

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 Ω typ. initial @ 2-4 V DC, 100 mA.
INSULATION RESISTANCE: $10^9 \Omega$ 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 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).

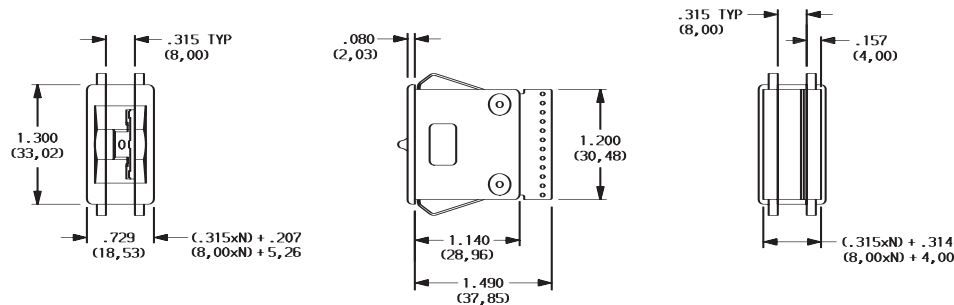


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

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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

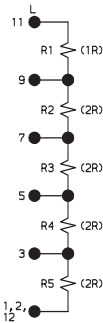
- 11** DECIMAL-1 POLE; 10 POSITION
- 14** RESISTOR DECADE; 1-2-2-2-2 CODE (RESISTORS NOT SUPPLIED)
- 21** BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONNECTED TO COMMON SIGNAL C										C
	0	1	2	3	4	5	6	7	8	9	
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										C
	0	1	2	3	4	5	6	7	8	9	
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										C
	1	2	4	8							
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.



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

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3 Series Thumbwheel Switches

FUNCTION CODE

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

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

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

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

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

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

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

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

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

71 BINARY CODED HEXADECIMAL,
16 POSITION

W T H M T	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						
TERM. LOCATION						

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

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

MOUNTING STYLE

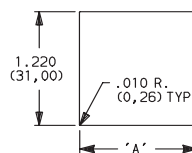
Type 0 Snap-In Front Mount

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

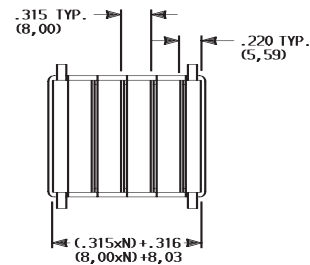
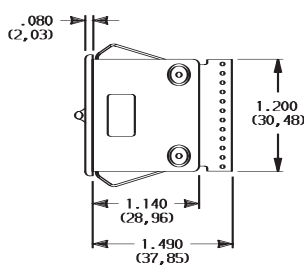
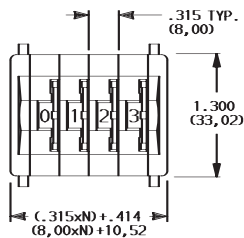
N = Number of sections.

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

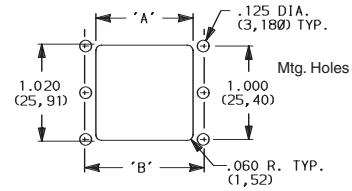
Type 1 Rear Mount

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

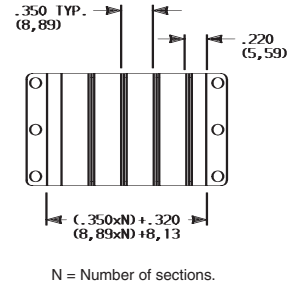
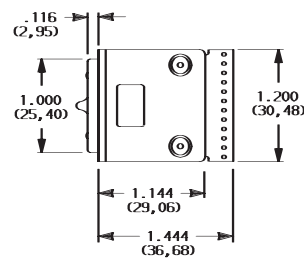
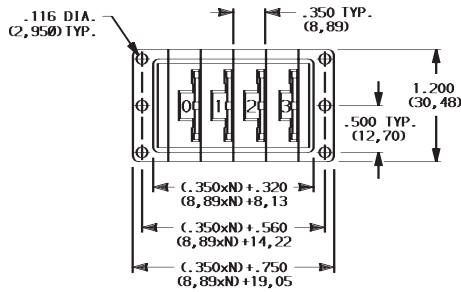
N = Number of sections.

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

PANEL MOUNTING



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

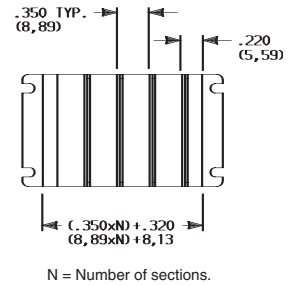
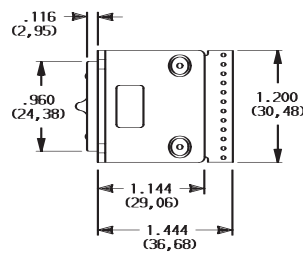
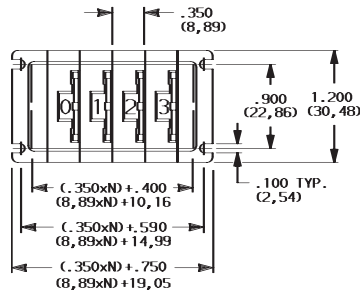


N = Number of sections.

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.)

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



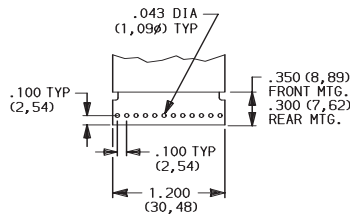
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



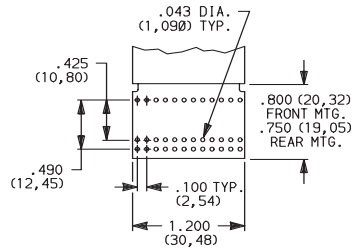
3 Series Thumbwheel Switches

TERMINATIONS

0 TYPE 0

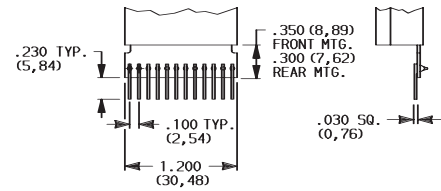


1 TYPE 1, EXTENDED TYPE 0



Signal traces cut except for common(s).

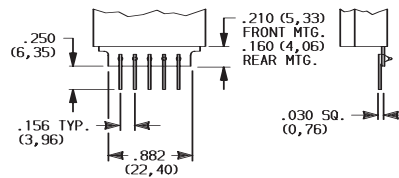
N SOLDER PINS WITH .100" SPACING



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

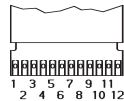


FIG. 1

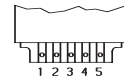
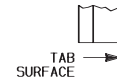


FIG. 2



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.

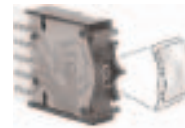
SEAL

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

Dimensions are shown: Inch (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

C&K

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



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.

Nut driver (For 403500000 nut)



PART NO.

406100652

PART NO.

403500000

Thumbwheel & Pushwheel



N



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

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 & M-10).</small>	DESCRIBE IN APPROPRIATE ROW
	1	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	2	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	3	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	4	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	5	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	6	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	7	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	8	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	9	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	10	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	11	<input type="text"/> 3 <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> – <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	

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 ____



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

Thumbwheel & Pushwheel



N