UG1410A-R2

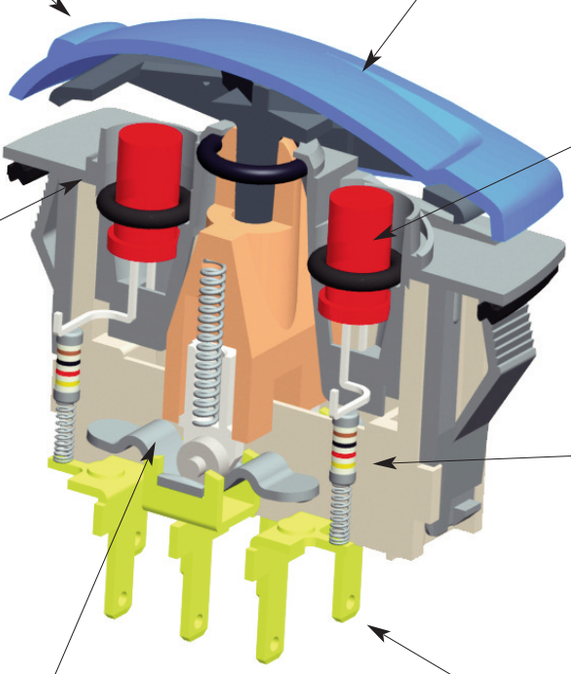
# Attractive rugged rocker switch

**Removable actuator**
Easy to stock
Easy to customize

**Up-to-date rocker design**
Smooth curves
Wide choice of colours and symbols
Laser etched symbols on illuminated versions

**High performance LEDs**
Long life expectancy
An array of colours and voltages

**Optional panel seal**



**High performance ultrasonic welding**
Protection against dust and the effects of continuous immersion under pressure.

**Integrated resistors**
Easy electrical connection

**Robust roller contact**
Very long life expectancy
Many electrical functions available

**Large variety of terminal options**
Up to 10 terminals
Screw, solder lug and quick-connect

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

The company reserves the right to change specifications without notice.

# KR series

## Power rocker switches

*Specifications*

- ❑ **Unique rocker design**
- ❑ **Wide choice of colours**
- ❑ **Laser etched symbols**
- ❑ **Illuminated or non-illuminated**
- ❑ **Optionally sealed to IP68 or IP69K**

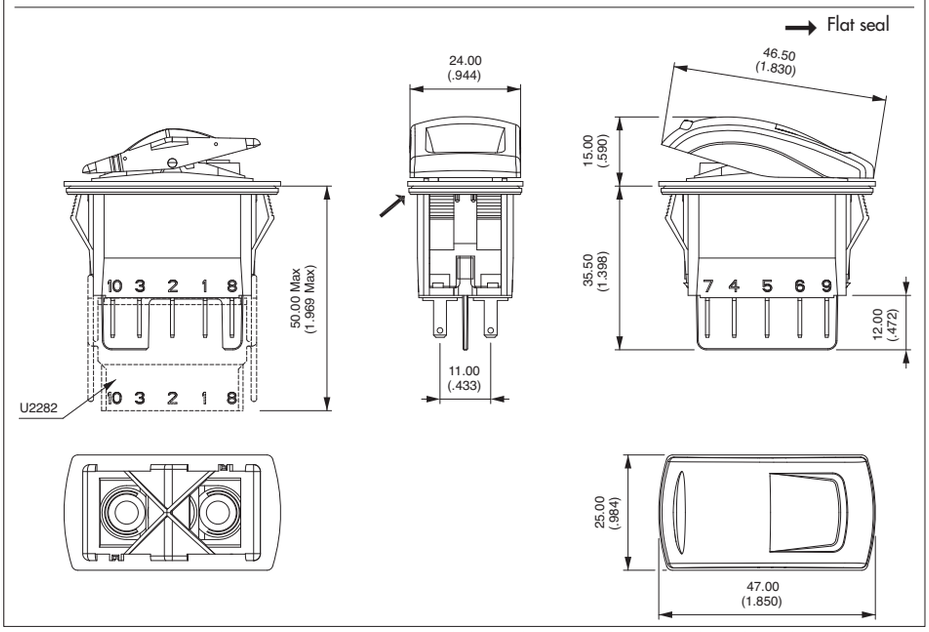
### ELECTRICAL SPECIFICATIONS

- Currrent/voltage rating with resistive load :
  - Silver plated contacts :
  **A** : 5A 24VDC, 100.000 cycles - 10A 24VDC, 10.000 cycles (terminals 6.35 x 0.8 only)
  **S** : 20A 12VDC, 10.000 cycles (see Overview)
  - Gold plated contacts (D) : 20mA 12V, 150.000 cycles
- Current/voltage rating with lamp load - silver contacts (A) :
  - functions 1 & 6 : 100W 24VDC, 10.000 cycles
  - other functions : 60W 24VDC, 10.000 cycles
- 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

- Sealing options :
  K : IP68 to front panel components of switch only according to IEC 60529
  Z : IP69K panel sealing according to DIN 40050-9
- Salt spray resistance : 96 hours according to IEC 512-6, test 11f
- Vibration resistance : 10-500 Hz / 10 g per IEC 60068-2-6
- Operating temperature : -40°C to +85°C

### DIMENSIONS




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

### MATERIALS

- Case : PA 6-6
- Actuator : ABS
- Bezel : PA 6-6
- Contacts & terminals : brass, solid silver grain, silver plated **(A or S)** or brass, solid silver grain, gold plated **(D)**
- 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.

**Packaging unit** : 40 pieces

**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**

**Poles**

| | |
|---|---|
| **3** | Single pole |
| **4** | Double pole |

**Electrical functions**

| | | | |
|---|---|---|---|
| **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 |

**Function 1** only for 6-terminal versions.

**Terminals**

**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 or U3152

**Normalized quick-connect 6,35x0,8**

**3** 6 terminals with barrier

**Terminals (continued)**

**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 or U3152

**Normalized quick-connect 2,8x0,8**

**G** 10 term. with barrier

**H** 10 term. w/o barrier

**J** 10 terminals for use with connector U2282

**Contacts**

| | |
|---|---|
| **A** | Silver |
| **D** | Gold plated |
| **S** | Silver 20A * |

**Sealing**

| | |
|---|---|
| **X** | No |
| **K** | IP68 |
| **Z** | IP69K |

**LEDS**

| | |
|---|---|
| **X** | None |
| **A** | LED 6V red |
| **B** | LED 6V green |
| **C** | LED 6V yellow |
| **M** | LED 6V blue |
| **R** | LED 6V white |
| **D** | LED 12V red |
| **E** | LED 12V green |
| **F** | LED 12V yellow |
| **N** | LED 12V blue |
| **S** | LED 12V white |
| **J** | LED 24V red |
| **K** | LED 24V green |
| **L** | LED 24V yellow |
| **P** | LED 24V blue |
| **T** | LED 24V white |
| **...** | |

**Wiring**

See following pages.

*** S contacts** for all functions except 4 and 4-1R - for normalized quick-connect terminals 6,35x0,8 only.

### ACTUATOR

| | |
|---|---|

**Type**

| | |
|---|---|
| **1** | For non-illuminated application |
| **2** | For illuminated application |

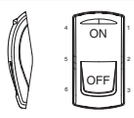
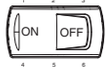
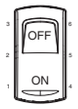
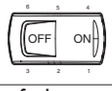
**Colour**

| | |
|---|---|
| **1** | Blue |
| **1/4** | Dark blue |
| **2** | Black |
| **3** | Green |
| **4** | Grey |
| **5** | Yellow |
| **6** | Red |
| **7** | Ivory |
| **9** | Orange |
| **A** | Aluminium bright |

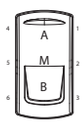
### ACTUATOR MARKING

| | Area A | Area M | Area B |
|---|---|---|---|

**Orientation**

| | |
|---|---|
| **N** |  |
| **O** |  |
| **S** |  |
| **E** |  |

**Symbols**



**Symbols** & **Accessories** : see end of section D.

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

# KR series

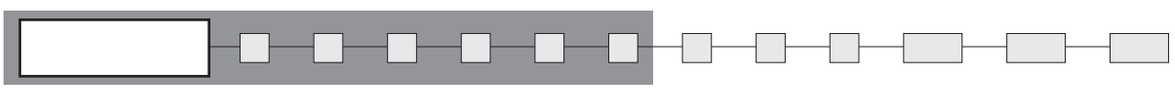
## Power rocker switches

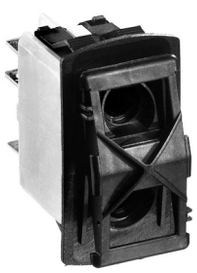
*Case*

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

**CASE + LEDS**

**MODEL STRUCTURE**

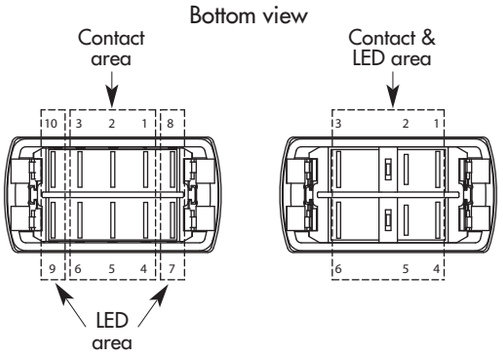




| Single pole | Double pole | 2-3 / 5-6 | | 1-2 / 4-5 |
|---|---|---|---|---|
| **KR31** | **KR41** | ON | - | OFF |
| | **KR44*** | ON | ON | ON |
| | **KR44-1R*** | ON | ON | MOM |
| **KR35** | **KR45** | MOM | - | ON |
| **KR36** | **KR46** | ON | - | ON |
| **KR37** | **KR47** | MOM | OFF | MOM |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

* Function 4 : single pole in double pole case

Bottom view




10 terminal version

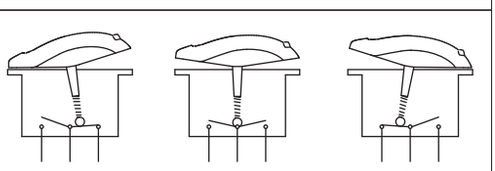
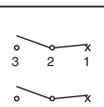
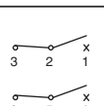
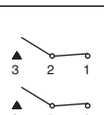
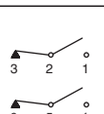
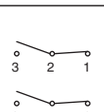
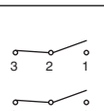
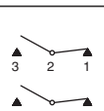
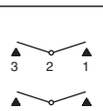
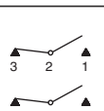
6 terminal version

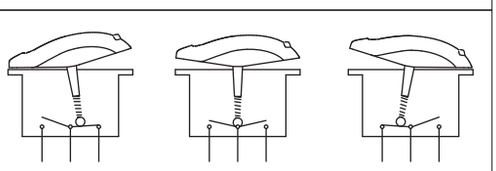
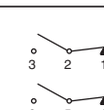
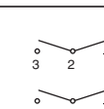
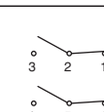
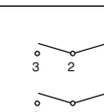
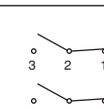
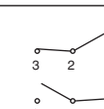
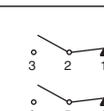
D

## ELECTRICAL FUNCTIONS AND CONNECTIONS

In the tables below, 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 (not terminals 6, 5, 4).

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

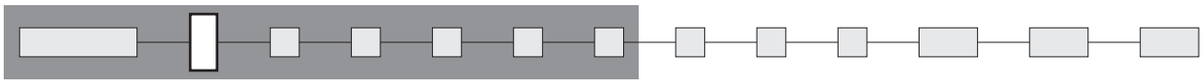
| | Positions | | |
|---|---|---|---|
| |  | | |
| Function 1 * KR31-KR41 |  | |  |
| Function 5 KR35-KR45 |  | |  |
| Function 6 KR36-KR46 |  | |  |
| Function 7 KR37-KR47 |  |  |  |

| | Positions | | |
|---|---|---|---|
| |  | | |
| Function 8 KR38-KR48 |  |  | |
| Function 9 KR39-KR49 |  |  | |
| Function 4 KR44 |  |  | |
| Function 4-1R KR44-1R |  | | |

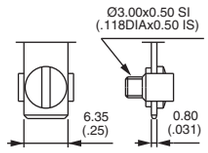
* Function 1 only available for 6 terminal versions.

### TERMINALS

**CASE + LEDS**

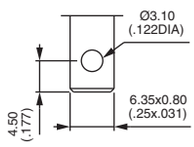


#### Screw



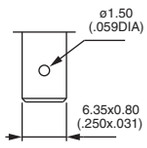

**0** 6 term. with barrier

#### Solder lug / quick-connect



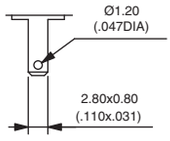

**2** 6 terminals with barrier
**4** 6 terminals w/o barrier
**A** 10 terminals with barrier
**B** 10 terminals w/o barrier
**C** 10 terminals for use with connector U2292 or U3152

#### Normalized quick-connect 6,35x0,8

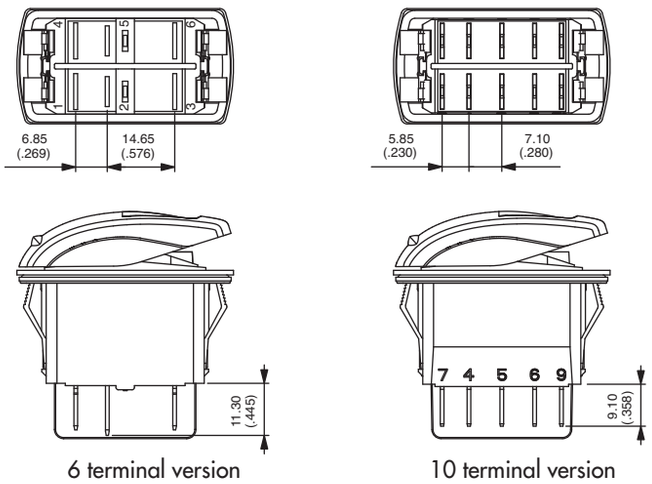



**3** 6 terminals with barrier
**5** 6 terminals w/o barrier
**D** 10 terminals with barrier
**E** 10 terminals w/o barrier
**F** 10 terminals for use with connector U2292 or U3152

#### Normalized quick-connect 2,8x0,8




**G** 10 terminals with barrier
**H** 10 terminals w/o barrier
**J** 10 terminals for use with connector U2282




6 terminal version — 10 terminal version

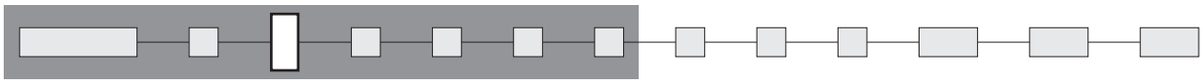
Terminals are marked on the case.

The drawings show the maximum possible number of terminals.

D

### CONTACT MATERIALS

**CASE + LEDS**



**A** Silver
**D** Silver, gold plated

**S** Silver 20A NEW!
For all functions except 4 and 4-1R - for normalized quick-connect terminals 6,35x0,8 only.

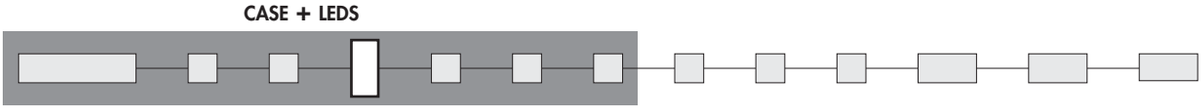
# KR series

## Power rocker switches

*Case - LEDs*

### SEALING

CASE + LEDS

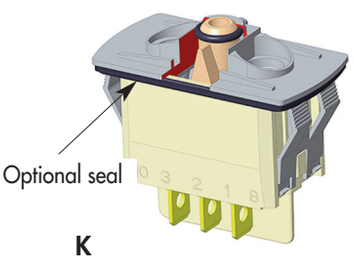


**X** No sealing

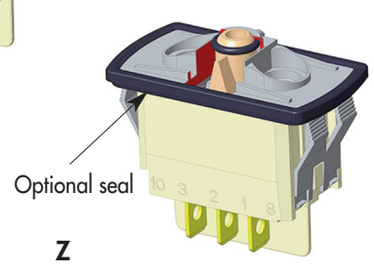
**K** IP68 (front panel components of switch only)

**Z** IP69K - Installation notice available on request

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.




**K**

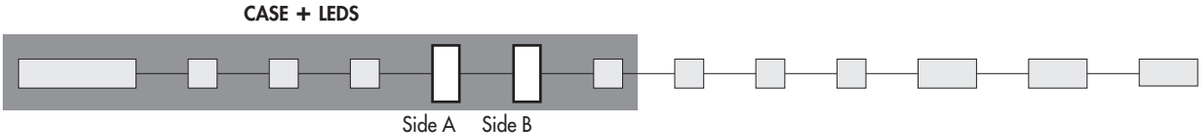



**Z**

D

### LEDS

CASE + LEDS

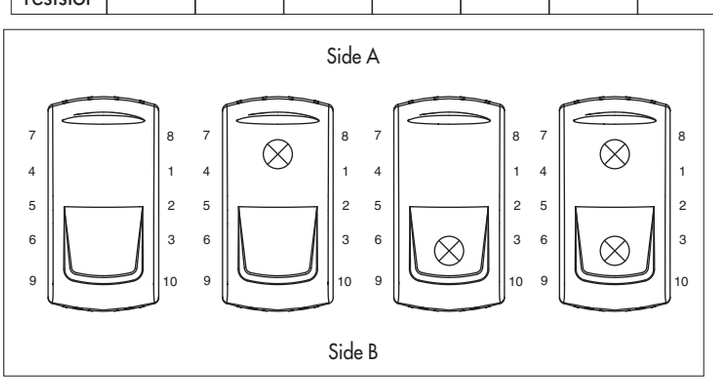



Complete each enlarged box with one of the codes listed below.

**X** Without LED

| | Red | Green | Yellow | Blue | White | Amber | Red/green |
|---|---|---|---|---|---|---|---|
| 6VDC | **A** | **B** | **C** | **M** | **R** | **4** | **1** |
| 12VDC | **D** | **E** | **F** | **N** | **S** | **5** | **2** |
| 24VDC | **J** | **K** | **L** | **P** | **T** | **6** | **3** |
| No resistor | **U** | **V** | **W** | **Y** | **Z** | **9** | **8** |

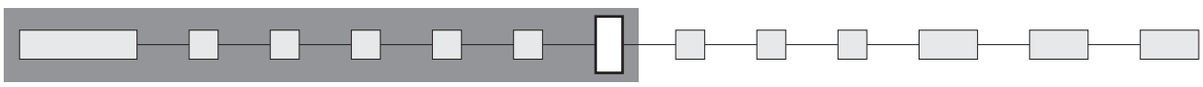
LED consumption : 20mA @ nominal voltage (25°C)
Other illumination solutions : on request.



## WIRING

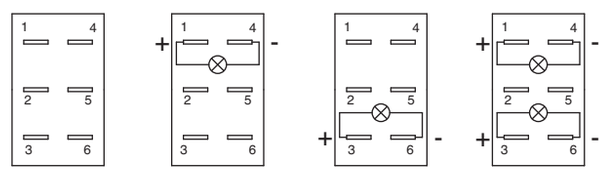
The LED wiring diagram is shown on the case.

**CASE + LEDS**

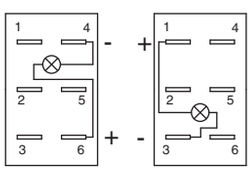


### • For 6 terminal versions

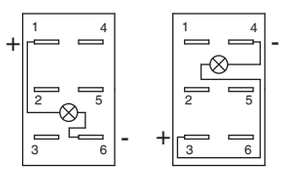
LED connected to the load



**A** (standard)

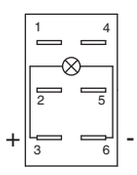


**B**

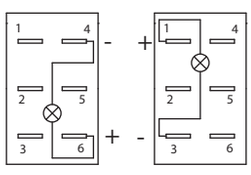


**C**

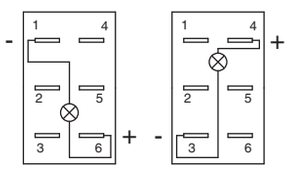
Note : If not available, terminals are added to connect the LED.



**D** - for function 1 (on-off) with LED on side A



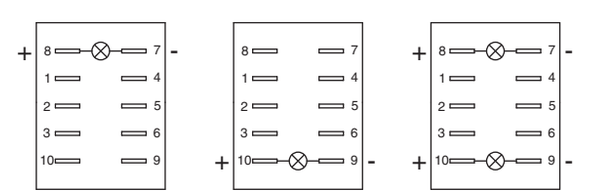
**E**



**F**

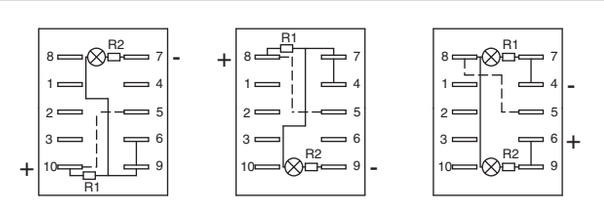
### • For 10 terminal versions

Independent LED or integrated functions



**G** (standard)

To have independent LEDs.



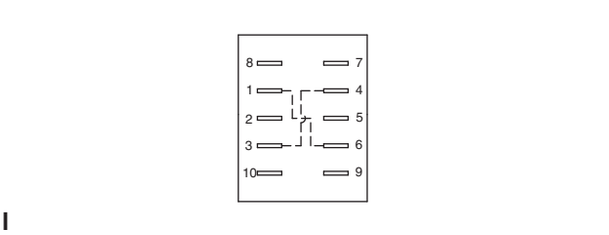
**H**

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

To obtain 2 symbol illumination levels (night illumination when OFF and higher illumination when ON).

H wiring with LED on side A available with functions 6, 8, 9 and 44.
H wiring with LED on side B available with functions 5, 6 and 9.
H wiring with 2 LEDs available with functions 8 and 9.
More information (H wiring schematics) : on request.

*Dotted line = external wiring, continuous line = internal wiring*



**I**

Power supply betweeen 2 and 5 - Load between 1 and 4 or 3 and 6.
Available with H and J quick-connect terminals.

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

*Dotted line = external wiring*

Please contact us for other wiring solutions.

D

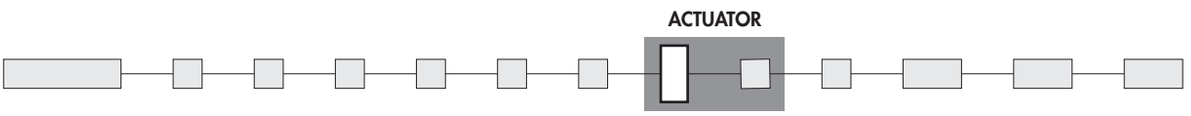
# KR series

## 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.**

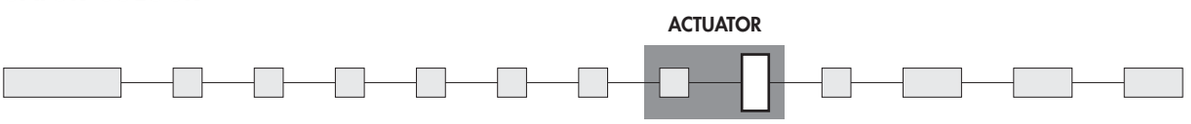
### ACTUATOR TYPE



**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 |

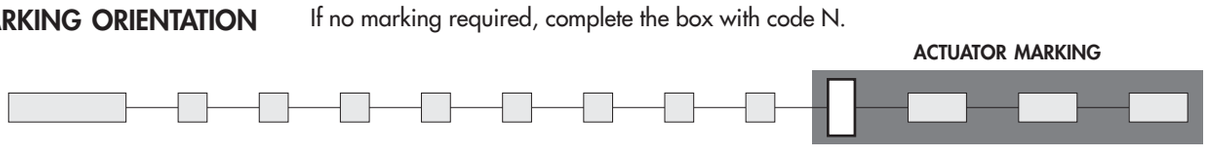
| Code | Colour |
|---|---|
| **7/1** | White |
| **9** | Orange |
| **A** | Aluminium bright |

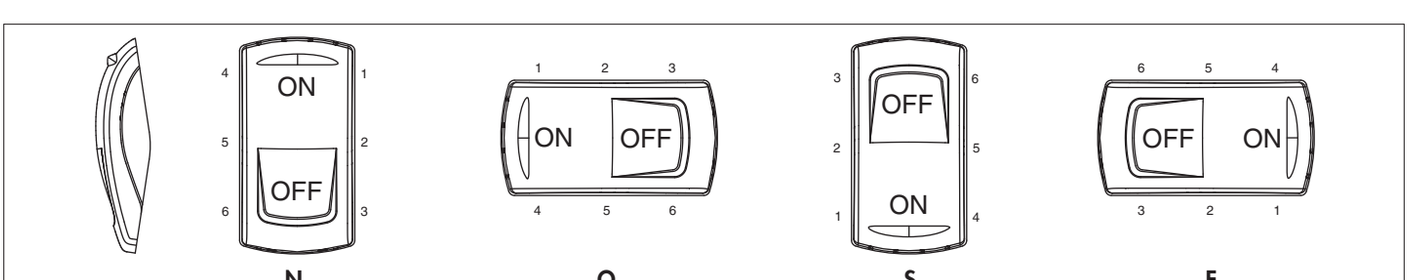
Note : colours 7 and 7/1 not available on illuminated versions.

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

### MARKING ORIENTATION

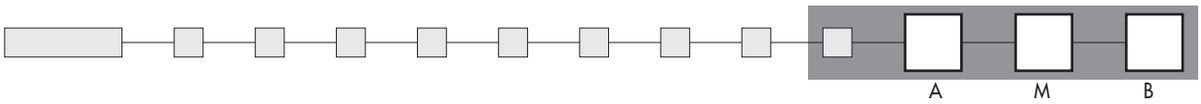
If no marking required, complete the box with code N.




Other orientations : on request

### SYMBOLS



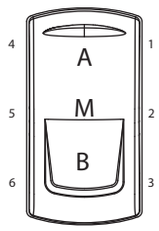

**XX** No symbol

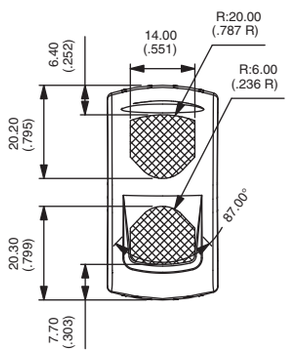
**Available symbols** : see end of section D.

**Marking colour**
White marking for illuminated rockers (laser etching) and non-illuminated black rockers (pad printing). Black marking for non-illuminated colour rockers (pad printing). Other : on request.

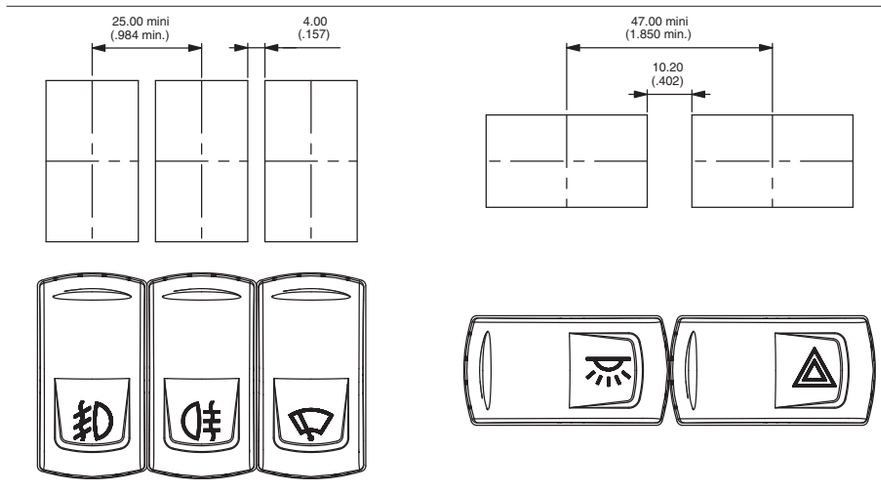
**Laser etching resistance**
- Water and petrol resistant acccording to EN61058-1
- Tear resistant (cross-cut test) according to NF ISO 2409 : class 0
- UV resistant according to ISO 4892-2

**Marking area**
For illuminated versions. The symbol will be included in the hatched area. Marking in M area : on request.

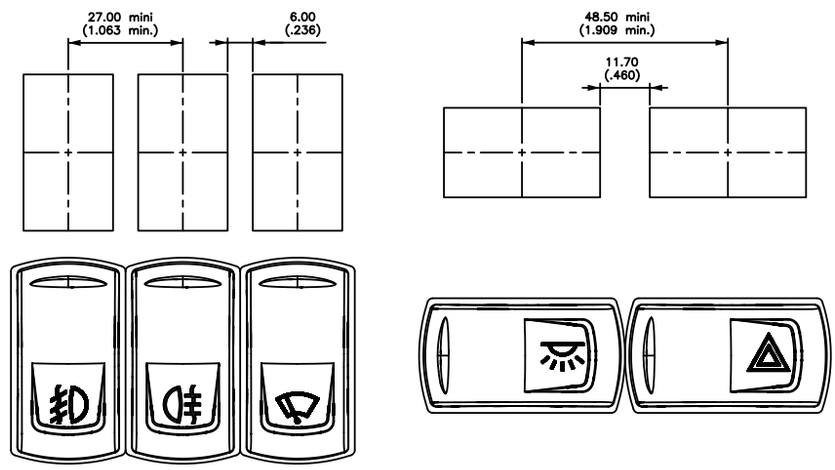



### MATRIX MOUNTING



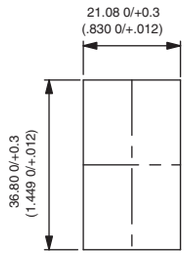

### SPECIFIC MATRIX MOUNTING FOR Z VERSION




### PANEL CUT-OUT

Panel thickness : 0,8 mm to 4,6 mm

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




D

# K range

## Power rocker switches and indicators

*Symbols*

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.

**Legend scale** :
KR series : 1:1
KL, KG and KI series : depending on space available on the product (see “Symbols” section at the end of each series).

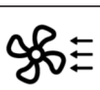
| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| XX | None | - |
| 01 | ON | - |
| 02 | OFF | - |
| 03 | O | - |
| 04 | I | - |
| 05 | II | - |
| 06 | STOP | - |
| 07 | A | Stop |
| 08 | M | Motion |
| 09 | | Up motion |
| 10 | | Down motion |
| 11 | | Hot |
| 12 | | Cold |
| 13 | | Hazard warning (0085) |
| 14 | | Traveller lighting |
| 15 | | Driver lighting (1421 |

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| 16 | | Revolving light |
| 17 | | Rear ventilator |
| 18 | | Heating (0637) |
| 19 | | Door opening |
| 20 | | Windshield demister/defroster (0635) |
| 21 | | Windshield wiper (0086) |
| 22 | | Windshield washer (0088) |
| 23 | | Ventilator fan (0089) |
| 24 | | Side mirror defroster |
| 25 | | Restarting pump |
| 26 | | Front fog lights (0633) |
| 27 | | Rear fog lights (0634) |
| 28 | | Propulsion system trim |
| 29 | | Beacon (1141) |
| 30 | | Anchor |
| 31 | | Electric motor (0011) |

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| 32 | | Emergency first aid vehicle (2565) |
| 33 | | Load tipping (1557) |
| 34 | | Loading light (2457) |
| 35 | | Tractor, rear-ward (1667) |
| 36 | | Combine, direction of movement (1678) |
| 37 | | Use no forks (2406) |
| 38 | | Transmission (1166) |
| 39 | | Working spot light (1145) |
| 40 | | Engine (0640) |
| 41 | | Horn (0244) |
| 42 | | Lock (1656) |
| 43 | | Taxi sign light (2551) |
| 44 | | Working light (1204) |
| 45 | | Working light symmetric (1204) |
| 46 | | - |
| 47 | ASM | - |

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.

**Legend scale** :
KR series : 1:1
KL, KG and KI series : depending on space available on the product (see “Symbols” section at the end of each series).

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| 48 | | All wheel drive |
| 49 | | Differential lock (1662) |
| 50 | | - |
| 51 | | - |
| 52 | | - |
| 53 | N | - |
| 54 | | Rear window wiper (0097) |
| 55 | | Rear window washer (0099) |
| 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 |

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| 64 |  | Indicator |
| 65 | | Brake release |
| 66 | | Baggage room left door |
| 67 | | Baggage room right door |
| 68 | | Power blinds |
| 69 | | Engine idle control |
| 70 | CRUISE RES/SET | Cruise res/set |
| 71 | | Driver windows up/down |
| 72 | | Middle door opening |
| 73 | | Front door opening |
| 74 | | Lighting in baggage room |
| 75 | CRUISE ON/OFF | Cruise on/off |
| 76 | TV | TV |
| 77 | | Pump |
| 78 | WC | Toilet |
| 79 | | Toilet decontamination |

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| 80 | | Front windshield heating |
| 81 | AUS | Aus |
| 82 | | Radiator fan |
| 83 | | Remove retarder |
| 84 | | Restricted speed |
| 85 | | Preheater |
| 86 | | ABS detection |
| 87 | | ECAS detection |
| 88 | | Engine stop |
| 89 | CRUISE RES/CAN | Cruise res/cancel |
| 90 | | ECAS reset |
| 91 | | Driver windows heating |
| 92 | CRUISE SET+/SET- | Cruise set |
| 93 | | Air bag up/down |
| 94 | | Read lighting |
| 95 | | Lighting main switch |

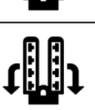
# K range

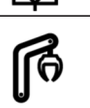
## Power rocker switches and indicators

*Symbols*

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.

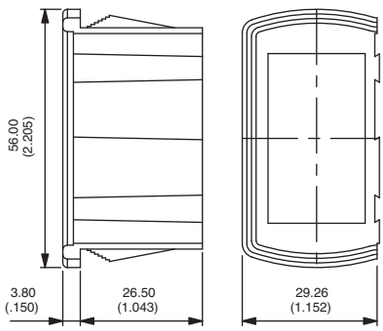
**Legend scale** :
KR series : 1:1
KL, KG and KI series : depending on space available on the product (see “Symbols” section at the end of each series).

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| 96 | | Heating using water |
| 97 | | Low beam |
| 98 | | Position lights |
| 99 | | Diesel acceleration |
| A1 | | Manual mode |
| A2 | | Clockwise cabin rotation |
| A3 | | Anticlockwise cabin rotation |
| A4 | | - |
| A5 |  | - |
| A6 | | Parking brake |
| A7 | | - |
| A8 | | - |
| A9 | | - |
| AA | | - |
| AB | | - |
| AC | | - |

| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| AD | | - |
| AE | | - |
| AF | | - |
| AG | | Battery charging condition (0247) |
| AH | | Turn signals (0084) |
| AJ | | High beam (0082) |
| AK | | Differential lock, bogie (2600) |
| AL | | Brushing with a rotating brush (0070) |
| AM | | Differential lock, transfer case 4x4 (2475) |
| AN | | Loader bucket, float (1441) |
| AP | | Loader bucket (1437) |
| AQ | | Rear window washer & wiper (0098) |
| AR | | Header Header drive (1579) |
| AS | | Excavator/backhoe boom side shift (2091) |
| AT | | Chemical water treatment (1851) |
| AU |  | Grapple skidder, single funct° boom (1762) |

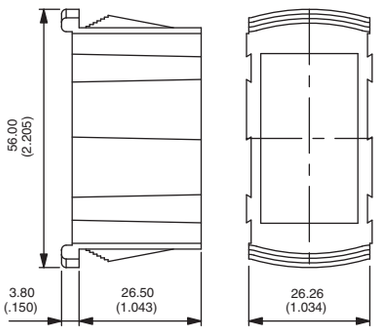
| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| AV | | - |
| AW | | - |
| AY | | - |
| AZ | | - |
| B1 | HIGH | - |
| B2 | LOW | - |
| B3 | | - |

### MOUNTING PANEL END



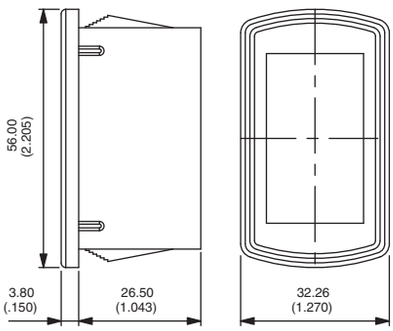

**U2261**

### MOUNTING PANEL MIDDLE




**U2262**

### SINGLE MOUNTING PANEL



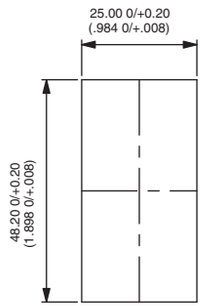

**U2267**

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

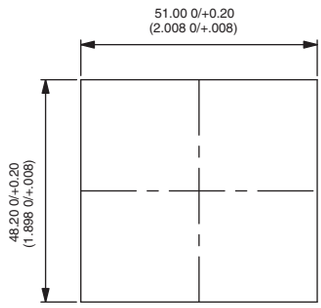
### MOUNTING PANEL CUT-OUT

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

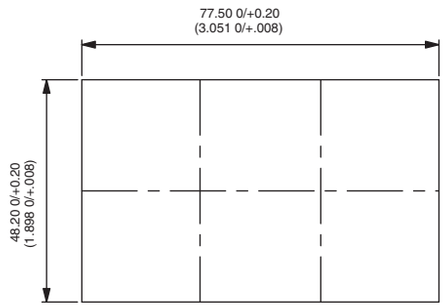
**For 1 element U2267**




**For 2 elements U2261**

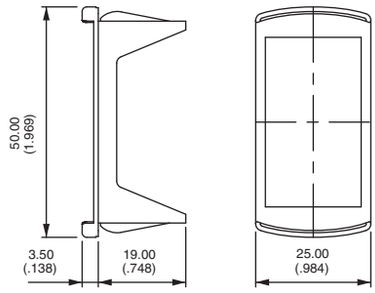



**For 3 elements** (2xU2261 + 1x U2262)




### 22 x 44 ADAPTER

**Front panel dismounting**

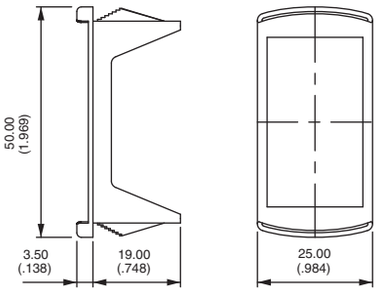



**U3060**

Recommended panel thickness : 0,60 mm to 1,50 mm

### 22 x 44 ADAPTER

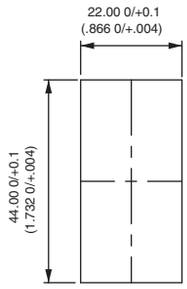
**Rear panel dismounting**




**U3070**

Recommended panel thickness : 1,60 mm -0,1/0 to 5,60 mm -0,1/0 in stages of 0,40 mm

### PANEL CUT-OUT




**Adapter colours** (replace 0 with code)
**1/4** : dark blue - **2** : black - **4** : grey
**5** : yellow - **6** : red - **7/1** : white

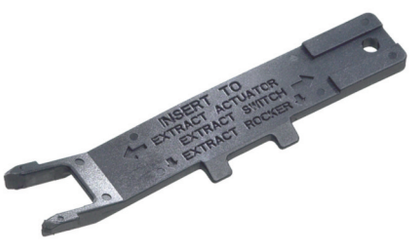
D

# K range

## Power rocker switches and indicators

*Accessories for KR, KL and KI series*

### ACTUATOR REMOVING TOOL




**U3052**

2 tools are supplied

EXTRACT ACTUATOR (KR ONLY)
Allows the extraction of the rocker / rocker support assembly.
Place the 2 claws under the support and push as indicated by the arrow.

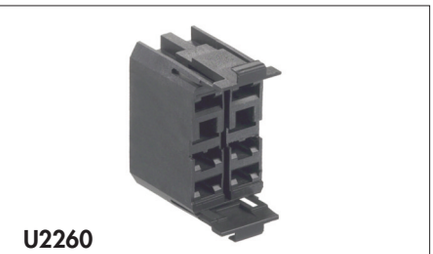
EXTRACT ROCKER (KR ONLY)
Allows to separate the rocker from its support.
Insert the tool between rocker and support as indicated by the arrrow. Pull out the tool in the opposite direction.

EXTRACT SWITCH (KR, KL AND KI)
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.

### CONNECTORS

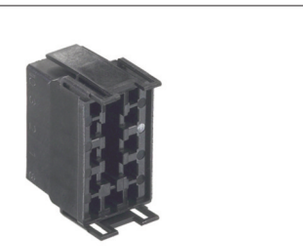
Standard colour : black. Other colours : on request.
Connectors cannot be combined with wiring types H and I.





**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 : TE42282-2).
Can be used for the KG series.

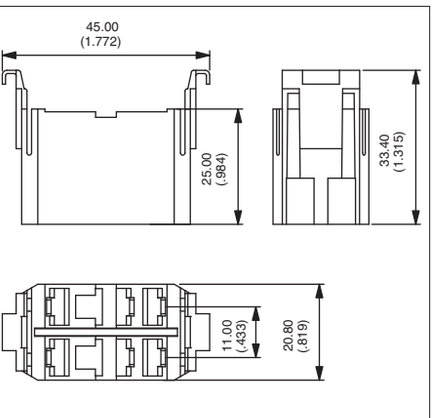


**U2282**

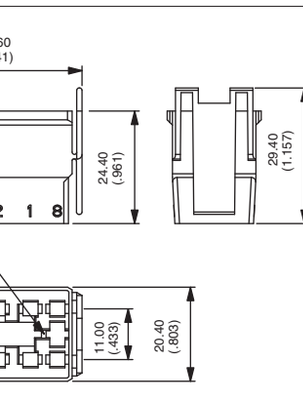
**10 terminal version**
For use with terminals type H or J.
2,8 (.110) tabs to be fitted by the user (example : AMP/Tyco 0-927779-3).

**U2292**

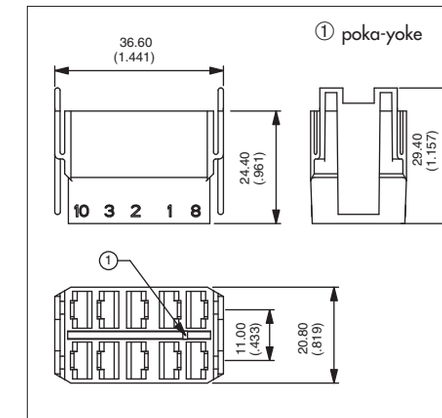
**10 terminal version**
For use with terminals type B, C, E or F.
6,35 (1/4) tabs to be fitted by the user (example : TE42282-2).




**U2260**




**U2282**



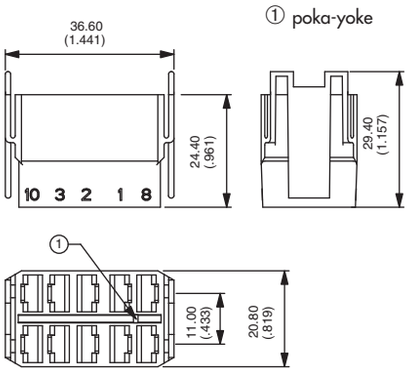

**U2292**

## CONNECTORS (continued)

**U3152**

*New!*

**10 terminal version**
For use with terminals type B, C, E or F.
6,35 (1/4) tabs to be fitted by the user
(example : «Timer» terminals TE927833-2)




**U3152**

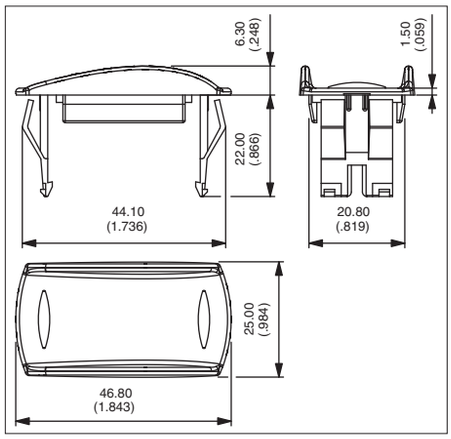
## BLANKING CAPS

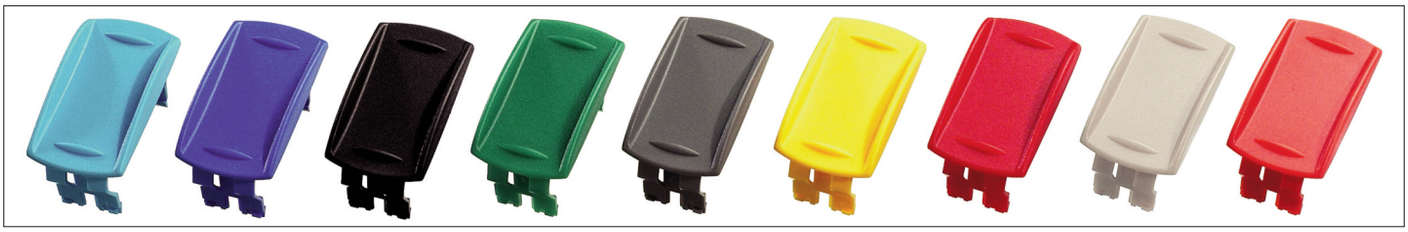
Usefull for future extensions.

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

| Code | Colour |
|---|---|
| **U2274** | Grey |
| **U2275** | Yellow |
| **U2276** | Red |
| **U2277** | Ivory |
| **U2279** | Orange |

Recommended panel thickness :
1,50 mm to 6 mm



Connectors can be hanged on specific hole plugs. Contact APEM.

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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http://moschip.ru/get-element

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9