

# C&K 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: -10°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 N-9 thru N-12. For additional options not shown in catalog, consult Customer Service Center.

Consult factory for illumination availability.

Thumbwheel & Pushwheel

### Series

**3** Thumbwheel switch

### Number of Sections

- 0** Switch section
- 1** 1 Switch section
- 2** 2 Switch sections
- 3** 3 Switch sections
- 4** 4 Switch sections
- 5** 5 Switch sections
- 6** 6 Switch sections
- 7** 7 Switch sections
- 8** 8 Switch sections
- 9** More than 8 switch sections

### Function Code

- 11** Decimal, SP, 10 position
- 14** Resistor decade
- 21** BCD, 10 position
- 23** Complement of BCD, 10 position
- 27** BCD, 10 position
- 31** BCD, 10 position
- 71** BCH, 16 position

### Mounting Style

- 00** Snap-in, front mount
- 09** Snap-in, front mount\*
- 10** Rear mount
- 19** Rear mount\*
- 20** Rear mount
- 29** Rear mount\*

### Terminations

- 0** Type 0
- 1** Type 1, extended type 0
- N** Solder pins with .100" spacing\*\*
- P** Solder pins with .156" spacing\*\*
- 9** Any combination

### Color/Marking/Stops

- 0** Matte black body, gloss black wheel, white marking

### Seal

- 0** No seal
- 1** Sealed contacts
- 2** Dust lens
- 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).



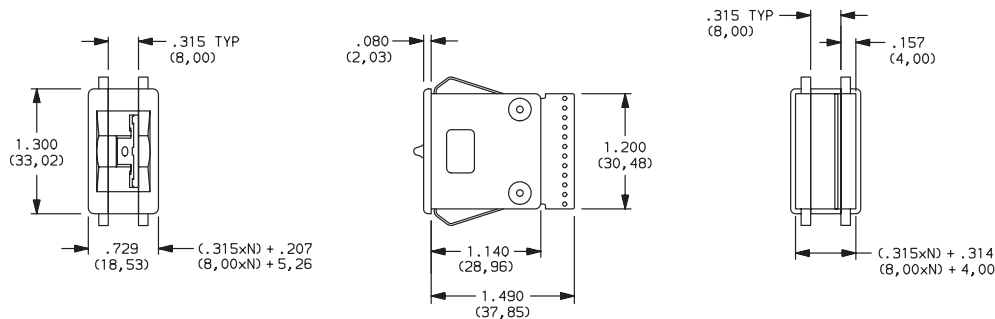
N



# C&K 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 N-10 and N-11.
- 1-8 Number of switch sections in assembly, includes endplates.
- 9 More than 8 switch sections, specify on CONFIGURATION FORM, page N-15 and consult Customer Service Center.

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

## FUNCTION CODE

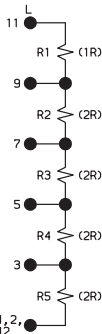
- 11 DECIMAL-1 POLE; 10 POSITION
- 14 RESISTOR DECADE; 1-2-2-2-2 CODE (RESISTORS NOT SUPPLIED)
- 21 BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONNECTED TO COMMON SIGNAL C										
	0	1	2	3	4	5	6	7	8	9	C
0	●										●
1		●									●
2			●								●
3				●							●
4					●						●
5						●					●
6							●				●
7								●			●
8									●		●
9										●	●
TERM. LOCATION											
	2	3	4	5	6	7	8	9	10	11	12

Available Terminations: 0, 1, N  
See fig. 1, page N-12.

W H E E L	SWITCH CIRCUIT										
	0	1	2	3	4	5	6	7	8	9	C
0	●										●
1	●	●									●
2	●	●	●								●
3	●	●	●	●							●
4	●	●	●	●	●						●
5	●	●	●	●	●	●					●
6	●	●	●	●	●	●	●				●
7	●	●	●	●	●	●	●	●			●
8	●	●	●	●	●	●	●	●	●		●
9	●	●	●	●	●	●	●	●	●	●	●
TERM. LOCATION											
	11	9	7	5	3	1,2	12				

Available Terminations: 1  
See fig. 1, page N-12.



W H E E L	SIGNALS CONN. TO COMM. SIG. C										
	1	2	4	8	C						
0					●						
1	●				●						
2		●			●						
3	●	●			●						
4			●		●						
5	●			●	●						
6		●			●						
7	●	●			●						
8			●		●						
9	●			●	●						
TERM. LOCATION											
	3	5	7	11	9						

Available Terminations: 0, 1, N  
See fig. 1, page N-12.

NOTE: For terminal location diagram, see page N-12.



# C&K 3 Series Thumbwheel Switches

## FUNCTION CODE

**23** COMPLEMENT OF BCD 1-2-4-8;  
10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C	1	2	4	8	C
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						
		3	9	11	5	7
		TERM. LOCATION				

Available Terminations: 0, 1, N  
See fig. 1, page N-12.

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

W H E E L	SIGNALS CONN. TO COMM. SIG. C	1	2	4	8	C
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						
		4	5	1	2	3
		TERM. LOCATION				

Available Terminations: P  
See fig. 2, page N-12.

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

W H E E L	SIGNALS CONN. TO COMM. SIG. C	1	2	4	8	C
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						
		2	3	11	9	8
		TERM. LOCATION				

Available Terminations: 0, 1, N  
See fig. 1, page N-12.

**71** BINARY CODED HEXADECIMAL,  
16 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C	1	2	4	8	C
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						
A						
B						
C						
D						
E						
F						
		3	5	7	11	9
		TERM. LOCATION				

Available Terminations: 0, 1, N  
See fig. 1, page N-12.

**NOTE:** For terminal location diagram, see page N-12.

## MOUNTING STYLE

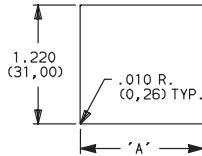
### Type 0 Snap-In Front Mount

MOUNTING STYLE	DIM. 'A'
00	$(.315 \times N) + .326$ $(8.00 \times N) + (8.28)$

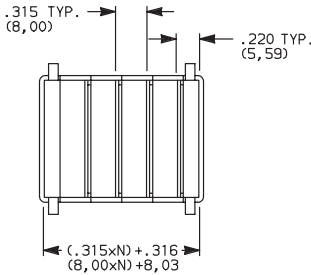
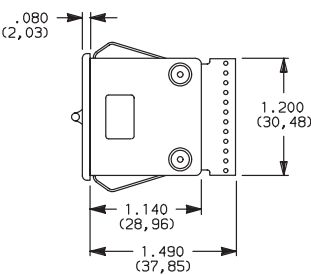
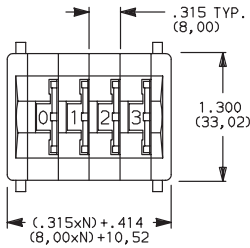
N = Number of sections.

Recommended panel thickness:  
0.46-.125  
(1.16-3.18)

#### PANEL MOUNTING



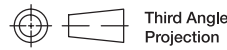
**00** SWITCH ASSEMBLY W/ ENDPLATES-.315 (8.00) SECTION PITCH



N = Number of sections.

**09** SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS  
(Must be ordered with number of sections option "0", see Page N-9.)

**NOTE:** Endplates, blank sections, spacers  
and assembly hardware available separately, see pages N-13 and N-14.



Third Angle  
Projection

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

# C&K 3 Series Thumbwheel Switches

## MOUNTING STYLE

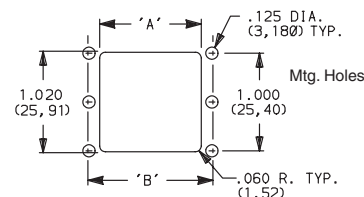
### Type 1 Rear Mount

MOUNTING STYLE	DIM. 'A'	DIM. 'B'
10	$(.350 \times N) + .340$ (8,89 x N) + (8,64)	$(.350 \times N) + .560$ (8,89 x N) + (14,22)

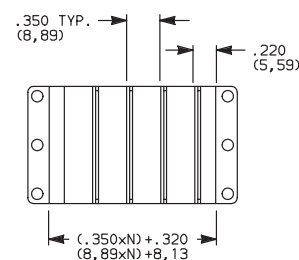
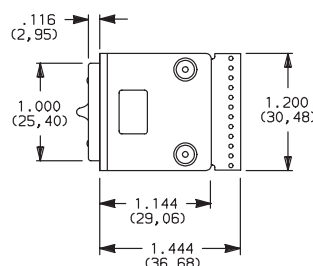
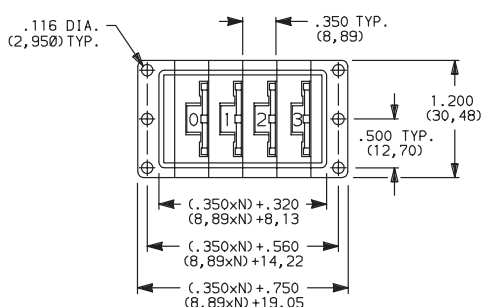
N = Number of sections.

Recommended panel thickness:  
0.46-.125  
(1,16-3,18)

### PANEL MOUNTING



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

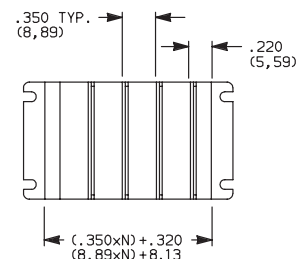
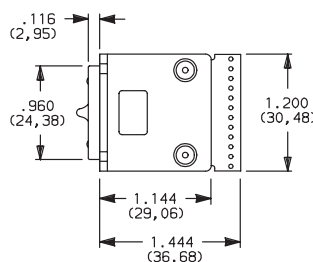
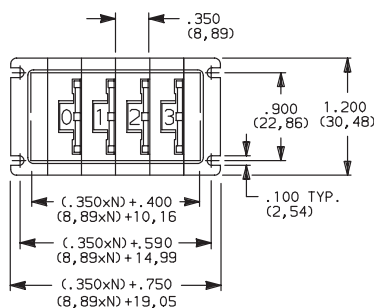


N = Number of sections.

### 19 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page N-9.)

### Type 2 Rear Mount

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



N = Number of sections.

### 29 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page N-9.)

Thumbwheel & Pushwheel



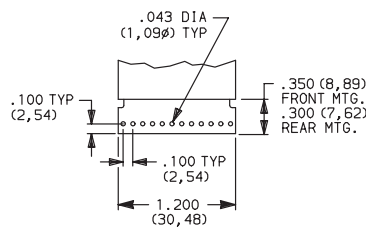
N

**NOTE:** Endplates, blank sections, spacers and assembly hardware available separately, see pages N-13 and N-14.

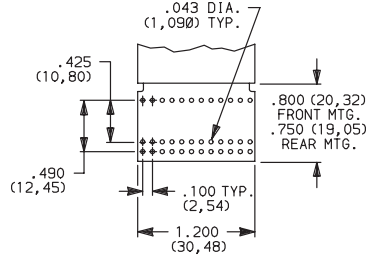
# C&K 3 Series Thumbwheel Switches

## TERMINATIONS

### 0 TYPE 0

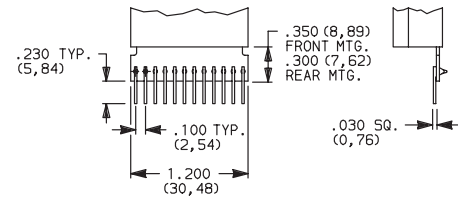


### 1 TYPE 1, EXTENDED TYPE 0



Signal traces cut except for common(s).

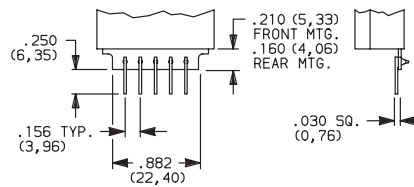
### N SOLDER PINS WITH .100" SPACING



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

Specify on configuration form, page N-15 and consult Customer Service Center.

### P SOLDER PINS WITH .156" SPACING



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

**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 N-14.

**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

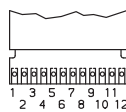


FIG. 1

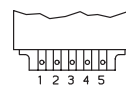
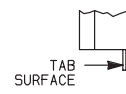


FIG. 2



**NOTE:** See function codes, pages N-9 and N-10, 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 N-14.

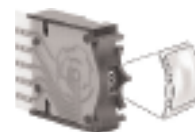
## SEAL

### 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

# C&K 3 Series Thumbwheel Switches

AVAILABLE HARDWARE		
<p>Blank sections, Type 0, .315 THK.</p>  <p>PART NO. 413602000 W/RIB-BLACK 400502000 W/RIB &amp; W/OUT SPRINGS-BLACK</p>	<p>Blank sections, Front mount, Type 0, .315 THK.</p>  <p>PART NO. 413502000 PLAIN-BLACK 400702000 PLAIN &amp; W/OUT SPRINGS-BLACK</p>	<p>Blank sections, Rear mount, Type 1, .350 THK.</p>  <p>4006 4008</p> <p>PART NO. 400602000 W/RIB-BLACK 400802000 PLAIN-BLACK</p>
<p>Blank sections, Rear mount, Type 2, .350 THK.</p>  <p>4734 4733</p> <p>PART NO. 473402000 W/RIB-BLACK 473302000 PLAIN-BLACK</p>	<p>End plates, Front mount, Type 0</p>  <p>PART NO. 413402000 BLACK</p> <p>Two required for complete assembly.</p>	<p>End plates, Rear mount, Type 1</p>  <p>PART NO. 400402000 BLACK</p> <p>Two required for complete assembly.</p>
<p>End plates, Rear mount, Type 2</p>  <p>PART NO. 473202000 BLACK</p> <p>Two required for complete assembly.</p>	<p>Spacers, Front mount, Type 0 &amp; 3, .078 THK. (Makes section pitch 10mm)</p>  <p>PART NO. 410802000 BLACK</p>	<p>Stop pins</p>  <p>PART NO. 402900000</p>

Thumbwheel & Pushwheel

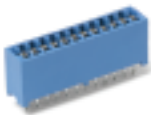




# C&K 3 Series Thumbwheel Switches

## 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 (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

# C&K 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

CUSTOMER

PRINT

REVISION:

ADDRESS

TEL.#

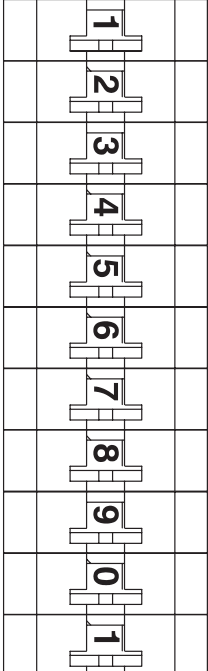
CUSTOMER CONTACT

DATE

DETAILS:

ORIGINATED BY

SALES REP.

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

