

## **Installation, Operating and Maintenance Instructions for the**

### **Jola Contact Protection Relay KR 5/Ex I (M1) / II (1) GD [Ex ia Ma] I [Ex ia Ga] IIC [Ex ia Da] IIIC**

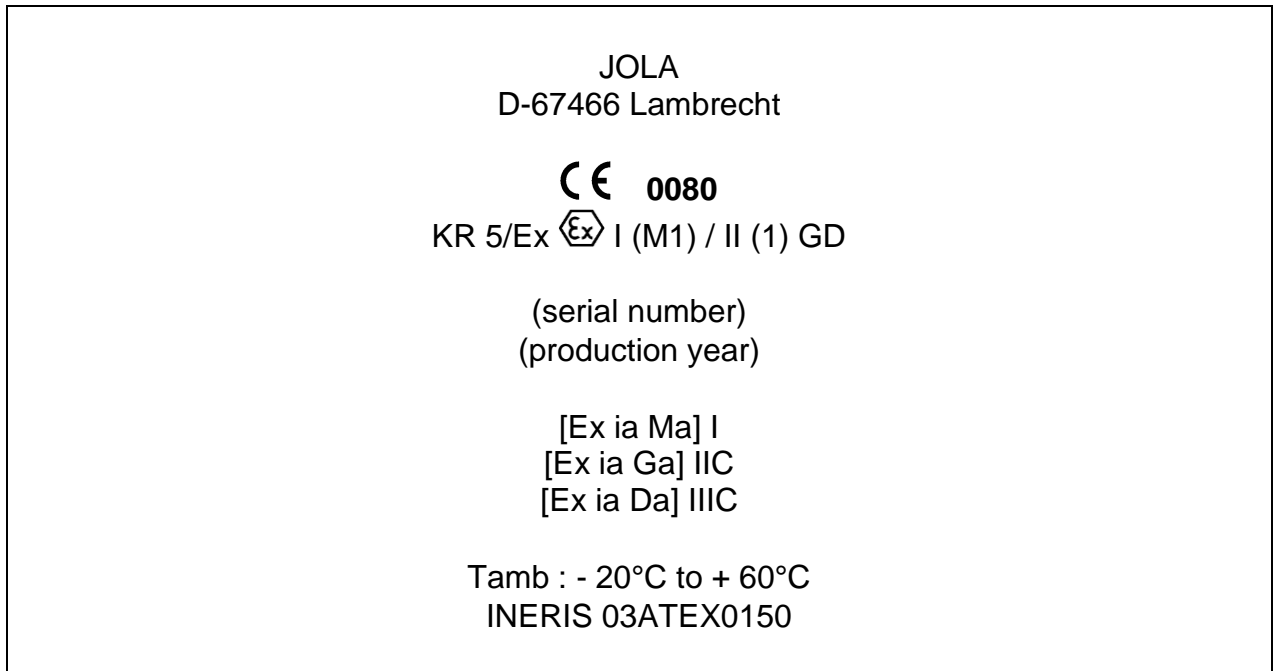
**These Installation, Operating and Maintenance  
Instructions must always be handed over to the  
fitter/operator/service personnel  
of our products together with all other user  
documentation and information!**

**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!**

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## 1. Area of application

The contact protection relay KR 5/Ex



is designed to transmit electrical signals coming **from one or more sensors installed in a potentially explosive atmosphere** to non-hazardous areas.  
**The contact protection relay KR 5/Ex must be installed outside potentially explosive atmospheres or be protected by a suitable standardized ignition protection class.**

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The sensors can, **for example, be used for the automatic control of pumps or solenoid valves or for the purpose of overflow or run-dry protection in tanks.**

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**All the technical parameters of the sensors and/or the contact protection relay are listed in this brochure and/or the accompanying product descriptions. These documents also contain the corresponding **installation recommendations**. **You must always observe and follow all the instructions relating to these parameters and installation recommendations. The relay may not be used for applications outside the specified parameter range.****

If the product descriptions are not supplied with the products or are lost, **you must always request a copy of the descriptions prior to installation, connection or start-up and ensure that they are read and observed by the suitably qualified specialist personnel. Otherwise the sensors and/or the contact protection relay may not be installed, connected and started up.**

## 2. Preconditions for safe use

### ◆ Maximum parameters of the sensors

The maximum parameters of the sensors are listed in the corresponding product documentation.

### ◆ Special requirements/conditions for the safe use of the sensors

The special requirements/conditions for the safe use of the sensors are listed in the corresponding product documentation.

### ◆ Maximum parameters of the contact protection relay KR 5/Ex

#### Rated supply voltages (terminals J15, J16):

$U = AC\ 24\ V, AC\ 110\ V, AC\ 115\ V, AC\ 230\ V\ or\ AC\ 240\ V$

#### Maximum electrical parameters of the electrical circuit connected to terminals J9, J10 and J11:

$U_{max.} = 250\ V; I_{max.} = 4A, but\ max.\ P = 100\ VA$

#### Maximum electrical parameters at output terminals J6 and J7:

$U_o = 11.5\ V; I_o = 12.7\ mA, but\ max.\ P_o = 70\ mW$

#### Maximum electrical parameters at output terminals (J1, J6) or (J1, J7):

$U_o = 10.5\ V; I_o = 25\ mA, but\ max.\ P_o = 140\ mW$

### Special requirements/conditions for the safe use of the contact protection relay KR 5/Ex

The contact protection relay KR 5/Ex must be **installed outside potentially explosive atmospheres** or be protected by a suitable standardized ignition protection class.

The electrical circuits connected to terminals J6 and J7 must be approved for use

- in above-ground areas which could be at risk due to a potentially explosive atmosphere caused by gases (groups IIC, IIB or IIA) or

- 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 (group I) or

- in above-ground areas which could be at risk due to a potentially explosive atmosphere caused by dusts

and their suitability in terms of intrinsic safety must be ensured.

The maximum parameters of the external circuits that may be connected are as follows:

For explosion group IIC	For explosion group IIB and for dust	For explosion groups IIA and I
$Co(L=0) = 1.62\ \mu F$ $Lo(C=0) = 152\ mH$ or $Lo/R_o = 176\ \mu H/Ohm$	$Co(L=0) = 11.1\ \mu F$ $Lo(C=0) = 672\ mH$ or $Lo/R_o = 777\ \mu H/Ohm$	$Co(L=0) = 45\ \mu F$ $Lo(C=0) = 972\ mH$ or $Lo/R_o = 1.12\ mH/Ohm$

The electrical circuits connected to terminals J6, J1 or J7, J1 must be approved for use

- in above-ground areas which could be at risk due to a potentially explosive atmosphere caused by gases (groups IIC, IIB or IIA) or
  - 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 (group I) or
  - in above-ground areas which could be at risk due to a potentially explosive atmosphere caused by dusts
- and their suitability in terms of intrinsic safety must be ensured.

The maximum parameters of the external circuits that may be connected are as follows:

For explosion group IIC	For explosion group IIB and for dust	For explosion groups IIA and I
$C_o(L=0) = 2.38 \mu F$ $L_o(C=0) = 22 mH$ or $L_o/R_o = 51 \mu H/Ohm$	$C_o(L=0) = 16.6 \mu F$ $L_o(C=0) = 152 mH$ or $L_o/R_o = 351 \mu H/Ohm$	$C_o(L=0) = 74 \mu F$ $L_o(C=0) = 352 mH$ or $L_o/R_o = 814 \mu H/Ohm$

### 3. Additional conditions for safe operation

**Before using the sensors, you must ensure that the materials used in the respective sensor are sufficiently chemically and mechanically resistant to the liquid to be monitored and all other 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 sensors and the contact protection relay may only be performed by suitably qualified specialist personnel in line with all the information material and documentation supplied with the units 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.**

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 and connection of the contact protection relay KR 5/Ex

**The contact protection relay KR 5/Ex must be installed outside potentially explosive atmospheres or be protected by a suitable standardized ignition protection class.**

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

The unit is designed exclusively for installation in a switch cabinet or in a suitable protective housing and may therefore only be installed in these locations. It is only suitable for use in clean environments.

## 6. Start-up

**Prior to start-up, you must re-check the mounting position of all the units, the mechanical fastening and the electrical connection.**

**In particular, you must check once again that the sensor(s) is (are) connected to the corresponding, admissible intrinsically safe circuit(s).**

**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.**

## 7. Maintenance

The maintenance intervals are listed in the product documentation for the sensors.

**To rule out any risks, however, the sensors and contact protection relay 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 sensor(s) and contact protection relay are installed as safety elements within a system, they 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.**

## 8. Repair

**All alterations and repairs to the sensor(s) and/or the contact protection relay KR 5/Ex must be performed in the manufacturer's facility. Under no circumstances may other individuals or companies perform unauthorised alterations or repairs.**