5, 11, 15

### RATED 3 PHASE POWER, AC-3A, Pe
- @ 220 – 240V AC: kW 1.5, 2.2, 4, 5.5
- @ 380 – 440V AC: kW 3, 5.5, 7.5, 11
- @ 500 – 690V AC: kW —, 5.5, 7.5, 11

### SHORT CIRCUIT RATINGS
- With Type g/M Fuses: kA 3, 5, 10, 10
- Maximum Fuse Size: A 10, 16, 25, 32

### MECHANICAL
- **Mechanical Endurance**: 100,000
- **Maximum Operating Rate**: 300

### ENVIRONMENTAL
- **Ambient Operating Temperature**: °C/F -25 to 85° / -13 to 131°
- **Altitude**: m/ft. 2,000/6,562
- **Ingress Protection**: Switch Type Code U IP10 Code G IP20
- **Operators**: —
- **Maintained**: Type 1, 3, 3R, 4/4X, 12, and IP65
- **Spring Return**: Type 1, 3, 3R, 12, and IP65

### CONSTRUCTION
- **Conductor Size**:
  - UL: AWG 18 – 16, 16 – 12, 16 – 12, 14 – 10
  - Solid/Multi-Strand: mm² 0.7 – 1.5, 1.5 – 4, 1.5 – 4, 2.5 – 6
  - Fine Strand with Sleeve: mm² 0.7 – 1.5, 1 – 2.5, 1 – 2.5, 1.5 – 4
  - Terminal Torque: Nm 0.5 – 0.8, 1 – 1.1, 1.1 – 1.4, 1.1 – 1.4
  - Lb-in. 5 – 7, 7 – 10, 10 – 12, 10 – 12

### ROHS COMPLIANCE
- For RoHS compliance documentation by product, refer to www.c3controls.com.

### Switch & Front Plate Installation Dimensions

#### Switch Current Rating Code

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<tr>
<th>Code</th>
<th>G10 / U10</th>
<th>G16 / U16</th>
<th>G29</th>
<th>G32</th>
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<tr>
<td>S22</td>
<td>9.5mm (3/8&quot;)</td>
<td>33mm (1-1/16&quot;)</td>
<td>32mm (1-1/4&quot;)</td>
<td>13mm (1/2&quot;)</td>
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<td>12mm (15/32&quot;)</td>
<td>46mm (1-13/64&quot;)</td>
<td>48mm (1-5/64&quot;)</td>
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<td>15mm (19/32&quot;)</td>
<td>50mm (1-31/32&quot;)</td>
<td>48mm (1-5/64&quot;)</td>
<td>15mm (1/16&quot;)</td>
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<td>50mm (1-31/32&quot;)</td>
<td>48mm (1-5/64&quot;)</td>
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#### Installation Code

<table>
<thead>
<tr>
<th>Code</th>
<th>H</th>
<th>A</th>
<th>F</th>
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<tr>
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<td>32mm (1-1/4&quot;)</td>
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<td>L22</td>
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<td>20.5mm (1-5/16&quot;)</td>
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<td>P22</td>
<td>7.5mm (3/8&quot;)</td>
<td>31.7mm (1-1/4&quot;)</td>
<td>48mm (1-1/4&quot;)</td>
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<td>34.2mm (1-3/8&quot;)</td>
<td>48mm (1-1/4&quot;)</td>
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<tr>
<td>N22</td>
<td>7.8mm (5/16&quot;)</td>
<td>25.6mm (1-1/8&quot;)</td>
<td>38.5mm (1-1/4&quot;)</td>
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Product Portfolio

Our dedication to the machine builder is engineered into every one of our products. It’s how we consistently manufacture the highest quality components. Check out c3controls’ complete product portfolio below!
The creativity of machine builders has markedly changed the fields of mining, harvesting, manufacturing, processing—even packaging and distribution—which in turn has transformed the common life of people worldwide by making available higher quality, less costly, safer goods.

But most people don’t fully appreciate how the quality of life has improved, let alone give thought to it—some things that people believed were strictly the stuff of science fiction only a decade ago are now considered commonplace. In a way, many of the things you create are hidden in plain sight from most of us.

In another decade we’ll be living in the midst of realities that don’t yet exist—realities that live only as ideas in the imaginations of people like you as you mull over how to better support the needs of your customers. And these ideas, too, are hiding in plain sight: scribbled on a paper napkin you stuffed in a coat pocket at a lunch counter, scrawled on a whiteboard in an office at the end of a hall, buried deep in a white paper waiting to be recognized as an innovation that might improve in some small way how your customers work—or revolutionize it.

We get what you’re about.
At c3controls we don’t just supply things.
We make things.