Installation, Operating and Maintenance Instructions for

Jola external-mounting limit switches RK 1/K/…/Variant ./Ex-..

⟨Ex⟩ I M2 Ex ia I Mb
or
⟨Ex⟩ II 1 G Ex ia IIC T6 Ga
or
⟨Ex⟩ II 2 G Ex ia IIC T6 Gb

These Installation, Operating and Maintenance Instructions must always be handed over to the fitter/operator/service personnel of our products together with all other user documentation and information! They should be stored in a safe place together with all other user documentation and information so they can be consulted again when necessary at any time!

Jola Spezialschalter GmbH & Co. KG
Klostergartenstr. 11 • 67466 Lambrecht (Germany)
Tel. +49 6325 188-01 • Fax +49 6325 6396
contact@jola-info.de • www.jola-info.de

1. Area of application

The external-mounting limit switches

JOLA
D-67466 Lambrecht

CE 0080

RK 1/K/…/Variante ./Ex-..

(serial number)
(production year)

Ex I M2 Ex ia I Mb
or
Ex II 1 G Ex ia IIC T6 Ga
or
Ex II 2 G Ex ia IIC T6 Gb

Tamb : - 20°C to + 60°C

INERIS 12ATEX0059

are binary contact devices for use

- **<u>in underground areas in mines as well as in above-ground areas of mines which could be at risk due to firedamp and/or flammable dusts:</u>**

  RK 1/K/…/Variante ./Ex-M Ex I M2 Ex ia I Mb,

- **<u>in above-ground areas which could be at risk due to a potentially explosive atmosphere:</u>**

  RK 1/K/…LF/Variant ./Ex-0G Ex II 1 G Ex ia IIC T6 Ga: in Zone 0, 1 or 2,
  RK 1/K/…/Variant ./Ex-1G Ex II 2 G Ex ia IIC T6 Gb: in Zone 1 or 2.

Application range, mounting and mode of operation of the RK 1/K/…/Variant ./Ex-.. external-mounting limit switches

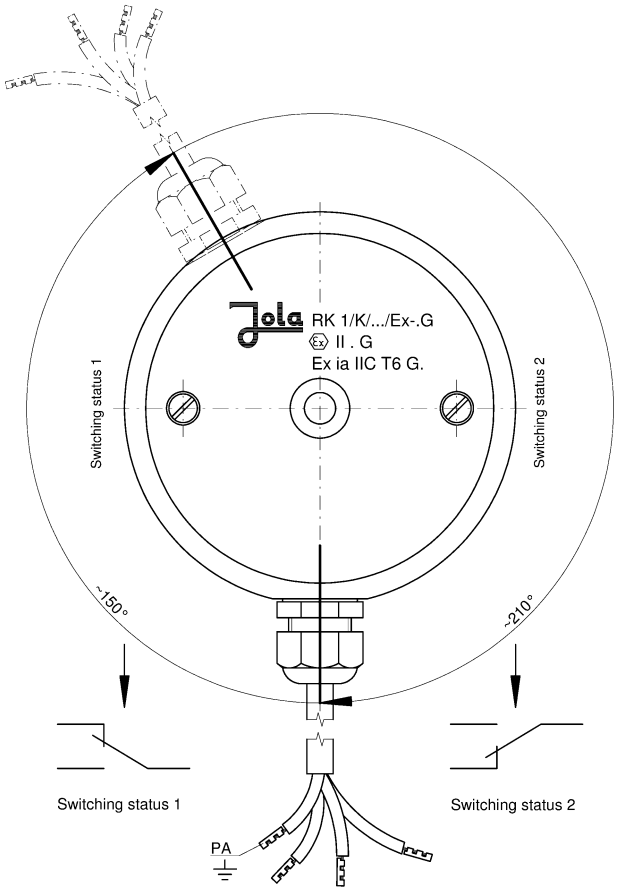
The RK 1/K/…/Variant ./Ex-.. external-mounting limit switches are particularly suitable where the use of conventional limit switches is questionable because of severe working conditions, e.g. in damp or dirty environment.

The mounting of the RK 1/K/…/Variant ./Ex-.. limit switches has to be effected via a through hole situated in the middle of the body of the switch.

Through this hole, the limit switch has to be mounted on a horizontal shaft of the customer's device which permits a rotation of max. +/- 180°. The rotation of the shaft causes the switching. In order to prevent an incorrect functioning of the limit switch and a cable break, a sufficient cable length must be left. After the limit switch has been set on the shaft, it has to be fixed by the screw placed inside the body of the switch.

The RK 1/K/…/Variant ./Ex-.. limit switches have as switching element a ball-operated microswitch (changeover contact). Representation of the switching: see below.

The external-mounting limit switches RK 1/K/…/Variant ./Ex-.. are not suitable to be used on rotating shafts.



The switching occurs by rotation to the right, clockwisely, when looking at the front-side (rating plate side).

All **the technical parameters of the external-mounting limit switch** are listed in this brochure and the accompanying product description. **You must always observe and follow all the instructions relating to these parameters. The units may not be used for applications outside the specified parameter range.**

If the product description is not supplied with the product or is lost, **you must always request a copy of the description prior to installation, connection or start-up and ensure that it is read and observed by the suitably qualified specialist personnel. Otherwise the external-mounting limit switch may not be installed, connected and started up.**

2. Preconditions for safe use

- **Maximum values for the external-mounting limit switches RK 1/K/…/Variant ./Ex-..**

Sensor type	Type designation	Li	Ci
Each external-mounting limit switch	RK 1/K/…/Variant ./Ex-..	1 µH per meter connecting cable	200 pF per meter connecting cable

- **Special requirements/conditions for the safe use of the external-mounting limit switches RK 1/K/…/Variant ./Ex-.. :**

  To ensure safe operation, power supply to the external-mounting limit switch RK 1/K/…/Variant ./Ex-.. must be via a Ex ia voltage source with output circuits which are approved as Ex ia intrinsically safe for use in the potentially explosive atmosphere which corresponds to the gas explosion group in which the device is installed: IIC, IIB, IIA respectively I.

  Always observe all the restrictions specified with regard to the voltage source.

  The output parameters of the voltage source must be equivalent to or lower than the input parameters of the units as defined below.

  Maximum input parameters at the wires or connection terminals:

Variant	Ui (V) max.	Ii (A) max.
Variant 0	42	0.1
Variant 1	42	0.1
Variant 2	13	0.1

3. Additional conditions for safe operation

When the external-mounting limit switch RK 1/K/…/Variant ./Ex-..
is equipped with an antistatic connection cable,
the antistatic cable has, under any circumstances,
to be not longer than 30 m.

Before installing the external-mounting limit switch RK 1/K/…/Variant ./Ex-.. you must ensure that the materials used are sufficiently chemically and mechanically resistant to all external influences.

In case of doubt, consult a suitably trained expert prior to use. Do not use the product before these questions have been fully clarified.

4. Installation, connection, start-up and maintenance, general regulations

Installation, connection, start-up and maintenance of the external-mounting limit switch RK 1/K/…/Variant ./Ex-.. may only be performed by suitably qualified specialist personnel in line with all the information material and documentation supplied with the the external-mounting limit switch and following all instructions contained therein.

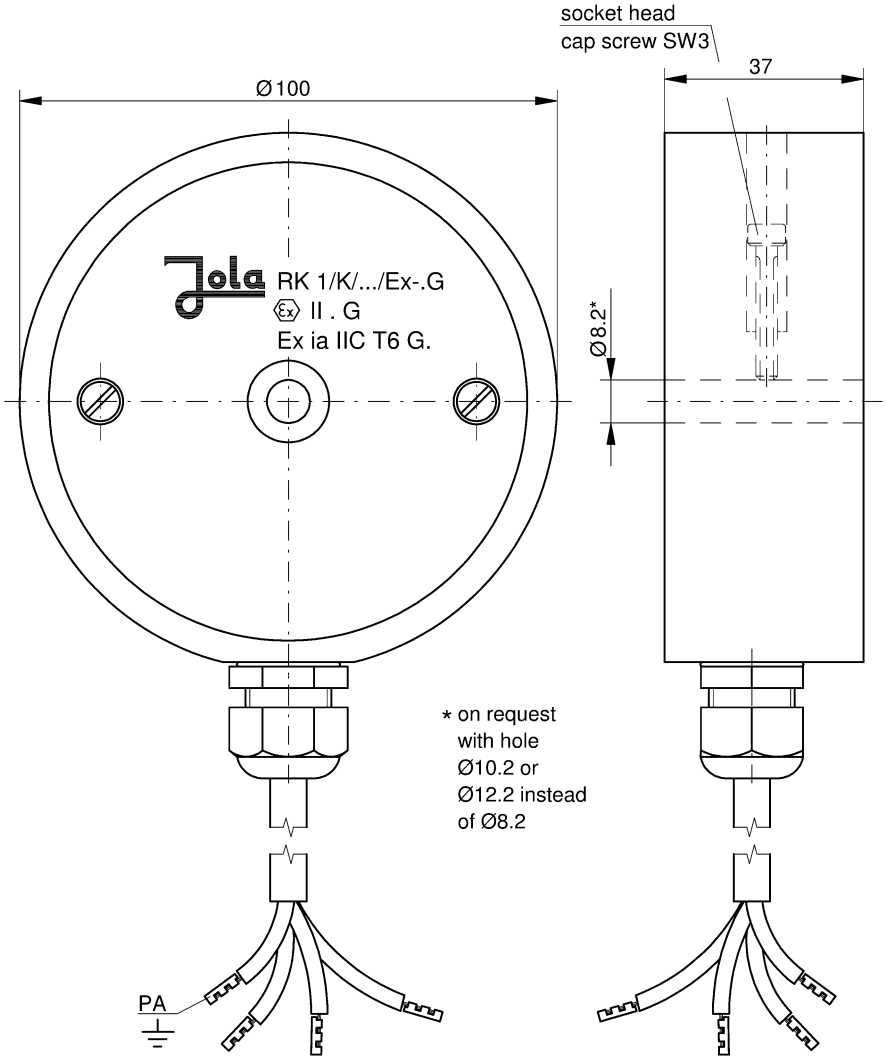
The qualified specialist personnel must ensure that they are familiar with all valid standards, regulations, local requirements and specific conditions, in particular the standards, regulations, local requirements and specific conditions relating to explosion protection – and must proceed accordingly.

The entire installation set-up of the external-mounting limit switches RK 1/K/…/Variant ./Ex-.. and of their mounting accessories must always comply with the standard IEC/EN 60 079-14 resp. the replacing standard.

You must always read – and adhere to the instructions outlined in - the yellow DIN A 5 leaflet "User information/Instructions for use with mounting, operating and maintenance instructions for the product...". If the leaflet is not supplied with the product or is lost, you must always request a replacement leaflet from Jola.

5. Installation of the external-mounting limit switches RK 1/K/…/Variant ./Ex-..

The mounting of the RK 1/K/…/Variant ./Ex-.. limit switches has to be effected via a through hole situated in the middle of the body of the switch.



Through this hole, the limit switch has to be mounted on a **horizontal metallic shaft** of the customer's device which permits a rotation of max. +/- 180°. The rotation of the shaft causes the switching. In order to prevent an incorrect functioning of the limit switch and a cable break, a sufficient cable length must be left.

After the limit switch has been set on the shaft, it has to be fixed by the screw placed inside the body of the switch.

The external-mounting limit switches RK 1/K/…/Variant ./Ex-.. are not suitable to be used on rotating shafts.

When mounting the external-mounting limit switch, take care to ensure that the switch and in particular the cable are not damaged by sharp edges and objects.

The horizontal metallic shaft has to be connected to the potential equalisation system.

6. Connection

Connect the **contact of the external-mounting limit switch RK 1/K/…/Variant ./Ex-..** as shown in the circuit diagram in the supplied product documentation.
If intrinsically safe contact protection relays are used, connect the external-mounting limit switch RK 1/K/…/Variant ./Ex-.. in line with the instructions contained in the corresponding production description.

Potential equalisation is necessary with:

- **the external-mounting limit switch RK 1/K/…/Variant ./Ex-..**
  and
- **the metal accessories and the accessories made of antistatic electrically conductive plastic.**

Connect the green-yellow conductor or the non-insulated conductor of the cable (depending of the type of cable) of the external-mounting limit switch RK 1/K/…/Variant ./Ex-.. to the potential equalisation system.

The horizontal metallic shaft and all other accessories made of metal or made of electrically conductive plastic material have as well to be connected to the potential equalisation system.

Connection to the potential equalisation system is essential for safe operation and must never be neglected.

You must also always ensure that you are connecting to the potential equalisation system and not to a potential earth.

The entire installation set-up must always comply with the standard IEC/EN 60 079-14 resp. the replacing standard.

7. Start-up

Prior to start-up, you must re-check the mounting position, the mechanical fastening and the electrical connection.
In particular, you must check once again that the unit is also connected to the corresponding, admissible intrinsically safe circuit (see point 2).

In addition, you must also check and verify that there is no possibility whatsoever of hazardous conditions occurring due to non-adherence to any of the relevant instructions, standards or official regulations.

Only then may the unit in question be started up electrically.

8. Maintenance

The external-mounting limit switches RK 1/K/…/Variant ./Ex-... are maintenance-free when used in a normal environment without chemically aggressive substances.

To rule out any risks, however, the external-mounting limit switches must be sight-checked and function-tested by qualified specialist personnel at least once a year.
Where risks cannot be ruled out, you should adhere to an inspection frequency suited to the application in question and laid down in consultation with the relevant supervisory authorities.

If the external-mounting limit switch is installed as a safety element within a system, it must always be inspected and checked at intervals to be agreed with the local supervisory authorities.

Prior to all maintenance work, the qualified specialist personnel must inform themselves of all valid standards, regulations, local guidelines and special conditions, in particular standards, regulations, local guidelines and special conditions concerning explosion protection and proceed accordingly.

9. Repair

All alterations and repairs to the external-mounting limit switches must be performed by the manufacturer's suitably qualified specialist personnel. Under no circumstances may other individuals or companies perform unauthorised alterations or repairs.

10. Disposal

The units must be disposed of by depositing them in conformity with the law at an appropriate collection point for electrical and electronic devices.