

Documentation for

KL2602 and KL2622

Two-channel Relay Output Terminals for 230 V_{AC} / 30 V_{DC}

Version: 1.3

Date: 2009-10-14

BECKHOFF

Table of contents

1	Foreword	1
1.1	Notes on the documentation	1
1.2	Safety Instructions	2
2	Product overview	3
2.1	Functional description	3
2.2	Technical data	4
2.3	The correct application of relay terminals	5
3	Annex	6
3.1	Support and Service	6

1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards. It is essential that the following notes and explanations are followed when installing and commissioning these components.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

1.1.1 Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development. For that reason the documentation is not in every case checked for consistency with performance data, standards or other characteristics. In the event that it contains technical or editorial errors, we retain the right to make alterations at any time and without warning. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

1.1.2 Delivery conditions

In addition, the general delivery conditions of the company Beckhoff Automation GmbH apply.

1.1.3 Trademarks

Beckhoff[®], TwinCAT[®], EtherCAT[®], Safety over EtherCAT[®], TwinSAFE[®] and XFC[®] are registered trademarks of and licensed by Beckhoff Automation GmbH. Other designations used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owners.

1.1.4 Patent Pending

The TwinCAT Technology is covered, including but not limited to the following patent applications and patents: EP0851348, US6167425 with corresponding applications or registrations in various other countries.

1.1.5 Copyright

© Beckhoff Automation GmbH.

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited. Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.






1.2 Safety Instructions

1.2.1 State at Delivery

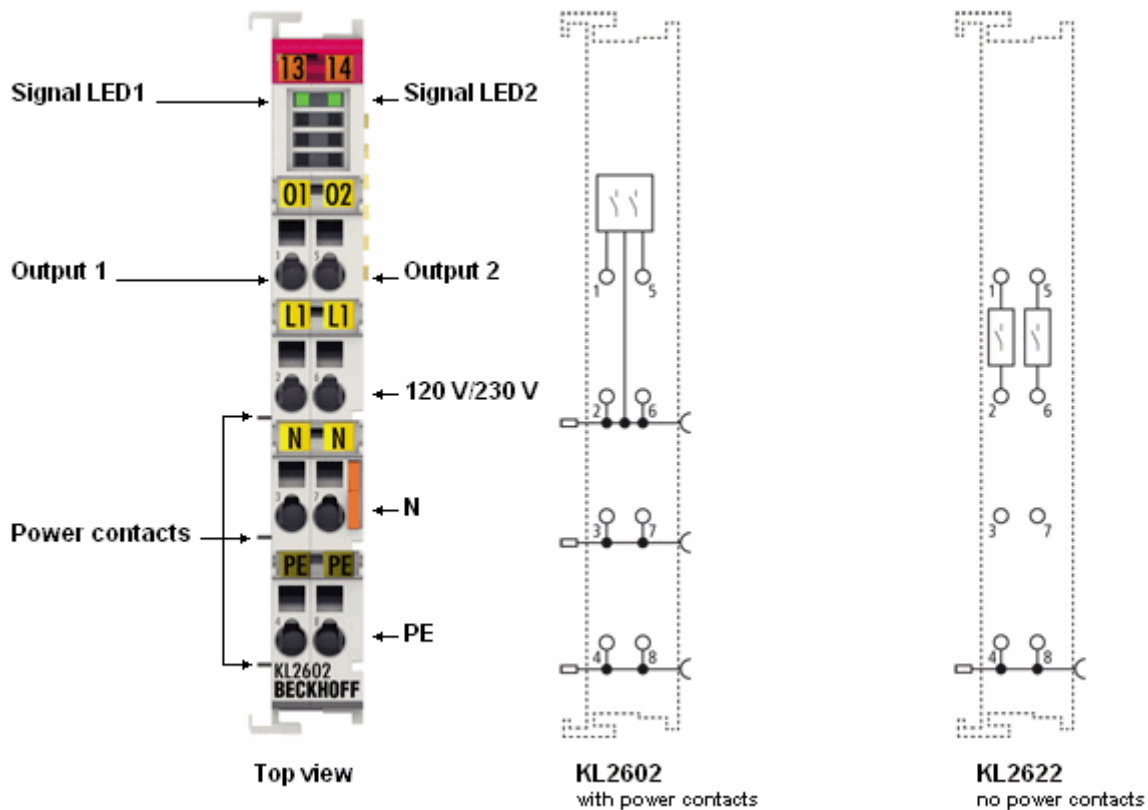
All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH.

1.2.2 Description of safety symbols

The following safety symbols are used in this documentation. They are intended to alert the reader to the associated safety instructions.

 DANGER	<p>Serious risk of injury!</p> <p>Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons.</p>
 WARNING	<p>Risk of injury!</p> <p>Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.</p>
 CAUTION	<p>Danger for persons!</p> <p>Failure to follow the safety instructions associated with this symbol may endanger persons.</p>
 Attention	<p>Danger for the environment or equipment</p> <p>Failure to follow the safety instructions associated with this symbol may endanger the environment or equipment.</p>
 Note	<p>Tip or pointer</p> <p>This symbol indicates information that contributes to better understanding.</p>

2 Product overview



2.1 Functional description

The KL2602 and KL2622 output terminals have two relays, each with a single contact, and can be used to switch devices requiring mains power and operating at up to 230 V_{AC}. The signal state of each relay is shown by an LED.

- The relay contacts of the KL2602 are joined to the power contacts.
- The relay contacts of the KL2622 are potential-free, and are not joined to the power contacts. The KL2622 only loops through the PE power contact.

LED display

The signal LEDs indicate the operational state of the associated terminal channel.

- On: Relay contact closed
- Off: Relay contact opened

Watchdog timer overflow

If no process data is transferred to the terminal from the Bus Coupler for 100 ms, the green LEDs go out, and the relay contacts are opened.


Process data


The bit-width in the process image is 2 bits.

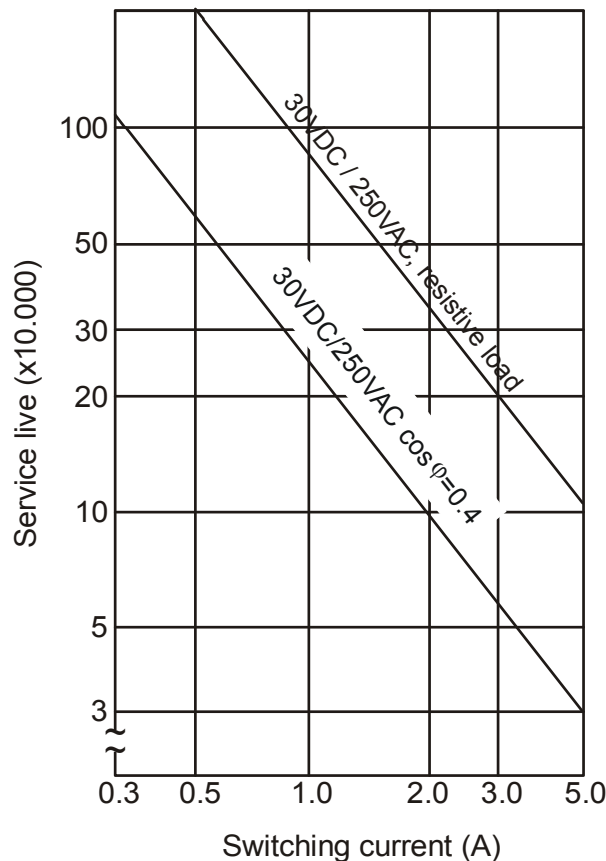
2.2 Technical data


Technical data		KL2602	KL2622
Number of outputs		2 N/O contacts for power contact	2 N/O contacts (potential-free)
Contact material		AgCdO	
Switching voltage		max. 250V _{AC} / 30V _{DC}	
Switching current		max. 5 A	
Switching capacity max. with resistive load		Alternating voltage: 5 A 250 V _{AC} 1250 VA Direct voltage: 5 A 30 V _{DC} 150 W	
Maximum switching current with inductive load, cosφ=0.4, L/R=7ms		2 A 250 V _{AC} 2 A 30 V _{DC}	
Minimum permitted load (approximate)		10 mA at 5 V _{DC} (as supplied) 100 mA at 20 V _{DC} (after a current of approx. 100 mA (or greater) has been switched at least once)	
Reaction time at a rated load		Reaction time: max. 10 ms Release time: max. 4 ms Bounce time: max. 5 ms	
Electrical isolation		500 V _{rms} (K-Bus/mains voltage)	
K-Bus current consumption		80 mA	85 mA
Bit width in process image		2 A	
Service life Mechanical operating cycles		20,000,000 switching operations	
Service life Electrical operating cycles		At least 100,000 switching operations on resistive loads at <ul style="list-style-type: none"> • 250 V_{AC} 5 A or • 30 V_{DC} 5 A 	
Permitted switching frequency at maximum contact load		10 switching operations / minute	
Contact resistance max. (new)		< 30 mΩ	
Insulation resistance (min).		100 MΩ at 500 V _{DC}	
Test voltage between open contacts		750 V (1 minute between open contacts)	
Configuration		no address or configuration settings	
Weight		approx. 85 g	approx. 80 g
Permissible ambient temperature range	during operation	0°C... +55°C	
	during storage	-25°C... +85°C	
Relative humidity		95 % no condensation	
Vibration / shock resistance		conforms to EN 60068-2-6 / EN 60068-2-27, EN 60068-2-29	
EMC resistance burst / ESD		conforms to EN 61000-6-2 / EN 61000-6-4	
Installation position		any	
Protection class		IP20	

2.3 The correct application of relay terminals

 WARNING	<p>Risk of electric shock and damage of device!</p> <p>Bring the bus terminal system into a safe, powered down state before starting installation, disassembly or wiring of the Bus Terminals!</p>
-----------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

 Note	<p>Analyze operation conditions</p> <p>It is extremely important to observe the technical specifications if fault-free operation is to be guaranteed. Any time that the stated parameters are exceeded, damage ranging from premature contact ageing up to fused contacts can result.</p> <p>If relays are to be used in a control system the expected operating conditions must be analyzed with great care. Switching capacity, service life (operating cycles) and the number of switches per minute must be considered.</p> <p>Appropriate protective circuits must be used to protect the relay contacts from excessive voltage peaks such as can occur when switching inductive loads (contactors, motors etc.). This allows switching frequencies nearly equal to those appropriate to resistive loads to be achieved. Arcing time when switching DC loads are significantly longer than those for comparable AC voltages (zero crossing); material flow can result.</p> <p>If the terminal is used to change the direction of inductive loads, adequate dead-times during the switch-over must be provided, in order to avoid temporary short-circuits.</p>
--------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



 Attention	<p>Attend the maximum values</p> <p>It is the maximum values that are to be expected that are critical to selection of the right terminal rather than the technical figures for normal operation!</p>
---------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

3 Annex

3.1 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

3.1.1 Beckhoff's branch offices and representatives

Please contact your Beckhoff branch office or representative for local support and service on Beckhoff products!

The addresses of Beckhoff's branch offices and representatives round the world can be found on her internet pages: <http://www.beckhoff.com>

You will also find further documentation for Beckhoff components there.

3.1.2 Beckhoff Headquarters

Beckhoff Automation GmbH

Eiserstr. 5

33415 Verl

Germany

phone: + 49 (0) 5246/963-0

fax: + 49 (0) 5246/963-198

e-mail: info@beckhoff.com

web: www.beckhoff.com

Beckhoff Support

Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- support
- design, programming and commissioning of complex automation systems
- and extensive training program for Beckhoff system components

hotline: + 49 (0) 5246/963-157

fax: + 49 (0) 5246/963-9157

e-mail: support@beckhoff.com

Beckhoff Service

The Beckhoff Service Center supports you in all matters of after-sales service:

- on-site service
- repair service
- spare parts service
- hotline service

hotline: + 49 (0) 5246/963-460

fax: + 49 (0) 5246/963-479

e-mail: service@beckhoff.com