

# 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

								Starwheel Miniature 84210	Pushwheel Large 84212	Pushwheel Miniature 84211	Pushwheel Subminiature 84214
Output code	Switching positions	Readout	Code	Circuit	Case	Wheel	Connections				
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	-	-	-
Changeover	10	+/-	M29	C, L	G, N	N	S	●	●	●	●
			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

Accessories	Description	Color	79211709	79211923	79211823	-
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 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
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  $U_i$ : 48 V
- Max. internal resistance: 200 m $\Omega$
- Min. insulation resistance: 10<sup>5</sup> M $\Omega$
- Dielectric strength: 600 VAC between tracks  
2500 VAC between tracks and external parts
- Vibration resistance: 10 g, 10 - 2000 Hz
- Conformity / Certifications: **CE**

## 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	Common C connected to tracks										
	0	1	2	3	4	5	6	7	8	9	C
Dial setting 0	•										
Dial setting 1		•									
Dial setting 2			•								
Dial setting 3				•							
Dial setting 4					•						
Dial setting 5						•					
Dial setting 6							•				
Dial setting 7								•			
Dial setting 8									•		
Dial setting 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	C connected to				
	1	2	4	8	C
Dial setting 0					
Dial setting 1	•				
Dial setting 2		•			
Dial setting 3	•	•			
Dial setting 4			•		
Dial setting 5	•		•		
Dial setting 6		•	•		
Dial setting 7	•	•	•		
Dial setting 8				•	
Dial setting 9	•			•	
84210/211/212	8	7	6	5	9
84214	8	7	6	5	1
Terminal location					

M03 BCD + compl.	Common C connected to tracks										
	1	2	4	8	-	-	-	-	C		
Dial setting 0					•	•	•	•			
Dial setting 1	•					•	•	•			
Dial setting 2		•					•	•			
Dial setting 3	•	•						•	•		
Dial setting 4			•					•	•		
Dial setting 5	•		•					•	•		
Dial setting 6		•	•					•	•		
Dial setting 7	•	•	•						•		
Dial setting 8				•	•	•	•				
Dial setting 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	C conn. to		
	1	2	C
Dial setting +	•		
Dial setting -		•	
Dial setting +	•		
Dial setting -		•	
Dial setting +	•		
Dial setting -		•	
Dial setting +	•		
Dial setting -		•	
Dial setting +	•		
Dial setting -		•	
84210/211/212	9	8	2
84214	3	7	5
Terminal location			

M07 BCD compl.	C connected to				
	-	-	-	-	C
Dial setting 0	•	•	•	•	
Dial setting 1		•	•	•	
Dial setting 2	•		•	•	
Dial setting 3		•		•	
Dial setting 4	•	•		•	
Dial setting 5		•		•	
Dial setting 6	•			•	
Dial setting 7		•		•	
Dial setting 8	•	•		•	
Dial setting 9		•		•	
84210/211/212	4	11	2	10	3
84214	9	7	5	3	1
Terminal location					

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

Other codes: please consult us

## Curves

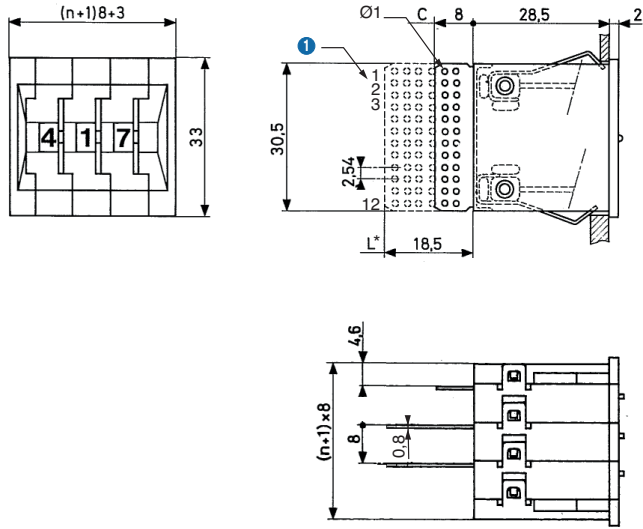
### Electrical life for 84210, 84211, 84212 and 84214

48 V $\sim$  / - : 0.1 A 10<sup>6</sup> cycles

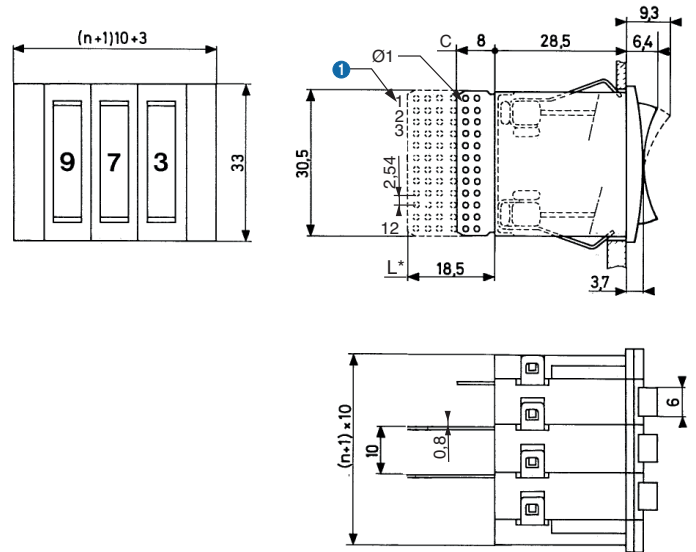
Dimensions

Products

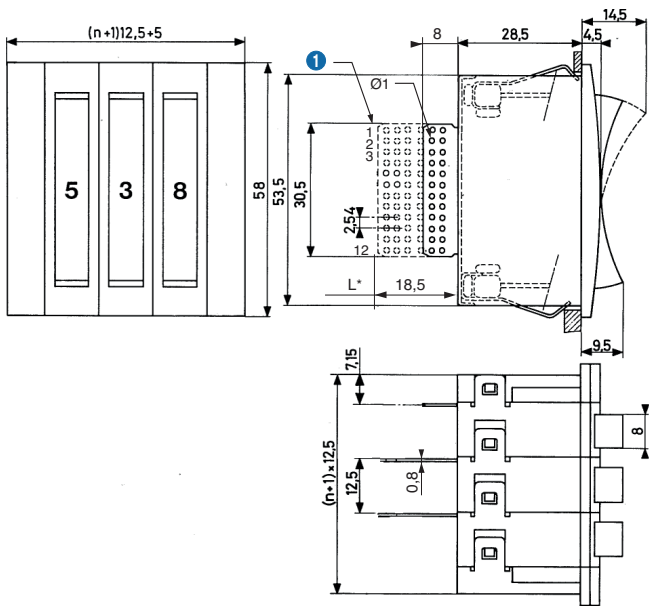
84210



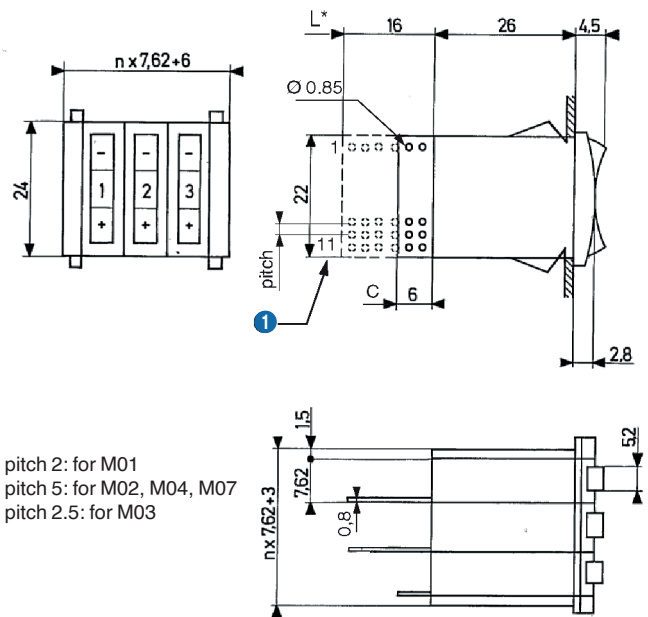
84211



84212



84214

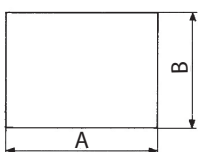


pitch 2: for M01  
pitch 5: for M02, M04, M07  
pitch 2.5: for M03

1 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

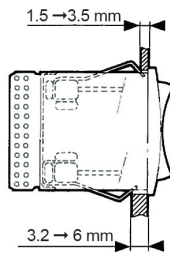


	A	B
84210	(n+1) 8 + J	31
84211	(n+1) 10 + J	31
84212	(n+1) 12.5 + J	54
84214	(nx7.62) + 3.5	22.5

n: number of modules      J: clearance: 1 mm for 1 ≤ n ≤ 10  
1.5 mm for 11 ≤ n ≤ 20

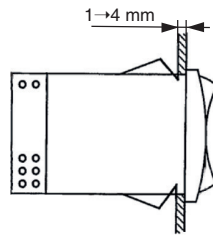
**Panel thickness**

84210/211/212



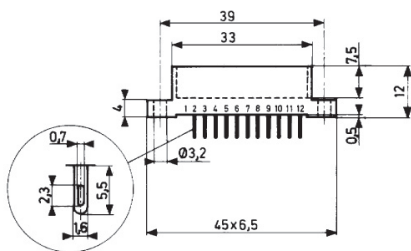
Clips have two mounting positions according to panel thickness.

84214

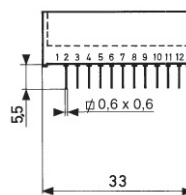


**Connectors**

**Solder lugs**



**Solder pins**



**Installation recommendations**

See "Basic technical concepts"

**How to order**

Use the 8 digit part numbers when they are defined

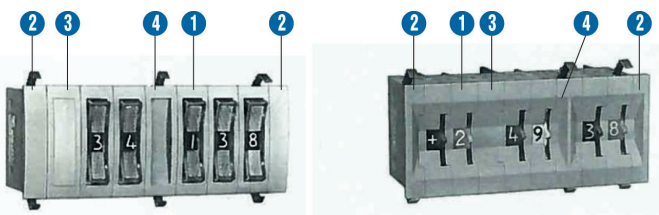
Other cases, precise:

Type of thumbwheel switch - Code - Circuit - Case - Wheel - Connections - Adaptation\* + Mounting accessories\* + Connector\*

\* if needed

Example: 84212 M07 L N N S + 79211947 + 25625493

**Examples of blocks**



- 1- Switch module
- 2- End caps
- 3- Spacer
- 4- Separator

**Warning:**

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