

APEM

KR series

Power rocker switches

- Wide choice of colours
- Laser etched symbols
- Illuminated or non-illuminated
- Optionally sealed to IP68



A P E M

**Up-to-date
rocker design**

KR series

Power rocker switches

The K range at a glance

A range of mix and match products



KR rocker switches

Attractive rugged rocker switches with more than 3.000.000 possible combinations. Custom laser etching.



KL locking rocker switches

Available with 2 or 3 positions, with one locked position. Patented intuitive ergonomics.



KI indicators

A complete indicator series with a wide choice of colours and a large number of LEDs. Long life expectancy.

2008 new product



KG rocker switches

With a raised protection bezel preventing inadvertent actuation of the rocker.

Accessories



Hole plug

For future extensions.



Connector

For separate wiring.



Mounting panel units

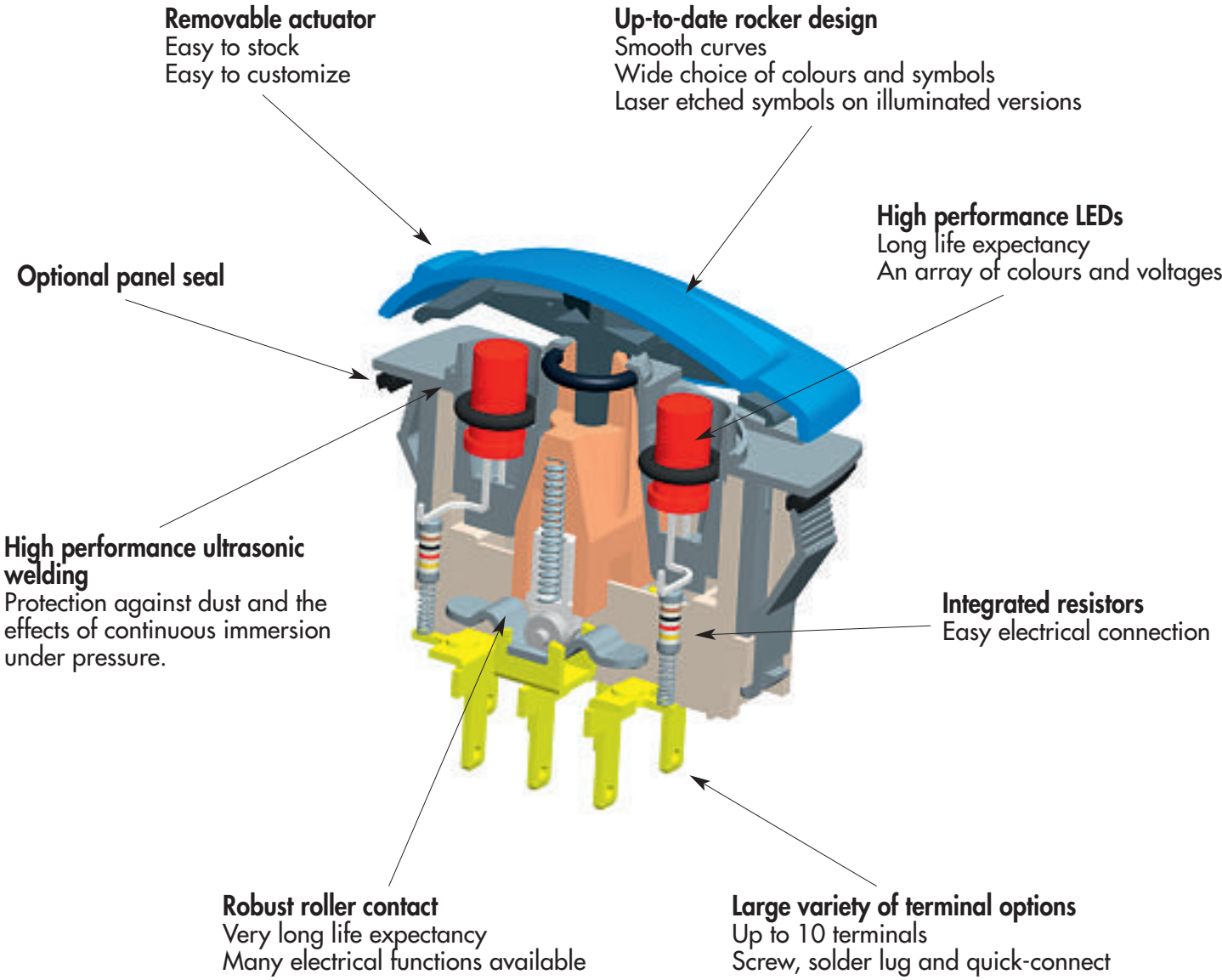
To limit the number of cut-outs.



Removing tool

APEM will be happy to develop custom product solutions. Please contact us with your requirements.

Attractive rugged rocker switch



APEM will be happy to develop custom product solutions. Please contact us with your requirements.

KR series

Power rocker switches

Specifications



- Up-to-date rocker design
- Wide choice of colours
- Laser etched symbols
- Illuminated or non-illuminated
- Optionally sealed to IP68

ELECTRICAL SPECIFICATIONS

- Current/voltage rating with resistive load :
5A 24VDC, 100.000 cycles
10A 24VDC, 10.000 cycles (terminals 6.35 x 0.8 only)
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between terminals
- Mechanical life : 150.000 cycles min.

ENVIRONMENTAL SPECIFICATIONS

- Degree of protection of sealed versions : frontal sealing to IP68 according to IEC 60529 (submersion under 1 meter of water for more than 30 minutes)
- Salt spray resistance : 96 hours according to IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

MATERIALS

- Case : PA 6-6
- Actuator : ABS
- Bezel : PA 6-6
- Terminals : brass, silver plated
- Contacts : silver
- Contact roller : brass, nickel plated

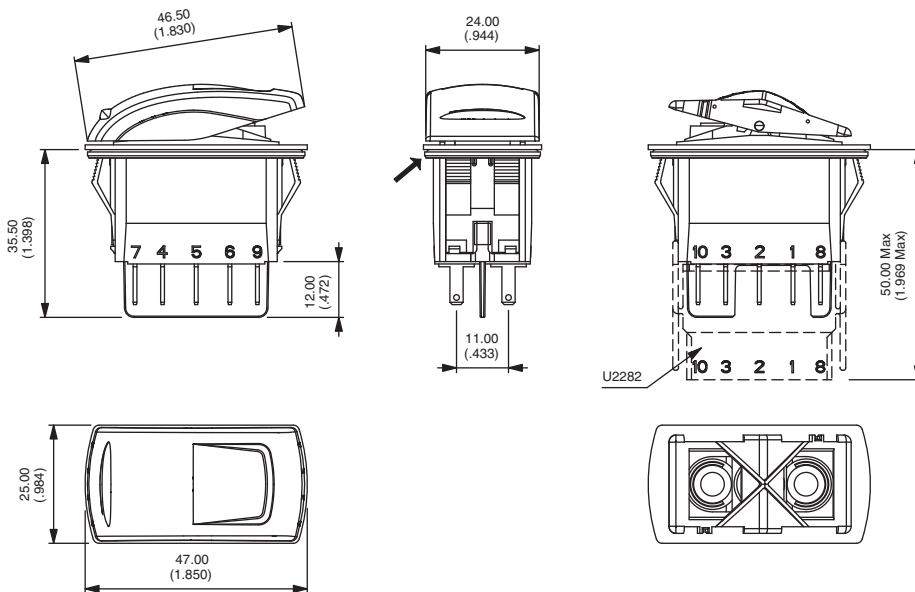
SEALING

Sealing is optional.

To order a sealed product, complete the appropriate box of ordering format on the following pages.

DIMENSIONS

→ Flat seal



Dimensions : First dimensions are in mm while inches are shown as bracketed numbers.

Tolerance : The general tolerance for dimensions in this brochure is $\pm 0,3$ (.012). Overall dimension tolerance is $\pm 0,5$ (.020).



Packaging unit : 40 pieces

Dimensions, specifications and data shown in this brochure are subject to change without notice.

HOW TO ORDER

- To order a complete product, fill in all the boxes of the following order guide.
- To order case only (without actuator), finish your order number with the LED wiring code.
- To order actuator only (without case), begin the order number with code KRR, then follow the order format from "actuator type" until the end of the options.

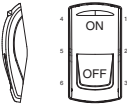

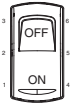

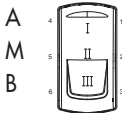
CASE + LEDS

KR							Side A	Side B																																		
SERIES	Electrical functions						Contacts	Sealing	LEDS	LED wiring																																
Poles	<table border="1"> <tr><td>1</td><td>ON</td><td>-</td><td>OFF</td></tr> <tr><td>4</td><td>ON</td><td>ON</td><td>ON</td></tr> <tr><td>4-1R</td><td>ON</td><td>ON</td><td>MOM</td></tr> <tr><td>5</td><td>MOM</td><td>-</td><td>ON</td></tr> <tr><td>6</td><td>ON</td><td>-</td><td>ON</td></tr> <tr><td>7</td><td>MOM</td><td>OFF</td><td>MOM</td></tr> <tr><td>8</td><td>ON</td><td>OFF</td><td>MOM</td></tr> <tr><td>9</td><td>ON</td><td>OFF</td><td>ON</td></tr> </table>						1	ON	-	OFF	4	ON	ON	ON	4-1R	ON	ON	MOM	5	MOM	-	ON	6	ON	-	ON	7	MOM	OFF	MOM	8	ON	OFF	MOM	9	ON	OFF	ON	A Silver	X No K Yes	X None A LED 6V red B LED 6V green C LED 6V amber M LED 6V blue R LED 6V white D LED 12V red E LED 12V green F LED 12V amber N LED 12V blue S LED 12V white J LED 24V red K LED 24V green L LED 24V amber P LED 24V blue T LED 24V white	See diagrams page 9.
1	ON	-	OFF																																							
4	ON	ON	ON																																							
4-1R	ON	ON	MOM																																							
5	MOM	-	ON																																							
6	ON	-	ON																																							
7	MOM	OFF	MOM																																							
8	ON	OFF	MOM																																							
9	ON	OFF	ON																																							
3 Single pole 4 Double pole							Terminals	Terminals (continued)																																		
						Screw 0 6 terminals with barrier Solder lug/quick-connect 2 6 terminals with barrier 4 6 terminals w/o barrier A 10 term. with barrier B 10 term. w/o barrier C 10 terminals for use with connector U2292 Quick-connect 6,35x0,8 3 6 terminals with barrier	Quick-connect 6,35x0,8 5 6 terminals w/o barrier D 10 term. with barrier E 10 term. w/o barrier F 10 term. for use with connector U2292 Quick-connect 2,8x0,8 G 10 term. with barrier H 10 term. w/o barrier J 10 terminals for use with connector U2282																																			

ACTUATOR

Type	Colour
1 For non-illuminated application 2 For illuminated application	1 Blue 1/4 Dark blue 2 Black 3 Green 4 Grey 5 Yellow 6 Red 7 Ivory 9 Orange A Chrome

ACTUATOR MARKING

	Area A	Area M	Area B
Orientation	Symbols		
N  O  S  E 	 See table pages 11 & 12. Marking in M area : on request.		
Accessories : see page 14.			



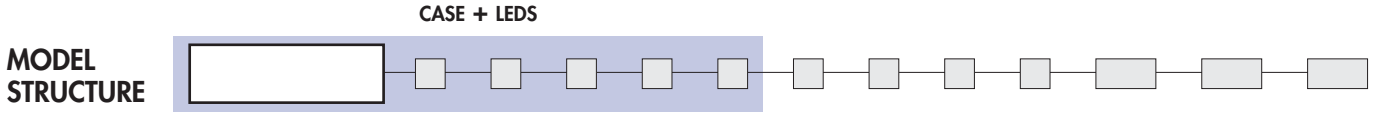
NOTICE : please note that not all combinations of above numbers are available. Refer to the following pages for further information.


KR series

Power rocker switches

Case

- To order case only (without rocker), finish your order number with the LED wiring code.



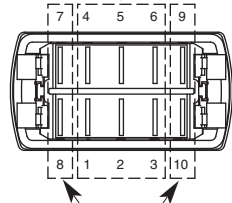


	2-3	1-2	
	5-6	4-5	
Single pole	Double pole		
KR31	KR41	ON - OFF	
	KR44*	ON ON ON	
	KR44-1R*	ON ON MOM	
KR35	KR45	MOM - ON	
KR36	KR46	ON - ON	
KR37	KR47	MOM OFF MOM	
KR38	KR48	ON OFF MOM	
KR39	KR49	ON OFF ON	

* Function 4 : single pole in double pole case

Bottom view

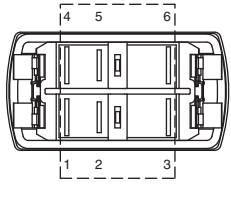
Contact area



LED area

10 terminal version

Contact & LED area



6 terminal version

ELECTRICAL FUNCTIONS AND CONNECTIONS

Terminal connections as viewed from bottom of switch.
 Only the contact area is represented.
 For single pole models, only terminals 1, 2 and 3 are to be considered.

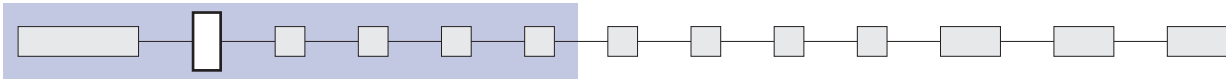
x = w/o terminal
 o = with terminal
 ▲ = momentary

	Position I	Position II	Position III		Position I	Position II	Position III
Function 1 * KR31-KR41				Function 8 KR38-KR48			
Function 5 KR35-KR45				Function 9 KR39-KR49			
Function 6 KR36-KR46				Function 4 KR44			
Function 7 KR37-KR47				Function 4-1R KR44-1R			

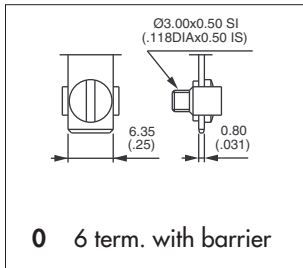
Function 1 only available for 6 terminal versions. Not available for illuminated versions.

TERMINALS

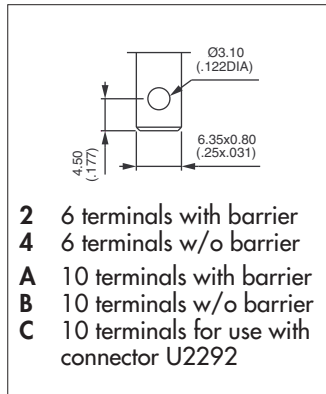
CASE + LEDS



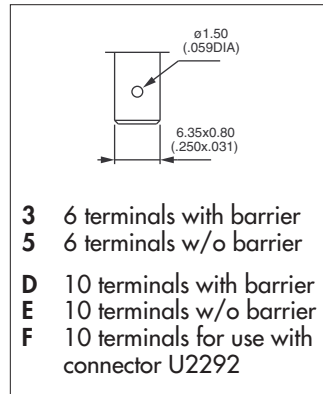
Screw



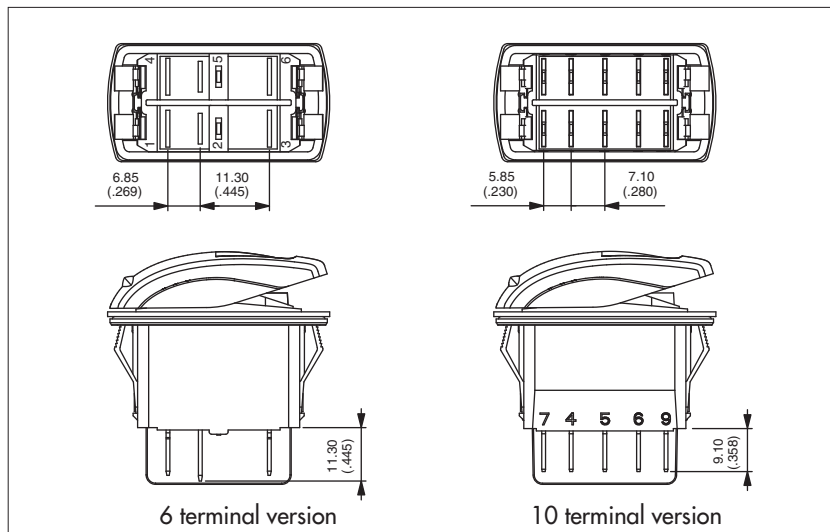
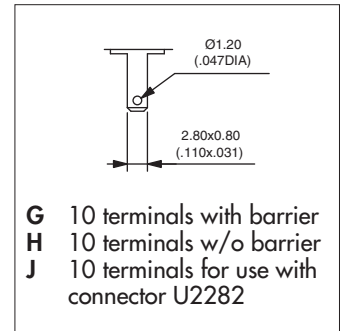
Solder lug / quick-connect



Normalized quick-connect 6,35x0,8



Normalized quick-connect 2,8x0,8

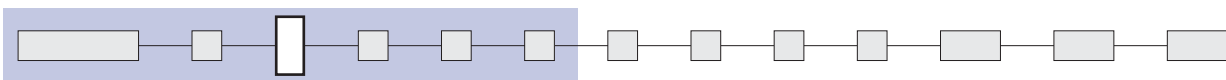


Terminals are marked on the case.

The drawings show the maximum possible number of terminals.

CONTACT MATERIALS

CASE + LEDS



A Silver

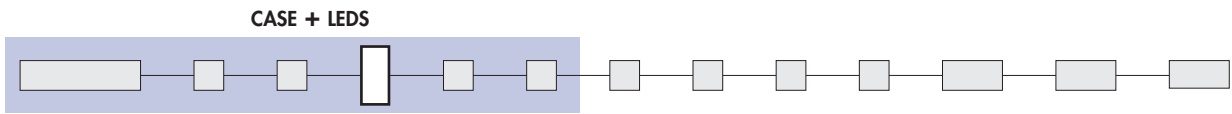
Other contacts : consult us.

KR series

Power rocker switches

Case - LEDs

SEALING

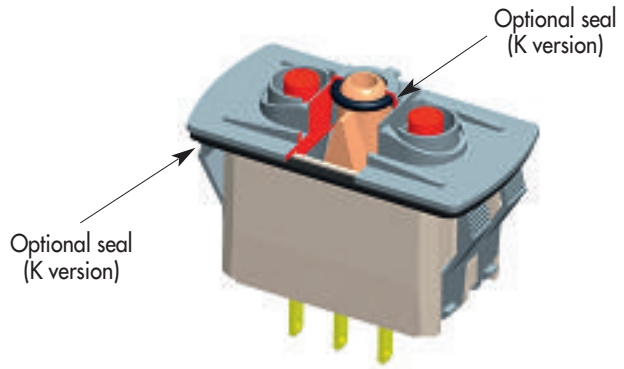


X No sealing

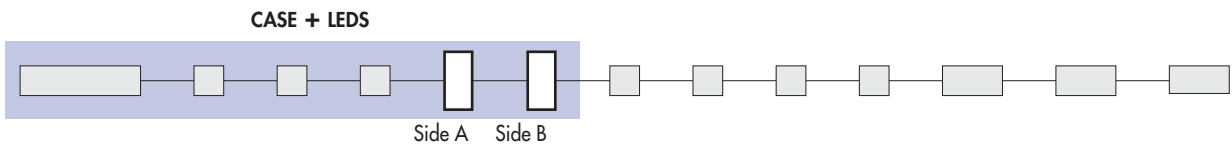
K IP68 (switch assembled on panel)

Ultrasonic welding of frame to case is standard on all versions.
The ultrasonic welding and the optional panel seal prevent water and dust from introducing into the switch housing.

*The product shall be installed professionally.
Test conditions available on request.*



LEDS



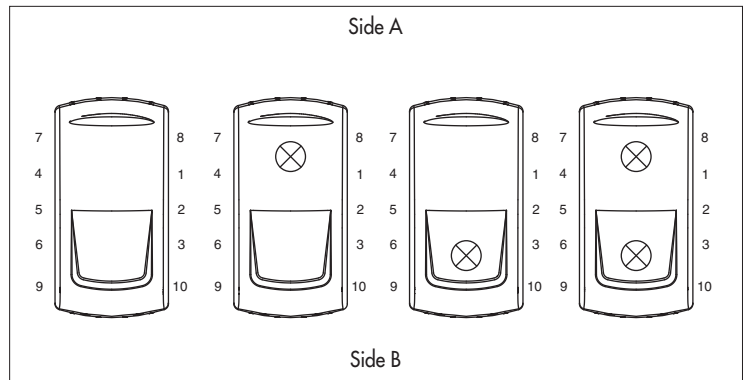
Complete each enlarged box with one of the codes listed below.

X Without LED

	Red	Green	Amber	Blue	White
6VDC	A	B	C	M	R
12VDC	D	E	F	N	S
24VDC	J	K	L	P	T

LED consumption : 20mA @ nominal voltage (25°C)

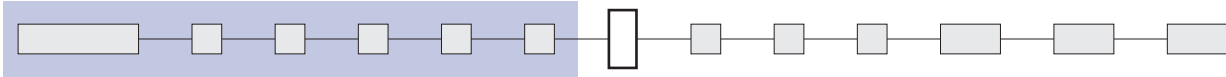
Other illumination solutions (neon, filament lamps) : on request.



LED AND TERMINAL WIRING

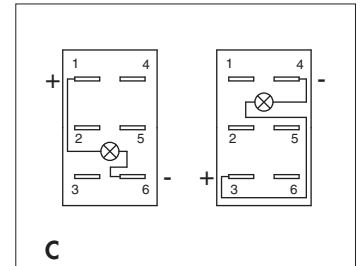
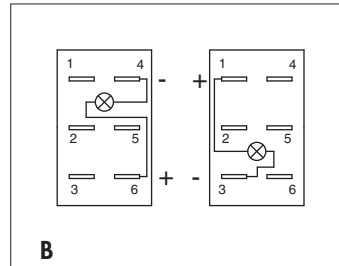
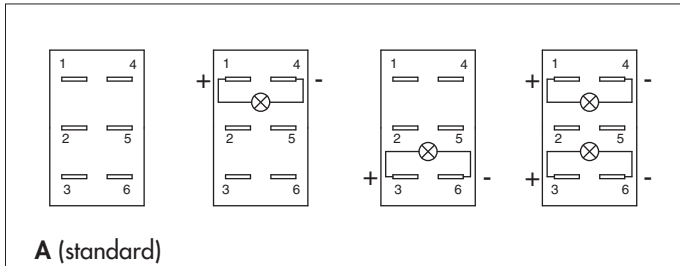
The LED wiring diagram is shown on the case.

CASE + LEDs

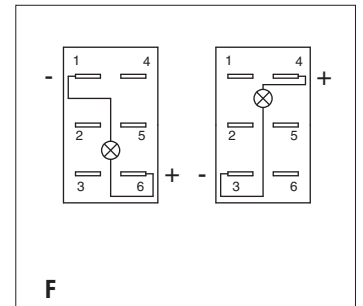
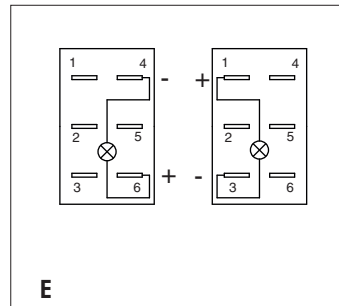
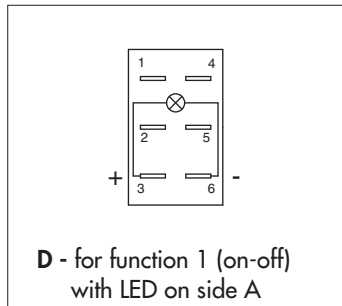


• For 6 terminal versions

LED connected to the load

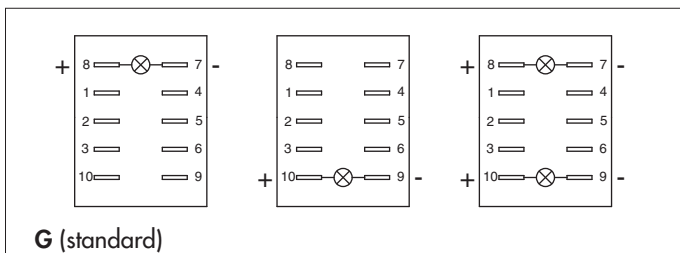


Note : If not available, terminals are added to connect the LED.

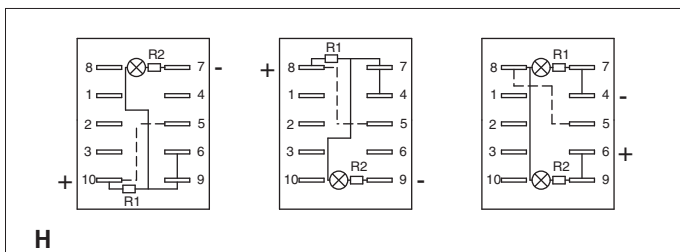


• For 10 terminal versions

Independent LED or integrated functions



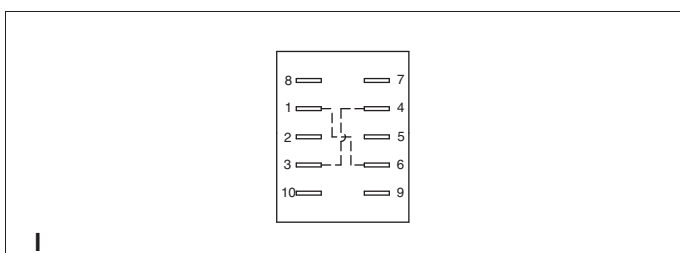
To have independent LEDs.



To obtain 2 symbol illumination levels (night illumination when Off and higher illumination when activated).

Dotted line = external wiring, continuous line = internal wiring

Available in Single Pole only, with H quick-connect terminals.



To have a polarity inversion (typical application : fan motor).

Dotted line = internal wiring, continuous line = internal wiring

Power supply between 2 and 5 - Load between 1 and 4 or 3 and 6.

Please contact us for other wiring solutions.

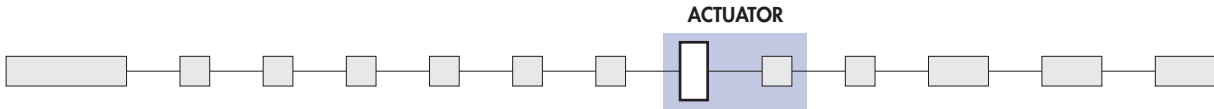
KR series

Power rocker switches

Actuator - Marking

To order actuator only (without case), begin the order number with code KRR, then follow the order format from "actuator type" until the end of the options.

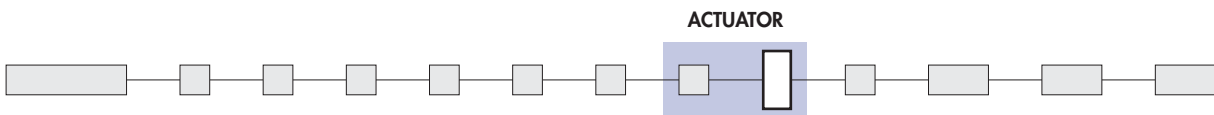
ACTUATOR TYPE



- 1 For non-illuminated application
- 2 For illuminated application

Other rocker design : on request.

ACTUATOR COLOUR



Code	Colour
1	Blue
1/4	Dark blue
2	Black
3	Green

Code	Colour
4	Grey
5	Yellow
6	Red
7	Ivory

Code	Colour
9	Orange
A	Chrome

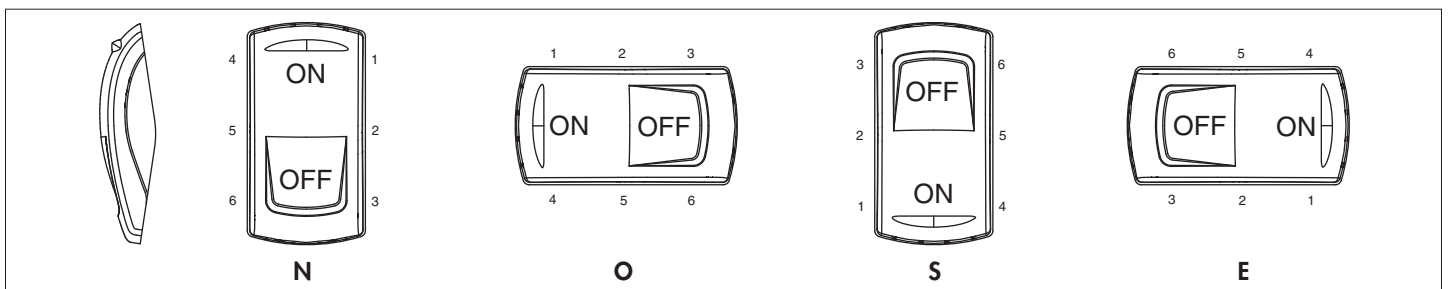
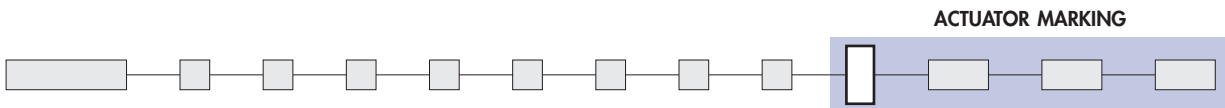
Note : colours A, 5 and 7 not available on illuminated versions.

A **soft-touch varnish** can be added. Consult us.



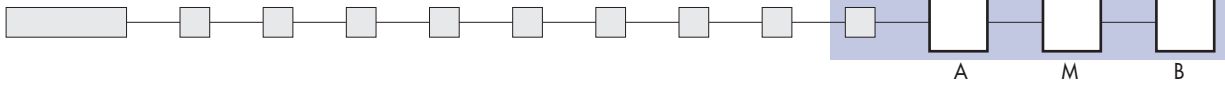
MARKING ORIENTATION

If no marking required, leave box blank.



Other orientations : on request

SYMBOLS

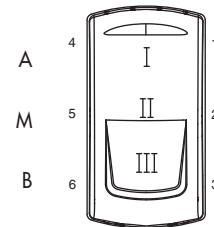


White marking for illuminated rockers and non-illuminated black rockers.
 Black marking for non-illuminated colour rockers. Other : on request.
 Marking in M area : on request.

Most symbols meet the ISO 7000 standard "graphical symbols for use on equipments" (code given in bracket in the description).

Contact us for symbols not featured in the following tables.

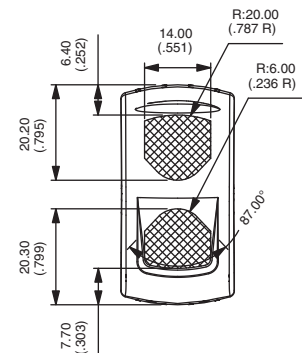
ACTUATOR MARKING



CODE	SYMBOL	DESCRIPTION	CODE	SYMBOL	DESCRIPTION
XX	None	-	14		Traveller lighting
01	ON	-	15		Driver lighting (1421)
02	OFF	-	16		Revolving light
03	○	-	17		Rear ventilator
04	I	-	18		Heating (0637)
05	II	-	19		Door opening
06	STOP	-	20		Windshield demister/defroster (0635)
07	A	Stop	21		Windshield wiper (0086)
08	M	Motion	22		Windshield washer (0088)
09		Up motion	23		Ventilator fan (0089)
10		Down motion	24		Side mirror defroster
11		Hot	25		Restarting pump
12		Cold	26		Front fog lights (0633)
13		Hazard warning (0085)	27		Rear fog lights (0634)

Marking area

For illuminated versions.
 The symbol will be included in the hatched area.



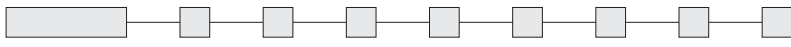
Symbol scale : 1:1 (standard).
 Other : on request.

KR series

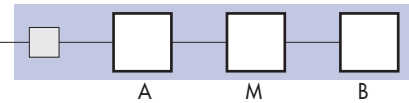
Power rocker switches

Actuator marking

SYMBOLS

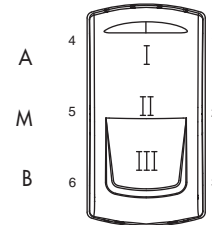


ACTUATOR MARKING



White marking for illuminated rockers and non-illuminated black rockers.
 Black marking for non-illuminated colour rockers. Other : on request.
 Marking in M area : on request.

Most symbols meet the ISO 7000 standard "graphical symbols for use on equipments" (code given in bracket in the description).
 Contact us for symbols not featured in the following tables.



Symbol scale : 1:1 (standard).
 Other : on request.

CODE	SYMBOL	DESCRIPTION
28		-
29		Beacon (1141)
30		-
31		Electric motor (0011)
32		Emergency first aid vehicle (2565)
33		Load tipping (1557)
34		Loading light (2457)
35		Tractor, rear-ward (0089)
36		Combine, direction of movement (1678)
37		Use no forks (2406)
38		Transmission (1166)
39		Working spot light (1145)
40		Engine (0634)
41		Horn (0244)

CODE	SYMBOL	DESCRIPTION
42		Lock (1656)
43		Taxi sign light (2551)
44		Flood light (1024)
45		-
46		-
47	ASM	-
48		-
49		Differential lock (1662)
50		-
51		-
52		-
53	N	-
54		Rear window wiper (0097)
55		Rear window washer (0099)

CODE	SYMBOL	DESCRIPTION
56		Lower load (2223)
57		Cab lock (1560)
58		Extraction
59		Pumping in
60		Rear PTO (1572)
61		Front PTO
62		Rockshaft down
63		Rockshaft up
64		Indicator

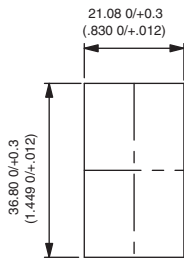
KR series

Power rocker switches

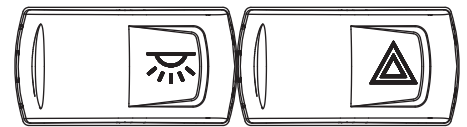
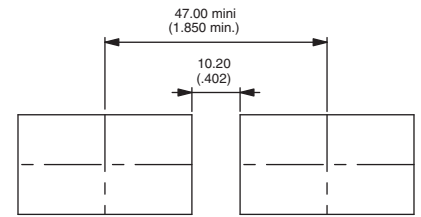
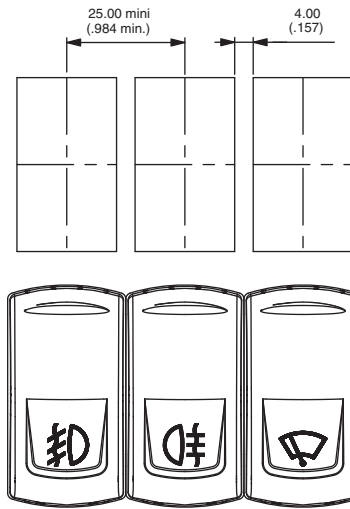
Mounting - Accessories

SWITCH PANEL CUT-OUT

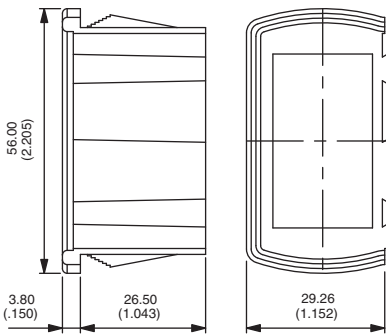
Recommended panel thickness :
between 2 mm and 3,5 mm



MATRIX MOUNTING

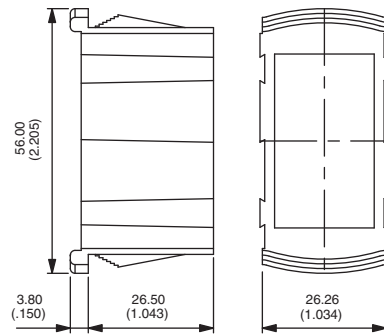


MOUNTING PANEL END



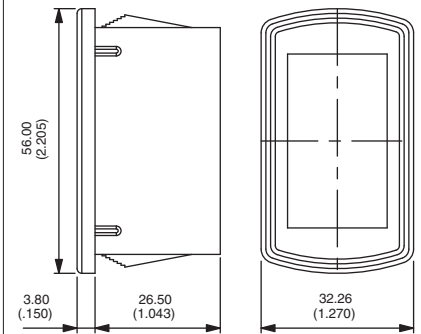
U2261

MOUNTING PANEL MIDDLE



U2262

SINGLE MOUNTING PANEL



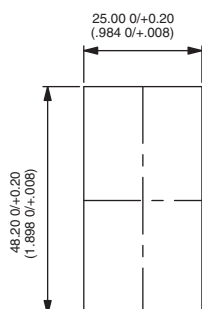
U2267

Recommended panel thickness : 1,10 mm - 1,80 mm - 2,60 mm - 3,40 mm - 4,20 mm - 5 mm - 5,80 mm

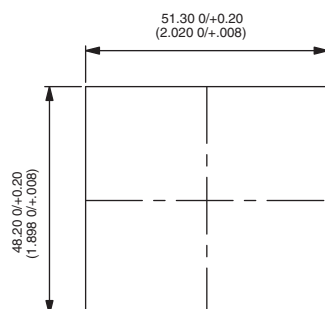
MOUNTING PANEL CUT-OUT

For additional elements, add 26,40 mm (1.039)

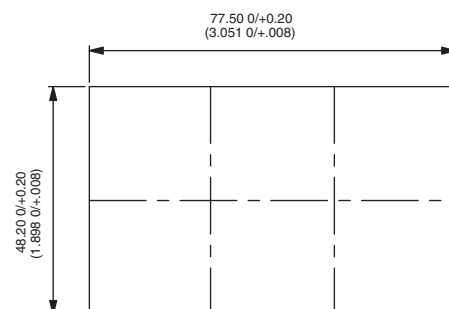
For 1 element U2267



For 2 elements U2261



For 3 elements (2xU2261 + 1x U2262)



KR series

Power rocker switches

Accessories

CONNECTORS

Standard colour : black. Other colours : on request.

Connectors cannot be combined with wiring types H and I.



U2260

6 terminal version

For use with terminals type 2, 3, 4 or 5.
6,35 (1/4) tabs to be fitted by the user
(example : AMP/Tyco 0-0141013-2).
Can be used for the KG series.



U2282

10 terminal version

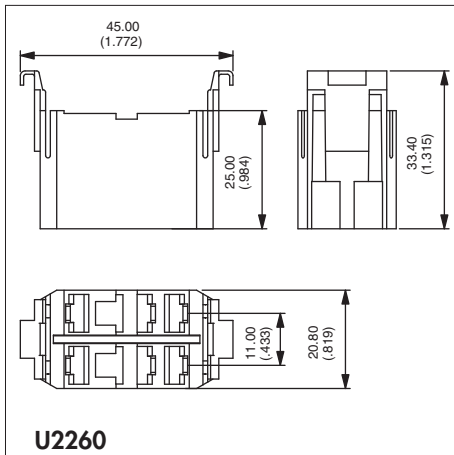
For use with terminals type G, H or J.
2,8 (.110) tabs to be fitted by the user
(example : AMP/Tyco 0-927779-3).



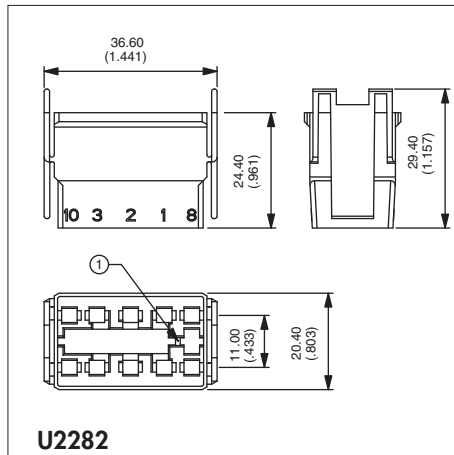
U2292

10 terminal version

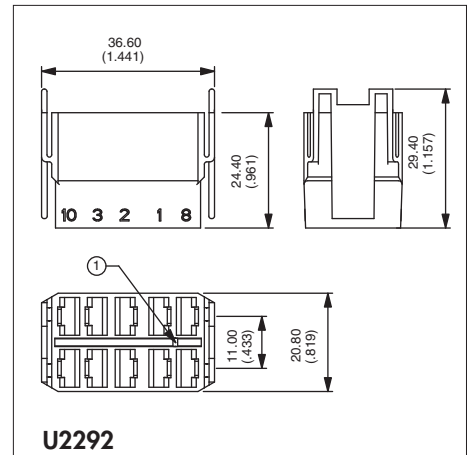
For use with terminals type A, B, C, D, E, F.
6,35 (1/4) tabs to be fitted by the user
(example : AMP/Tyco 0-0141013-0).



U2260



U2282



U2292

① poka-yoke

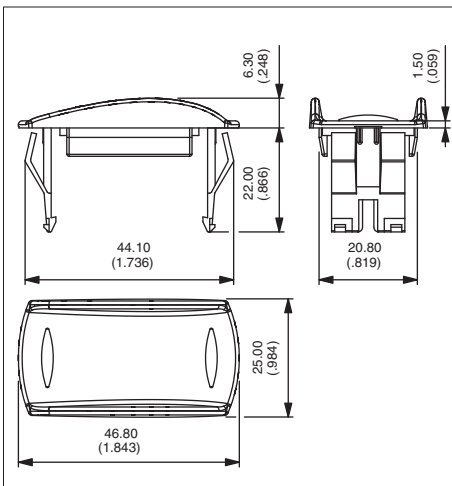
HOLE PLUG

Usefull for future extensions.

Code	Colour
U2271	Blue
U2271/4	Dark blue
U2272	Black
U2273	Green

Code	Colour
U2274	Grey
U2275	Yellow
U2276	Red
U2277	Ivory

Code	Colour
U2279	Orange



Recommended panel thickness :
1,50 mm to 6 mm

ACTUATOR REMOVING TOOL



U3052

2 tools are supplied

EXTRACT ACTUATOR

Allows the extraction of the rocker / rocker support assembly.
Place the 2 claws under the support and push as indicated by the arrow.

EXTRACT ROCKER

Allows to separate the rocker from its support.

Insert the tool between rocker and support as indicated by the arrow. Pull out the tool in the opposite direction.

EXTRACT SWITCH

Allows to extract switch from panel mounting units. 2 tools are necessary.

Insert the tools between switch and panel mounting units from the rear to compress the snap-in device. Pull off switch manually.

APEM, a world of switching capabilities

The APEM group is one of the world's largest manufacturers of switches, switch panels and joysticks.

APEM designs, develops, manufactures and sells electro-mechanical components to multiple industrial markets including: instrumentation, medical, security, communications, industrial automation, avionics, military and transport.

Other APEM embedded products



■ " I " range of pushbuttons

This range consists of several series of IP67 sealed pushbuttons (IP, IB, IS, IF, IA) and a large variety of models: round or square, momentary or latching, illuminated or non-illuminated, plastic or metallic, with optional marking.



■ Specific switch panels

In addition to the switching function, specific switch panels incorporate several other functions such as illumination by LED, backlighting, EMC protection, sealing, connection, support, mounting...

Applications for these products include transport and utility vehicles, agricultural engines and boats.



■ Joysticks

APEM also manufactures joysticks for professional applications. Easy to operate, reliable and designed for extremely long service life, APEM joysticks are offered with a wide range of options allowing to satisfy a large variety of requirements. Several series are available, each one based on a different technology: switch joysticks, potentiometer joysticks and contactless joysticks.



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www.apem.com