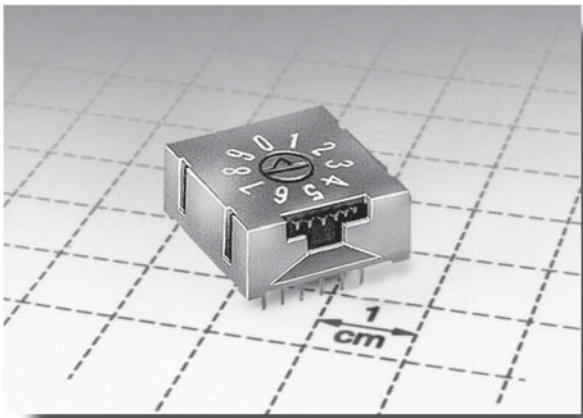


# C&K 3M Series

## Miniature Thumbwheel Switches



### Features/Benefits

- *PCB mounting style for electronic applications*
- *Process compatible boot available for solder washing*
- *Multiple wheel markings available to customize application*

### Typical Applications

- *Test & measurement equipment*
- *Instrumentation*
- *Computer peripherals*

### Build-A-Switch

Our easy Build-A-Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-29 and J-30. For additional options not shown in catalog, consult Customer Service Center.



Thumbwheel & Pushwheel

Typical Example:

Series

Function Code

11 (STD.) Decimal, SP, 10 position, CCW  
12 Decimal, SP, 10 position, CW  
21 BCD, SP, 10 position, CCW  
22 BCD, SP, 10 position, CW  
24 Complement of BCD, SP, 10 position, CW

Marking

0 (STD.) No wheel marking  
1 Vertical wheel marking, terminals left  
2 Vertical wheel marking, terminals right  
3 Upright wheel marking, terminals down  
4 Inverted wheel marking, terminals up

Seal

NONE (STD.) No seal  
F Splashproof silicone rubber seal

# C&K 3M Series Miniature Thumbwheel Switches

## Specifications

CONTACT RATING:  
 CARRY: 1 AMP continuous @ 28 V DC.  
 SWITCH: 0.4 VA max., 100 mA max., 28 V DC max.  
 ELECTRICAL LIFE: 100,000 actuations.  
 CONTACT RESISTANCE: Below 100 milliohms typ. @  
 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> ohms min. (dry).  
 DIELECTRIC STRENGTH: 250 V RMS min. @ sea level.  
 OPERATING TEMPERATURE: -10°C to 65°C.

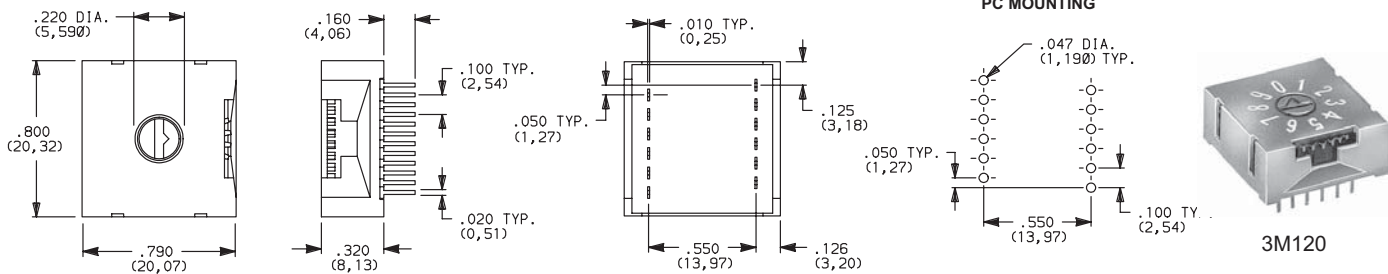
**NOTE:** Specifications and materials listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## Materials

HOUSING: Glass filled polyester (PBT), flame retardant  
 (UL 94V-0).  
 BASE: Glass filled nylon (UL 94V-0).  
 THUMBWHEEL: Glass filled polyester (PBT), flame retardant  
 (UL 94V-0).  
 ROTOR CONTACTS: Hard gold over nickel over copper on  
 epoxy fiberglass.  
 STATOR CONTACTS: Copper alloy, with gold over nickel.  
 TERMINALS: Solder clad over copper alloy. All terminals  
 insert molded. All terminals present regardless of function.  
 BASE SEAL: Epoxy.

## SERIES

### 3M MINIATURE THUMBWHEEL SWITCH

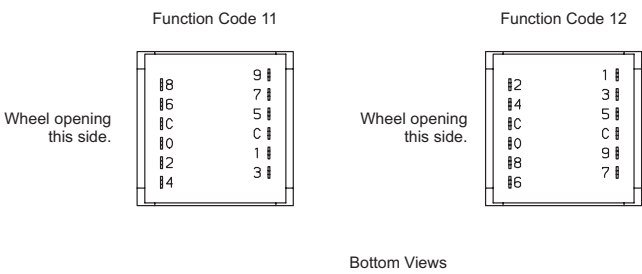


| PART NUMBER | NO. POSITIONS |
|-------------|---------------|
| 3M120       | 10            |

## FUNCTION CODE

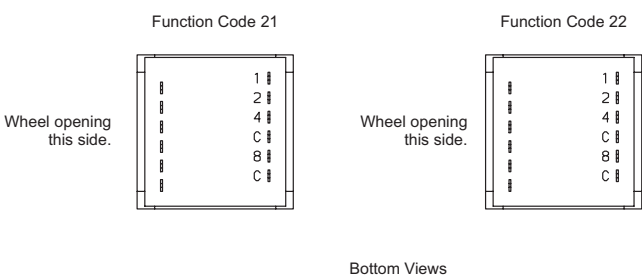
- 11 (STD.) DECIMAL, SP, 10 POSITION, CCW
- 12 DECIMAL, SP, 10 POSITION, CW

| WHEEL | COMMON (C) CONNECTED TO TERMINAL INDICATED |   |   |   |   |   |   |   |   |   |
|-------|--------------------------------------------|---|---|---|---|---|---|---|---|---|
|       | 0                                          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0     | ●                                          |   |   |   |   |   |   |   |   |   |
| 1     |                                            | ● |   |   |   |   |   |   |   |   |
| 2     |                                            |   | ● |   |   |   |   |   |   |   |
| 3     |                                            |   |   | ● |   |   |   |   |   |   |
| 4     |                                            |   |   |   | ● |   |   |   |   |   |
| 5     |                                            |   |   |   |   | ● |   |   |   |   |
| 6     |                                            |   |   |   |   |   | ● |   |   |   |
| 7     |                                            |   |   |   |   |   |   | ● |   |   |
| 8     |                                            |   |   |   |   |   |   |   | ● |   |
| 9     |                                            |   |   |   |   |   |   |   |   | ● |



- 21 BCD, SP, 10 POSITION, CCW
- 22 BCD, SP, 10 POSITION, CW

| WHEEL | COMM. (C) CONN TO TERM. IND. |   |   |   |
|-------|------------------------------|---|---|---|
|       | 1                            | 2 | 4 | 8 |
| 0     |                              |   |   |   |
| 1     | ●                            |   |   |   |
| 2     |                              | ● |   |   |
| 3     | ●                            |   | ● |   |
| 4     |                              |   |   | ● |
| 5     | ●                            |   | ● |   |
| 6     |                              | ● | ● |   |
| 7     | ●                            | ● | ● |   |
| 8     |                              |   |   | ● |
| 9     | ●                            |   |   | ● |

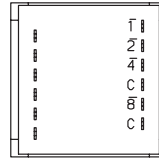


## Thumbwheel & Pushwheel

## 24 COMPLEMENT OF BCD, SP, 10 POSITION, CW

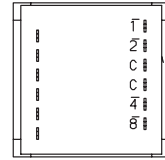
| WHEEL | COMM. (C) CONN. TO TERM. IND. |   |   |   |
|-------|-------------------------------|---|---|---|
|       | 1                             | 2 | 4 | 8 |
| 0     | ●                             | ● | ● | ● |
| 1     |                               | ● | ● | ● |
| 2     | ●                             |   |   | ● |
| 3     |                               |   | ● | ● |
| 4     | ●                             | ● |   | ● |
| 5     |                               | ● |   | ● |
| 6     | ●                             |   |   | ● |
| 7     |                               |   |   | ● |
| 8     | ●                             | ● | ● |   |
| 9     |                               | ● | ● |   |

Function Code 23



Wheel opening  
this side.

Function Code 24



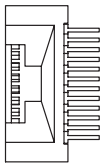
Wheel opening  
this side.

### Bottom Views

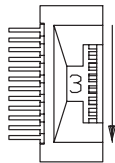
**0 (STD.) NO WHEEL MARKING**

### 1 VERTICAL WHEEL MARKING, TERMINALS LEFT

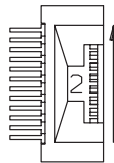
## 2 VERTICAL WHEEL MARKING, TERMINALS RIGHT



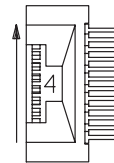
CCW



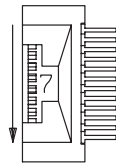
CW



CCW



CW

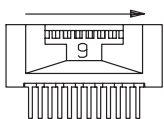


### 3 UPRIGHT WHEEL MARKING, TERMINALS DOWN

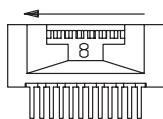
#### 4 INVERTED WHEEL MARKING, TERMINALS UP

TOP MARKINGS-ALL SWITCHES

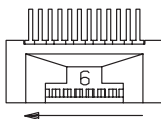
CCW



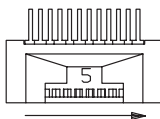
CW



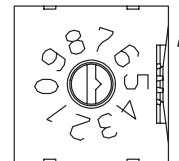
CCW



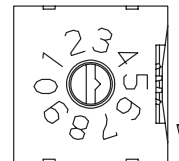
CW



CCW



CW



**NONE** (STD.) NO SEAL

**F** SPLASHPROOF SILICONE RUBBER SEAL AND EPOXY BASE SEAL.



**NOTE:** Silicone rubber seal peels off easily after installation. Epoxy base seal standard.