THUMBWHEEL / SELECTOR SWITCHES

8421

› Starwheel or pushwheel models
› Choice of output codes with 10 or 16 switching positions
› Snap-in front panel mounting for easy installation
› Range of standardized dimensions to fit most panel cutouts
› Large display characters for easy reading
› High reliability switching thanks to gold plated contacts
› Very long life
› Choice of mounting accessories: snap-in endcaps, spacers and connectors

Main specifications

Output code	Switching positions	Readout	Code	Circuit	Case	Wheel	Connec-tions	Starwheel Miniature 84210	Pushwheel Large 84212	Pushwheel Miniature 84211	Pushwheel Subminiature 84214
BCD	10	0-9	M02	C	G	N	S	84210005	84212005	84211007	-
			M02	C	N	N	S	84210055	84212013	84211003	84214007
			M02	L	G	N	S	84210006	84212001	84211008	-
			M02	L	N	N	S	84210056	84212014	84211004	84214009
Decimal	10	0-9	M01	C	G	N	S	84210003	84212004	84211001	-
			M01	C	N	N	S	84210053	84212011	84211024	84214005
			M01	L	G	N	S	84210004	84212002	84211002	-
			M01	L	N	N	S	84210054	84212012	84211023	84214010
BCD + complement	10	0-9	M03	C	G	N	S	84210007	84212006	84211013	-
			M03	C	N	N	S	84210057	84212032	84211017	●
			M03	L	G	N	S	●	84212003	84211012	-
			M03	L	N	N	S	84210058	84212024	84211030	●
BCD complement	10	0-9	M07	C, L	G, N	N	S	●	●	●	●
BCH hexadecimal	16	0-9, A-F	M29	C	G	N	S	84210408	-	-	-
			M29	C,L	G,N	N	S	●	-	-	-
		0-15	M29	C	N	N	S	84210409	-	-	-
			M29	C,L	G,N	N	S	●	-	-	-
Changeover	10	+/-	M04	C,L	G,N	N	S	●	●	●	●

C=short G=grey S=solder or for connector
L=long N=black
Long circuits have track cuts for mounting of additional components in series

Mounting accessories

Pairs of end caps (with clips)	For securing the block of modules to the panel	grey	79211709	79211923	79211823	-
		black	79211759	79211947	79211847	79214283
Spacers	Blank module for creating a space or filling a gap	grey	79211738	79211914	79211814	-
		black	79211745	79211936	79211836	79214216
Separators (with clips)	Blank module for joining and securing two blocks	grey	79211752	79211924	79211824	-
		black	79211760	79211948	79211848	-
Connectors	For quick connection and disconnection of the module	solder lugs	25625493			-
		solder pins	25625495			-

Spacers and separators have same dimensions as switch modules. For an illustration, see "Examples of blocks" on last page.

Electrical characteristics				
Rating nominal / 48 V AC/DC (A)	0.1	0.1	0.1	0.1
Operating range / 0.1 → 48 V AC/DC (A)	0.0001 → 0.1	0.0001 → 0.1	0.0001 → 0.1	0.0001 → 0.1
Rating thermal (non-switchable) / 48 V AC/DC (A)	1	1	1	1
Mechanical characteristics				
Digit height - 10 / 16 positions (mm)	4.5 / 2.8	6	4.5	4
Module width - pitch (mm)	8	12.5	10	7.6
Module height - cutout (mm)	31	54	31	22.5
Mounting depth - C / L circuits (mm)	37 / 47	37 / 47	37 / 47	32 / 42
Operating force (N)	3	4	5	5
Ambient operating temperature (° C)	-25 → +70	-25 → +70	-25 → +70	-25 → +70
Ambient storage temperature (° C)	-40 → +85	-40 → +85	-40 → +85	-40 → +85
Mechanical life (operations)	10^6	10^6	10^6	10^6
Weight (g)	5.5	14	7.5	4

▮ Standard product   ▮ Product made to order   ● Contact us

Additional specifications

- Actuator: POM (84210) ; transparent PC (84211/212/214)
- Case: PA66 GB (84210/84211/84212 grey); PPO (84212 black/84214)
- Sliding contacts: gold alloy
- PCB tracks and terminals: gold over nickel
- Mounting features: Assembly of modules through integrated pins or clips.
  Front mounting on panel ; fastening by the snap-in endcaps.

- Degree of protection: IP40 (front face)
- Rated insulation voltage Ui: 48 V
- Max. internal resistance: 200 mΩ
- Min. insulation resistance: 10^5 MΩ
- Dielectric strength: 600 VAC between tracks
  2500 VAC between tracks and external parts
- Vibration resistance: 10 g, 10 - 2000 Hz
- Certification marks: $C\epsilon$

Product adaptations

> Special codes: hexadecimal + complement (M28: 84210), Kelvin-Varley (M17: 84210/211/212), …
> Special circuits: long without track cuts, with overlap (make before break), ...
> Red wheel (R)
> Connections for PCB (X3): 0.6 x 0.5 x 5 tin-plated solder pins
> Lockout stops for restricting the setting range

Principles

Standard coding tables

M01 — Decimal

M01 Decimal	Dial setting	Common C connected to tracks										
		0	1	2	3	4	5	6	7	8	9	C
	0	●										
	1		●									
	2			●								
	3				●							
	4					●						
	5						●					
	6							●				
	7								●			
	8									●		
	9										●	
84210/211/212		11	10	9	8	7	6	5	4	3	2	12
84214		11	10	9	8	7	6	5	4	3	2	1
Terminal location												

M02 — BCD

M02 BCD	Dial setting	C connected to				
		1	2	4	8	C
	0					
	1	●				
	2		●			
	3	●	●			
	4			●		
	5	●		●		
	6		●	●		
	7	●	●	●		
	8				●	
	9	●			●	
84210/211/212		8	7	6	5	9
84214		8	7	6	5	1
Terminal location						

M03 — BCD + compl.

M03 BCD + compl.	Dial setting	Common C connected to tracks								
		1	2	4	8	$\bar{1}$	$\bar{2}$	$\bar{4}$	$\bar{8}$	C
	0					●	●	●	●	
	1	●					●	●	●	
	2		●			●		●	●	
	3	●	●					●	●	
	4			●		●	●		●	
	5	●		●			●		●	
	6		●	●		●			●	
	7	●	●	●					●	
	8				●	●	●	●		
	9	●			●		●	●		
84210/211/212		6	5	4	3	11	10	9	8	7
84214		4	3	2	1	9	8	7	6	5
Terminal location										

M04 — Changeover

M04 Changeover	Dial setting	C conn. to		
		1	2	C
	+	●		
	-		●	
	+	●		
	-		●	
	+	●		
	-		●	
	+	●		
	-		●	
	+	●		
	-		●	
84210/211/212		9	8	2
84214		3	7	5
Terminal location				

M07 — BCD compl.

M07 BCD compl.	Dial setting	C connected to				
		$\bar{1}$	$\bar{2}$	$\bar{4}$	$\bar{8}$	C
	0	●	●	●	●	
	1		●	●	●	
	2	●		●	●	
	3			●	●	
	4	●	●		●	
	5		●		●	
	6	●			●	
	7				●	
	8	●	●	●		
	9		●	●		
84210/211/212		4	11	2	10	3
84214		9	7	5	3	1
Terminal location						

M29 — BCH Hexadec.

M29 BCH Hexadec.	Dial setting	C connected to				
		1	2	4	8	C
	0					
	1	●				
	2		●			
	3	●	●			
	4			●		
	5	●		●		
	6		●	●		
	7	●	●	●		
	8				●	
	9	●			●	
	A/10		●		●	
	B/11	●	●		●	
	C/12			●	●	
	D/13	●		●	●	
	E/14		●	●	●	
	F/15	●	●	●	●	
84210/211/212		11	9	2	4	7
Terminal location						

Other codes: please consult us

Curves

Electrical life for 82410, 84211, 84212 and 84214

48 V $\sim$ /$=$ 0.1 A 10^6 cycles

Dimensions

Products

84210
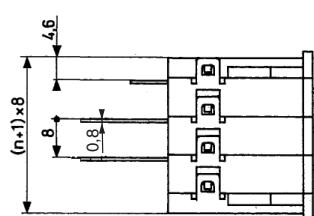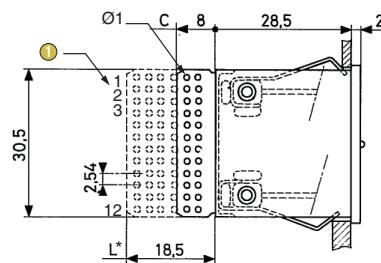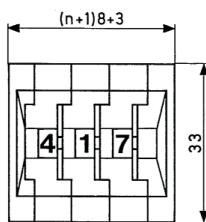
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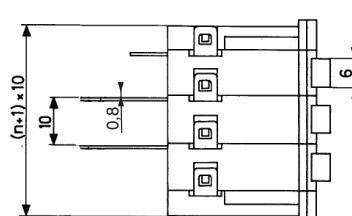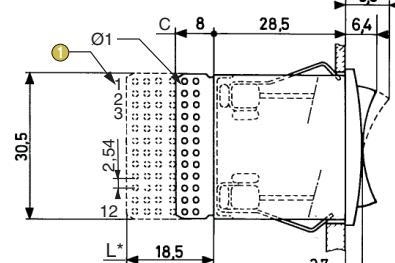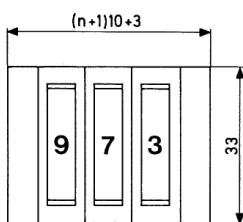
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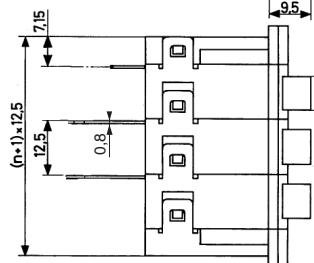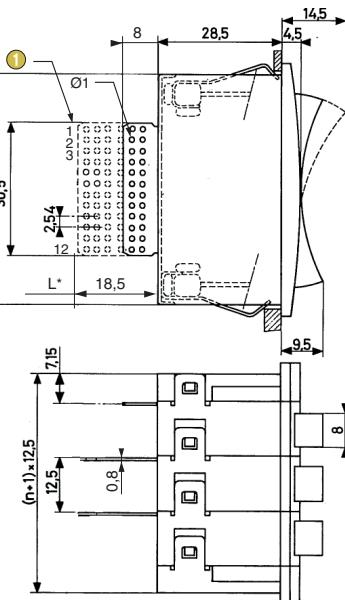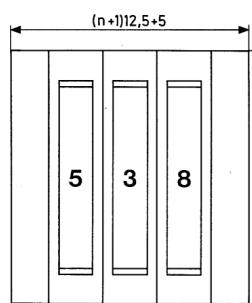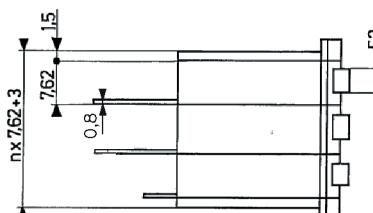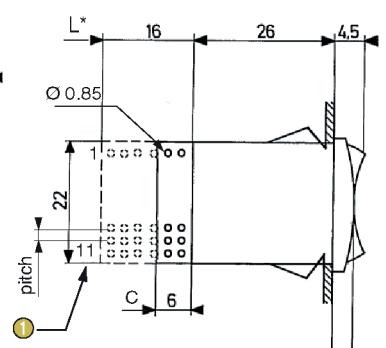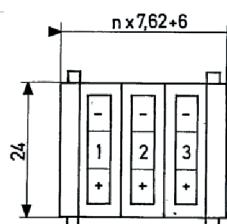
84214

pitch 2: for M01
pitch 5: for M02, M04, M07
pitch 2.5: for M03

❶ Terminal location

* Long circuits have track cuts for mounting components in series, except for common C.
  Hole spacings: 84210/211/212: 5.5, 8 and 10.5 mm
   84214: 7.5 and 10 mm

Panel cutouts
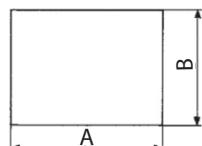
	A	B
84210	(n+1) 8 + J	31
84211	(n+1) 10 + J	31
84212	(n+1) 12.5 + J	54
84214	(nx7.62) + 3.5	22.5

n: number of modules   J: clearance: 1 mm for $1 \leq n \leq 10$
                         1.5 m for $11 \leq n \leq 20$

Panel thickness

84210/211/212
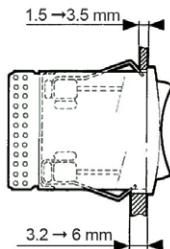
84214

Clips have two mounting positions according to panel thickness.
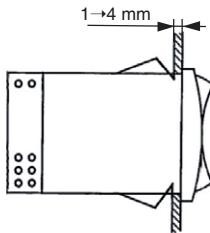
Connectors

Solder lugs
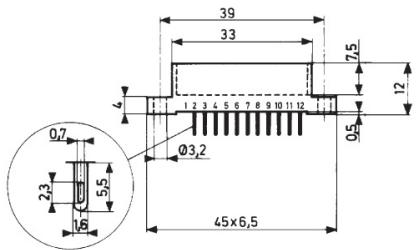
Solder pins

<hr>
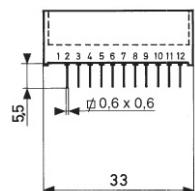
Installation recommendations

See "Basic technical concepts"

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How to order

Use the 8 digit part numbers when they are defined

Other cases, precise:

>Type of thumbwheel switch - Code - Circuit - Case - Wheel - Connections - Adaptation* + Mounting accessories* + Connector*
>* if needed
>Example: 84212 M07 L N N S + 79211947 + 25625493

<hr>

Examples of blocks
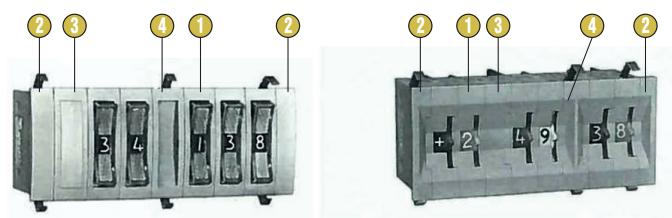
1- Switch module
2- End caps
3- Spacer
4- Separator