

# 3 Series Thumbwheel Switches

## Features/Benefits

- Most complete product offering in the industry
- Spacers available to fit most panel cutouts
- Front or rear mounting options

## Typical Applications

- Test & measurement equipment
- Industrial equipment
- Computer devices



## Specifications

### CONTACT RATING:

CARRY: 1 AMP continuous.  
SWITCH: 100 mA max.

OPERATING VOLTAGE: 50 mV to 28 V DC or 120 V AC.

ELECTRICAL LIFE: 100,000 actuations.

CONTACT RESISTANCE: Below 100 m  $\Omega$  typ. initial @  
2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup>  $\Omega$  min.

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level  
between common terminal and any output.

OPERATING TEMPERATURE: -40°C to 65°C.

## Materials

HOUSING: ABS plastic.

THUMBWHEEL: ABS plastic.

ROTOR CONTACTS: Precious metal on copper alloy.

STATOR CONTACTS: Hard gold over nickel over copper  
on epoxy fiberglass.

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

\* Note: All models listed are RoHS compliant. See Technical Data section of this catalog for  
RoHS compliant and compatible definitions and specifications.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages M-4 thru M-10. For additional options not shown in catalog, consult Customer Service Center.

Consult factory for illumination availability.

| Series              | Number of Sections                                                                                                                                                                                                                       | Function Code                                                                                                                                                                      | Mounting Style                                                                         | Terminations                                                                                                                           | Color/Marking/Stops                                  | Seal                                                                           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------|
| 3 Thumbwheel switch | 0 Switch section<br>1 1 Switch section<br>2 2 Switch sections<br>3 3 Switch sections<br>4 4 Switch sections<br>5 5 Switch sections<br>6 6 Switch sections<br>7 7 Switch sections<br>8 8 Switch sections<br>9 More than 8 switch sections | 11 Decimal, SP, 10 position<br>14 Resistor decade<br>21 BCD, 10 position<br>23 Complement of BCD, 10 position<br>27 BCD, 10 position<br>31 BCD, 10 position<br>71 BCH, 16 position | 00 Snap-in, front mount<br>09 Snap-in, front mount*<br>10 Rear mount<br>19 Rear mount* | 0 Type 0<br>1 Type 1, extended type 0<br>N Solder pins with .100" spacing**<br>P Solder pins with .156" spacing**<br>9 Any combination | 0 Matte black body, gloss black wheel, white marking | 0 No seal<br>1 Sealed contacts<br>2 Dust lens<br>3 Sealed contacts & dust lens |

\*X9 mounting styles must be ordered with '0' number of sections.

\*\* Note: Termination option N (RoHS compliant) replaced termination option 3 (Non-RoHS compliant).  
Termination option P (RoHS compliant) replaced termination option B (Non-RoHS compliant).

Thumbwheel

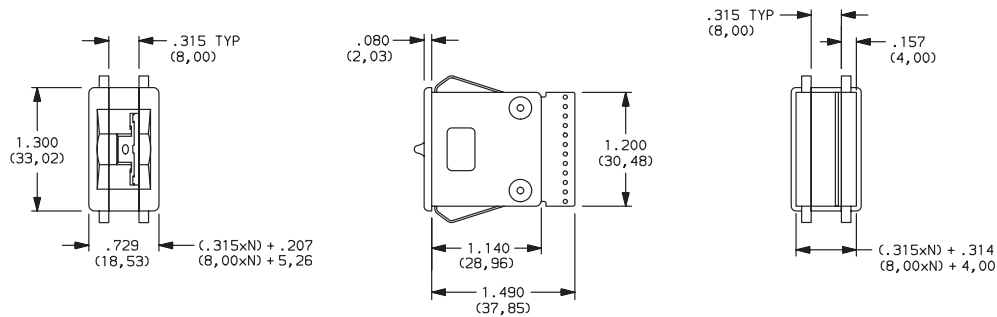


M

# 3 Series Thumbwheel Switches

SERIES

## 3 THUMBWHEEL SWITCHES



NUMBER OF SECTIONS

- 0** Switch section only, no assembly. Blank bodies are considered sections; endplates are not sections. Must be ordered with 09 or 19 mounting style options, see pages M-5 and M-6.
- 1-8** Number of switch sections in assembly, includes endplates.
- 9** More than 8 switch sections, specify on CONFIGURATION FORM, page M-10 and consult Customer Service Center.

**NOTE:** Endplates and blank sections available separately, see pages M-13 and M-14.

FUNCTION CODE

**11** DECIMAL-1 POLE; 10 POSITION

**14** RESISTOR DECADE; 1-2-2-2-2 CODE  
(RESISTORS NOT SUPPLIED)

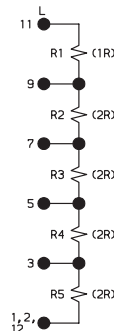
**21** BCD 1-2-4-8; 10 POSITION

| WHEEL | SIGNALS CONNECTED TO COMMON SIGNAL C |   |   |   |   |   |   |   |    |    | C  |
|-------|--------------------------------------|---|---|---|---|---|---|---|----|----|----|
| 0     | ●                                    |   |   |   |   |   |   |   |    |    | ●  |
| 1     |                                      | ● |   |   |   |   |   |   |    |    | ●  |
| 2     |                                      |   | ● |   |   |   |   |   |    |    | ●  |
| 3     |                                      |   |   | ● |   |   |   |   |    |    | ●  |
| 4     |                                      |   |   |   | ● |   |   |   |    |    | ●  |
| 5     |                                      |   |   |   |   | ● |   |   |    |    | ●  |
| 6     |                                      |   |   |   |   |   | ● |   |    |    | ●  |
| 7     |                                      |   |   |   |   |   |   | ● |    |    | ●  |
| 8     |                                      |   |   |   |   |   |   |   | ●  |    | ●  |
| 9     |                                      |   |   |   |   |   |   |   |    | ●  | ●  |
|       | 2                                    | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|       | TERM. LOCATION                       |   |   |   |   |   |   |   |    |    |    |

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

| WHEEL | SWITCH CIRCUIT |   |   |   |   |     |   |   |   |   |    |
|-------|----------------|---|---|---|---|-----|---|---|---|---|----|
| 0     | ●              |   |   |   |   |     |   |   |   |   | ●  |
| 1     | ●              | ● |   |   |   |     |   |   |   |   | ●  |
| 2     | ●              | ● | ● |   |   |     |   |   |   |   | ●  |
| 3     | ●              | ● | ● | ● |   |     |   |   |   |   | ●  |
| 4     | ●              | ● | ● | ● | ● |     |   |   |   |   | ●  |
| 5     | ●              | ● | ● | ● | ● | ●   |   |   |   |   | ●  |
| 6     | ●              | ● | ● | ● | ● | ●   | ● |   |   |   | ●  |
| 7     | ●              | ● | ● | ● | ● | ●   | ● | ● |   |   | ●  |
| 8     | ●              | ● | ● | ● | ● | ●   | ● | ● | ● |   | ●  |
| 9     | ●              | ● | ● | ● | ● | ●   | ● | ● | ● | ● | ●  |
|       | 11             | 9 | 7 | 5 | 3 | 1,2 |   |   |   |   | 12 |
|       | TERM. LOCATION |   |   |   |   |     |   |   |   |   |    |

Available Terminations: 1  
See fig. 1, page M-7.



| WHEEL | SIGNALS CONN. TO COMM. SIG. C |   |   |    |   |   |   |   |  |  | C |
|-------|-------------------------------|---|---|----|---|---|---|---|--|--|---|
| 0     |                               |   |   |    |   |   |   |   |  |  | ● |
| 1     | ●                             |   |   |    |   |   |   |   |  |  | ● |
| 2     |                               | ● |   |    |   |   |   |   |  |  | ● |
| 3     | ●                             | ● |   |    |   |   |   |   |  |  | ● |
| 4     |                               |   | ● |    |   |   |   |   |  |  | ● |
| 5     | ●                             |   |   | ●  |   |   |   |   |  |  | ● |
| 6     |                               | ● |   |    | ● |   |   |   |  |  | ● |
| 7     | ●                             |   |   |    |   | ● |   |   |  |  | ● |
| 8     |                               |   |   |    |   |   | ● |   |  |  | ● |
| 9     | ●                             |   |   |    |   |   |   | ● |  |  | ● |
|       | 3                             | 5 | 7 | 11 | 9 |   |   |   |  |  |   |
|       | TERM. LOCATION                |   |   |    |   |   |   |   |  |  |   |

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

**NOTE:** For terminal location diagram, see page M-7.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ckswitches.com





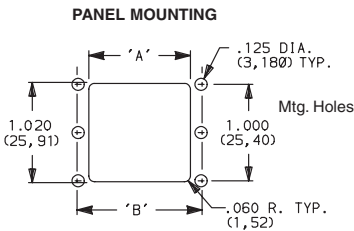
# 3 Series Thumbwheel Switches

## MOUNTING STYLE

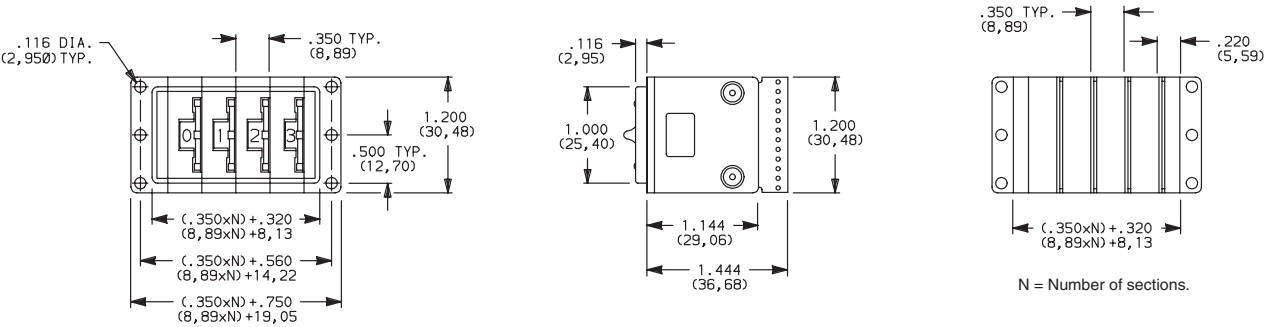
### Type 1 Rear Mount

| MOUNTING STYLE | DIM. 'A'                                 | DIM. 'B'                                  |
|----------------|------------------------------------------|-------------------------------------------|
| 10             | (.350 x N) + .340<br>(8,89 x N) + (8,64) | (.350 x N) + .560<br>(8,89 x N) + (14,22) |

N = Number of sections.  
Recommended panel thickness:  
0.46-.125  
(1,16-3,18)



### 10 SWITCH ASSEMBLY W/ ENDPLATES--.350 (8,89) SECTION PITCH



### 19 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page M-4.)

**NOTE:** Endplates, blank sections, spacers and assembly hardware available separately, see pages M-8 and M-9.

Thumbwheel



M



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

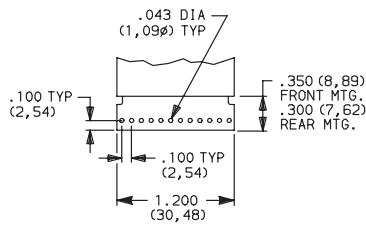


6 Mar 20

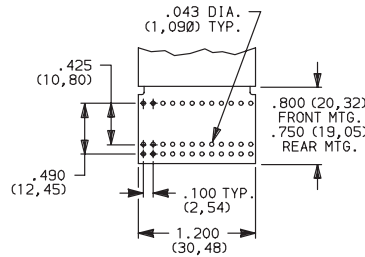
## TERMINATIONS



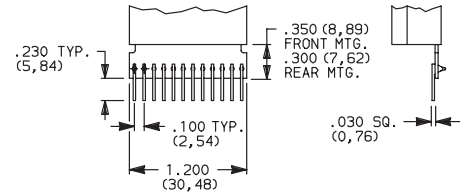
### 0 TYPE 0



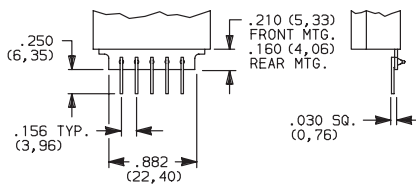
### 1 TYPE 1, EXTENDED TYPE 0



### N SOLDER PINS WITH .100" SPACING



### P SOLDER PINS WITH .156" SPACING



PC Board 1/32" (0,79) thick.

### 9 ANY COMBINATION OF TERMINATION CONFIGURATIONS OR SPECIAL TERMINATIONS.

Specify on configuration form, page M-10 and consult Customer Service Center.

**NOTE:** All terminal holes shown may not be present for all function codes, consult Customer Service Center.  
Terminal connector available for termination options 0 & 1, see page M-9.

**NOTE:** Termination option N (RoHS compliant) replaced termination option 3 (Non-RoHS compliant).  
Termination option P (RoHS compliant) replaced termination option B (Non-RoHS compliant).

## Terminal Location Numbers

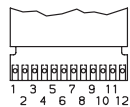


FIG. 1

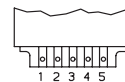


FIG. 2

**NOTE:** See function codes, pages M-4 and M-5, for signal locations.

## COLOR/MARKING/STOPS



### 0 MATTE BLACK HOUSING (Gloss black wheel with white characters; no stops.)

**NOTE:** Stop pins are available separately, see page M-8.

## SEAL

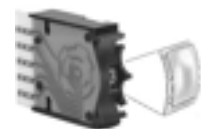


### 0 UNSEALED SWITCHING CONTACTS.

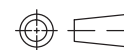
**1 SEALED SWITCHING CONTACTS.** (Sealing is by means of an o-ring rotary seal and a cured-in-place elastomer gasket. Switching contact area is protected from moisture, oil, and airborne contaminants.)

**2 DUST LENS.** (Protects the character face of the wheel from abrasion and dirt.)

**3 SEALED SWITCHING CONTACTS AND DUST LENS**



Dust Lens



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 3 Series Thumbwheel Switches

## AVAILABLE HARDWARE

Blank sections, Type 0,  
.315 THK.



PART NO.

**413602000** W/RIB-BLACK

**400502000** W/RIB & W/OUT SPRINGS-BLACK

Blank sections, Front mount, Type 0,  
.315 THK.



PART NO.

**413502000** PLAIN-BLACK

**400702000** PLAIN & W/OUT SPRINGS-BLACK

Blank sections, Rear mount, Type 1,  
.350 THK.



4006



4008

PART NO.

**400602000** W/RIB-BLACK

**400802000** PLAIN-BLACK

Blank sections, Rear mount, Type 2,  
.350 THK.



4734



4733

PART NO.

**473402000** W/RIB-BLACK

**473302000** PLAIN-BLACK

End plates, Front mount, Type 0



PART NO.

**413402000** BLACK

Two required for  
complete assembly.

End plates, Rear mount, Type 1



PART NO.

**400402003** BLACK

Two required for  
complete assembly.

End plates, Rear mount, Type 2



PART NO.

**473202003** BLACK

Two required for  
complete assembly.

Spacers, Front mount, Type 0 & 3, .078 THK.  
(Makes section pitch 10mm)



PART NO.

**410802000** BLACK

Stop pins



PART NO.

**402900000**

Thumbwheel



M

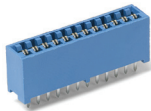


6 Mar 20

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

AVAILABLE HARDWARE

Terminal connector



605A00000



605A02000

PART NO.

605A00000 PC

605A02000 SOLDER LUG

Fits 0 & 1 terminations only.

Screws for field assembly of thumbwheel switches  
(2 screws needed per assembly + 403500000 nuts)

| SCREW PART NUMBER<br>(0-80 UNF THD. SIZE) | NUMBER OF SECTIONS IN ASSEMBLY |                 |
|-------------------------------------------|--------------------------------|-----------------|
|                                           | FRONT MOUNTING                 | REAR MOUNTING   |
|                                           | MTG. STYLE - 00                | MTG. STYLE - 10 |
| 412700000                                 | 1-2                            | 1-2             |
| 412701000                                 | 3-4                            | 3               |
| 412702000                                 | 5-7                            | 4-6             |

Nut



Two nuts required per assembly and screws.

PART NO.

403500000

Nut driver (For 403500000 nut)



PART NO.

406100652



# 3 Series Thumbwheel Switches

## Configuration Form

GRAY SHADED AREAS TO BE FILLED IN BY CUSTOMER SERVICE.

CATALOG PART NO.

**3**

C&K PART NUMBER

C&K PART NUMBER

COMPANY NAME

ADDRESS

TEL.#

CUSTOMER CONTACT

DATE

ORIGINATED BY

SALES REP.

CUSTOMER  
PRINT  
REVISION:

DETAILS:

| THUMBWHEEL<br>SECTIONS                                                              | NO.<br>OF<br>SEC. | FUNCTION CODE – TERMINATIONS –<br>COLOR/MARKING/STOPS/SEAL –<br>ILLUMINATION<br><small>ENTER OPTION CODES IN APPROPRIATE BOXES. FUNCTION<br/>CODES INCLUDE BLANK SECTIONS (SEE PAGES M-9 &amp; M-10).</small> | DESCRIBE IN APPROPRIATE ROW |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|    | <b>1</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|    | <b>2</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|    | <b>3</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|   | <b>4</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>5</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>6</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>7</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>8</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>9</b>          | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>10</b>         | 3 - - - - -                                                                                                                                                                                                   |                             |
|  | <b>11</b>         | 3 - - - - -                                                                                                                                                                                                   |                             |

QUALITY CONTROL INSTRUCTIONS

PRODUCTION APPROVAL

DATE

Q.C. APPROVAL

DATE

REV.

INITIALS

DATE

FOR SWITCHES WITH MORE THAN 11 SECTIONS, CONTINUE ON ADDITIONAL SHEETS.

SPECIAL INSTRUCTIONS OR SPECIFICATIONS:

SHEET \_\_\_\_ OF \_\_\_\_



6 Mar 20

M-10

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ckswitches.com

Thumbwheel



M