Contactor Combination EX

Manual and Safety Instructions
Read this manual before installing and activating this product. Respect all safety instructions and local laws and regulations.

The installation may only be executed by qualified electricians. This product may only be used according to its intended use set forth in this manual.

The following Symbols and hazard statements are used in this operating and assembly instructions:

**Hazard statements**

**Danger**
Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.

**Warning**
Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.

**Caution**
Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

**Notes**

A blue or grey circle with a white graphical symbol indicates that an action must be taken.

A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.

If these instructions are not observed, it may result in malfunction or damage to the equipment.

The hazard statements are structured in the following way:

**Signal Word**

**Description of Hazard**
Consequence of ignoring the warning.
**Action to avoid the hazard.**
# Technical Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Switch cycles</strong></td>
<td>Max. 30 starts/h</td>
</tr>
<tr>
<td><strong>Mech. Life span</strong></td>
<td>$10^7$ switching cycles</td>
</tr>
<tr>
<td><strong>Operating voltage</strong></td>
<td>400 V AC</td>
</tr>
<tr>
<td><strong>Nominal operating current</strong></td>
<td>1A - 32A</td>
</tr>
<tr>
<td><strong>Rated power AC3/400V</strong></td>
<td>Max. 15 kW</td>
</tr>
<tr>
<td><strong>Supply frequency</strong></td>
<td>50 - 60 Hz</td>
</tr>
<tr>
<td><strong>Temperature range</strong></td>
<td>-25 - +50°C</td>
</tr>
<tr>
<td><strong>Magn. Tripping</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Therm. Tripping</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Motor protection tripping</strong></td>
<td>See tripping chart</td>
</tr>
<tr>
<td><strong>Protection class</strong></td>
<td>IP44</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>CEE-plug 16A/32A</td>
</tr>
<tr>
<td><strong>Cable entry</strong></td>
<td>Motor: M 32 (11-21 mm)</td>
</tr>
<tr>
<td></td>
<td>Control: M 16 (4-10 mm)</td>
</tr>
<tr>
<td><strong>Cross sections of the main conductors</strong></td>
<td>1 - 10 mm² rigid/ 1 - 6 mm² flexible / 16 - 10 AWG</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Polycarbonate (PC)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>325 x 145 x 170 mm (L x W x H)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>approx. 3 kg</td>
</tr>
</tbody>
</table>

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# Intended use

The contactor combination EX is intended for use in industrial and commercial areas in accordance with the EMC guidelines and taking interference emissions into account. When using the device, the permissible ambient conditions according to the specified IP protection class and the permissible temperature range must be observed. Special provisions apply to EX zones, areas with an increased risk of fire and underground. The contactor combination EX may switch motors in the EX\(_{\text{II}(2)}\) \(_{\text{GD}}\) area, provided that the level control itself is outside the EX zone. Mechanical and electrical changes may only be carried out after consulting the manufacturer and only by certified specialists. All changes to the device must meet the safety requirements. The manufacturer assumes no liability for damage resulting from improper use.
**Warnings**

**DANGER**

**Death or serious personal injury**
- The device may only be installed, serviced and commissioned by a suitably trained specialist taking into account the local regulations and technical regulations. The "5 safety rules" must be observed
- Before any intervention or opening of the device, it must be switched off using the on / off switch, the power supply must be interrupted by pulling the mains plug and secured against being switched on again
- Maximum current rating must not be exceeded

**Attention**
- Set the tripping current of the motor protection switch to the nominal motor current
- Overcurrent and residual current protective devices must be provided by the customer, according to standards, the cable length between the protective devices and the motor protection plug must not exceed 3m
- In automatic mode, the connected consumer can start up at any time
- The contactor combination EX may switch motors in the EX II (2) GD area, provided that the level control itself is outside the EX zone

**Notes**
- If a thermal contact is connected, the jumper at connections T1 and T2 must be removed
- The contactor combination EX may switch motors in the ATEX area, provided that the contactor combination itself is outside the ATEX zone; it must be ensured that the connected motor is suitable for operation within the ATEX zone
- In ATEX applications, an additional potential equalization in accordance with DIₜ VDE 60079-14 (VDE 0165-1) is required in addition to the main potential equalization, so that in the event of a fault there are no potential differences dangerous for the occurrence of ignitable sparks
- Only float switches approved for this purpose may be used in EX areas
- Never use oils, grease or any kind of solvents, these substances have negative effects on the plastics rigidity
- Only connect suitable cables and level controllers and observe the maximum cable length
Operation

Rocker switch On/Off
On = contactor combination in operation
Off = contactor combination out of operation

Rocker switch manual/ automatic
In the manual mode, the connected consumer is switched on or off according to the rocker switch on / off.
In the automatic mode, the connected consumer is switched on or off according to the float switch connected (rocker switch on / off must be set to on).

Reset-button motor protection relay
If the over-current relay trips, two options can be selected to switch it on again (setting is made using a switch on the motor protection relay):
Automatik (A): The motor protection relay switches on automatically after the bimetall has cooled down.
Hand (H): The motor protection relay must be reset by hand after the bimetall has cooled down.
The motor protection relay is set to automatic at the factory.

For integrated phase-sequence indicator and phase inverter
Red LED lights up = phase angle incorrect.
The direction of rotation is changed by lightly pressing and turning the pole pins in the plug.

For integrated operation indicator
Bright LED lights up = device is operating

Connection for thermal contact
The thermal contact of the connected consumer can be connected via terminals T1 and T2; in the event of a fault, the connected load will be deactivated.

Integrated restart inhibit
If the motor protection or the thermal contact in the consumer is triggered, the restart inhibit prevents automatic switching on after the error has been rectified. After troubleshooting, the electronics must first be reset using the on / off switch before the consumer can be switched on again.

Installation

Connection of the consumer according to the circuit diagram to terminals L1 (U), L2 (V), L3 (W), N and PE. The thermal contact of the connected consumer is installed on terminals T1 and T2, the factory-fitted bridge must be removed for this.
In automatic mode, the contactor combination can be controlled via a level controller, which is connected directly to terminals 1 and 3 of the isolating relay and to the PE terminal. The float switch used must be suitable for use in EX areas.
EU Declaration of Conformity

We hereby declare that the Nolta – Schützkombination EX specified below will, due to its design and construction, comply with the relevant regulations listed.

Product Designation

Nolta – Schützkombination EX

Manufacturer

Nolta GmbH
Industriestr. 8
35091 Cölbe

EU directives / Harmonized standards / national techn. Standards - Specifications

Low Voltage Directive 2014/35/EU

Restriction of use of certain hazardous substances in electrical and electronic equipment (RoHS) – Directive 2011/65/EU & 2015/863/EU


EN 60204-1:2018 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

Authorized representative
Name and address

David Loechelt
Nolta GmbH
Industriestr. 8
35091 Cölbe

We confirm that a CE mark according to the European directives is affixed to the above mentioned Nolta – Schützkombination EX.

21.04.2021
Date
CEO
Dr. Ing J. Knake

Head of Quality Management
D. Loechelt
Circuit diagram

Attention!
Do not disconnect under load!

Feed

Overcurrent protection device in the supply line according to DIN VDE 0113 Part 1 Section 7.2 required.

Nolta contactor combination EX
processedTechnik
date 1 07 6
checked 89 34

Nolta GmbH
Industriestraße 8
35091 Cölbe

3-phase-motor QS
thermal contact

Ex-float switch

Manual/automatic

Restart inhibit

UVWNPEPES1S2 PET1 T2 (optional)

Phase sequence indicator

Operating indicator

Pepperl Fuchs
KFA6-SR2-Ex1.W

L1 L2 L3 N PE
X1

Phase sequence (optional)

(3-phase-motor)
Disposal

This product or parts of it must be disposed of in an environmentally sound way:
Use the public or private waste collection service. If this is not possible, please contact
your NOLTA dealer.
The operating instructions for the built-in switch amplifier can be called up using the following QR code:

Switch Amplifier KFA6-SR2-Ex2.W:
Instruction Manual

Marking

K-System, Isolated barriers
Device identification
Model number
ATEX approval

Group, category, type of protection, temperature classification

| Table 1 |
| The exact designation of the device can be found on the name plate on the device side. |

Pepperl+Fuchs GmbH
Lilienthalallee 200, 68307 Mannheim, Germany

| Table 2 |
| Target Group, Personnel |
| Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator. |
| Mounting, installation, commissioning, operation, maintenance and dismantling of the device may only be carried out by appropriate trained and qualified personnel. The instruction manual must be read and understood. |
| Prior to using the device you should make yourself familiar with the device and carefully read the instruction manual. |

Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location.

The corresponding datasheets, declarations of conformity, EC-type-examination certificates, certificates and control drawings if applicable supplement this document. You can find this information under www.pepperl-fuchs.com.

Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

The device is used in control and instrumentation technology (C&I technology) for the galvanic isolation of signals such as 20 mA and 10 V standard signals or alternatively for adapting or standardizing signals. The device has intrinsically safe circuits that are used for operating intrinsically safe field devices in hazardous areas.

Use the device only within the specified ambient conditions.

The device is designed for mounting on a 35 mm DIN mounting rail according to EN 60715. Only use the device stationary.

The device is an associated apparatus according to IEC/EN 60079-11.

Improper Use

Protection of the personnel and the plant is not ensured if the device is not being used according to its intended use.

The device is not suitable for isolating signals in power installations unless this is noted separately in the corresponding datasheet.

Mounting and Installation

Do not mount a damaged or polluted device.

Mount the device in a way that the device is protected against mechanical hazard. Mount the device in a surrounding enclosure for example.

The device must be installed outside of the hazardous area.

The device fulfills a degree of protection IP20 according to IEC/EN 60529.

The device must be installed outside of the hazardous area.

The device fulfills a degree of protection IP20 according to IEC/EN 60529.

Operation, Maintenance, Repair

The devices must not be repaired, changed or manipulated. If there is a defect, the product must always be replaced with an original device.

If the rated voltage is greater than 50 V AC, proceed as follows:

1. Switch off the voltage.
2. Connect the terminal blocks or disconnect the terminal blocks.

Delivery, Transport, Disposal

Check the packaging and contents for damage. Check if you have received every item and if the items received are the ones you ordered.

Always store and transport the device in the original packaging. Store the device in a clean and dry environment. The permitted ambient conditions (see datasheet) must be considered.

Improper Use of Device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.

Requirements for Usage as Associated Apparatus

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Intrinsically safe circuits of associated apparatus can be led into hazardous areas. Observe the compliance of the separation distances to all non-intrinsically safe circuits according to IEC/EN 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

Observe the maximum values of the device, when connecting the device to intrinsically safe apparatus.

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

If no \( L_o \) and \( C_o \) values are specified for the simultaneous appearance of lumped inductances and capacitances, the following rule applies:

- The specified value for \( L_o \) and \( C_o \) is used if one of the following conditions applies:
  - The circuit has distributed inductances and capacitances only, e.g., in cables and connection lines.
  - The total value of \( L_o \) (excluding cable) of the circuit is < 1 % of the specified \( L_o \) value.
  - The total value of \( C_o \) (excluding cable) of the circuit is < 1 % of the specified \( C_o \) value.
  - A maximum of 50 % of the specified value for \( L_o \) and \( C_o \) is used if the following condition applies:
    - The total value of \( L_o \) (excluding cable) of the circuit is ≥ 1 % of the specified \( L_o \) value.
    - The total value of \( C_o \) (excluding cable) of the circuit is ≥ 1 % of the specified \( C_o \) value.

If channels of one device are connected in parallel, ensure the parallel connection is made directly at the terminals of the device. When verifying the intrinsic safety, observe the maximum values for the parallel connection.

Prior to using the device you should make yourself familiar with the device and carefully read the instruction manual.
Float Switch
KR1 EX

Manual and Safety Instructions
Read this manual before installing and activating this product. Respect all safety instructions and local laws and regulations.

The installation may only be executed by qualified electricians. This product may only be used according to its intended use set forth in this manual.

The following Symbols and hazard statements are used in this installation, operating and safety instruction:

**Hazard statements**

**Danger**  
Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.

![Danger Symbol](danger.png)

**Warning**  
Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.

![Warning Symbol](warning.png)

**Caution**  
Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

![Caution Symbol](caution.png)

**Notes**

A blue or grey circle with a white graphical symbol indicates that an action must be taken.

A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.

If these instructions are not observed, it may result in malfunction or damage to the equipment.

The hazard statements are structured in the following way:

**Signal Word**

**Description of Hazard**

Consequence of ignoring the warning.  
Action to avoid the hazard.
### Technical Data

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Cable Type</th>
<th>Cross Section</th>
<th>Cross section dimension</th>
<th>Color</th>
<th>Ratings</th>
<th>Tmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 0004..</td>
<td>TPK LIY30Y</td>
<td>4G0,75mm²</td>
<td>7,6mm</td>
<td>Blue</td>
<td>Ci ≤ 0 nF + 0.11 nF/m Li ≤ 0 µH + 0.35 µH/m</td>
<td>80°C</td>
</tr>
<tr>
<td>40 0027..</td>
<td>Ölflex HEAT 180 SIHF</td>
<td>4G0,75mm²</td>
<td>7,6mm</td>
<td>Red</td>
<td>Ci ≤ 0 nF + 0.074 nF/m Li ≤ 0 µH + 0.57 µH/m</td>
<td>80°C</td>
</tr>
<tr>
<td>40 0034..</td>
<td>Ölflex HEAT 180 SIHF</td>
<td>3G1,0mm²</td>
<td>7mm</td>
<td>Red</td>
<td>Ci ≤ 0 nF + 0.075 nF/m Li ≤ 0 µH + 0.54 µH/m</td>
<td>80°C</td>
</tr>
<tr>
<td>40 0031..</td>
<td>H05RN-F</td>
<td>4G0,75mm²</td>
<td>6,8 - 8,8mm</td>
<td>Black</td>
<td>Ci ≤ 0 nF + 0.094 nF/m Li ≤ 0 µH + 0.56 µH/m</td>
<td>60°C</td>
</tr>
<tr>
<td>40 0032..</td>
<td>H07RN-F</td>
<td>3G1,0mm²</td>
<td>8,3 - 10,7mm</td>
<td>Black</td>
<td>Ci ≤ 0 nF + 0.081 nF/m Li ≤ 0 µH + 0.62 µH/m</td>
<td>60°C</td>
</tr>
</tbody>
</table>

**Intended use:**
The KR1 Ex float switch can be used with a certified, intrinsically safe circuit electrical system for the control and regulation of liquid levels in Zone 0, 1 and 2 Ex- areas and in the presence of gas groups IIA, IIB and IIC, for which there is a risk of explosion when these gases are in contact with flammable materials and exposed to temperatures in the range T1 - T6.
Installation

The level controller must be connected via an isolating switch relay (06 3232).

For a correct, intrinsically safe connection please refer to the user manual of the intrinsically safe barrier.

Connect the cables to the designated connections of your pump controller in accordance with table 1.

The power cable of the level controller should be carefully laid along its entire length to prevent any risk of mechanical damage. Also ensure that moisture cannot penetrate cable ends.

To avoid the risk of an electrostatic charge, the housing of the level controller must be connected to the equipment’s potential equalization system using the potential equalization conductor (green/yellow) in the connection cable.

Only for connection to a certified intrinsically safe circuit with $U_i \leq 40V$ ; $I_i \leq 100mA$.

<table>
<thead>
<tr>
<th></th>
<th>Brown</th>
<th>Black</th>
<th>Grey</th>
<th>Green/Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>To empty (Normally open)</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>To fill (Normally closed)</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High Level Alarm</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Low Level Alarm</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 1

Figure 1
**EU Declaration of Conformity**

We hereby declare that the level controller specified below will, due to its design and construction, Comply with the relevant regulations listed.

**Product Designation**  
KR1 Ex

**Manufacturer**  
Nolta GmbH  
Industriestr. 8  
35091 Cölbe

**Marking**  
II 1G Ex ia IIC T6 Ga

**EU-Type Examination Certificate**  
SEV 13 ATEX 0103

**IECEEx Certificate of Conformity**  
IECEEx SEV 13.0002

**Notified body**  
(1285)  
Eurofins Electrosuisse Product Testing AG  
Luppmenstrasse 3  
CH-8320 FEHRALTORF  
Switzerland

**EU directives / Harmonized standards / national techn. Standards - Specifications**

- Equipment or protective system intended for use in potentially explosive atmospheres - Directive 2014/34/EU
- Restriction of use of certain hazardous substances in electrical and electronic equipment (RoHS) – Directive 2011/65/EU
- EN 60079-0:12 + A11:13 Explosive atmospheres – Part 0: Equipment – General requirements
- EN 60079-11:12 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
- EN 60079-26:15 Explosive atmospheres – Part 26: Equipment with Protection Level (EPL) Ga

**Application**  
In intrinsically safe electrical circuits in Ex-Zone 0, 1 and 2

**Authorized representative**  
Name and address  
David Loechelt  
Nolta GmbH  
Industriestr. 8  
35091 Cölbe

We confirm that a CE mark according to the European directives is affixed to the above mentioned level controller.

31.08.2018
CEO  
Dr. Ing J. Knake

Head of Quality Management  
D. Loechelt