

KCS-U200 relay - Latching , 2 pole

Datasheet

**KCS-U200 is obsolete
from January 1st, 2023**



Description

Bistable railway relay with two change-over contacts. The contacts remain in the last powered position. Bistable by means of two coils and a mechanical rocker mechanism. The two separate coils are galvanically isolated. The contacts are weld-no-transfer contacts: they are mechanically forced in the same position.

The KCS-U200 relay is a compact design relay connected with 2.8 x 0.8 mm fastons. The construction of the relay and choice of materials makes the KCS-U200 relay suitable to withstand low and high temperatures, shock & vibrating and dry to humid environments.

Application

These relay series are designed for demanding rolling stock applications. The KCS-U200 is used in applications where two contacts are used in one relay and the contacts are set and reset with permanent power or impulses.

Features

- Latching (bistable) relay
- Compact design
- 2 C/O contacts
- 2 galvanic isolated coils
- Weld-no-transfer contacts
- Flash barrier
- 2.8 x 0.8 faston connections
- Transparent cover

Benefits

- Proven reliable
- Long term availability
- Easy to maintain
- Low life cycle cost
- No maintenance

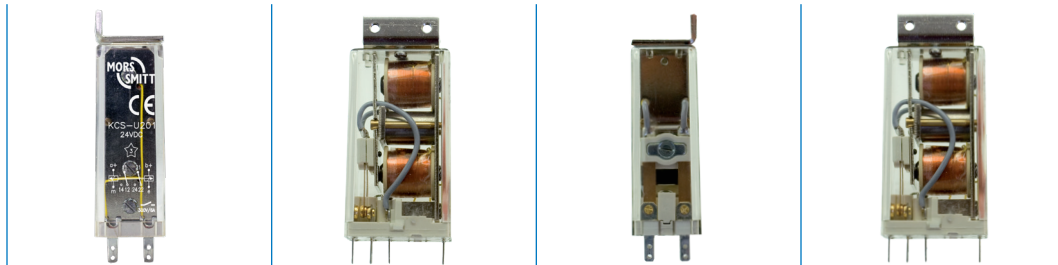
Railway compliancy

- EN 50155 Electronic equipment used on rolling stock for railway applications
- IEC 60571 Electronic equipment used on railway vehicles
- IEC 60077 Electrical equipment for rolling stock in railway applications
- IEC 60947 Low voltage switch gear and control gear
- IEC 61373 Rolling stock equipment - Shock and vibration test
- IEC 60947-5-4 Electromechanical components for control applications. This standard examines both coil and contact specifications in depth
- EN 50121 Electromagnetic compatibility for railway applications
- NF F 16-101/102, EN 45545-2 Fire behaviour - Railway rolling stock
- NF F 62-002 On-off contact relays and fixed connections

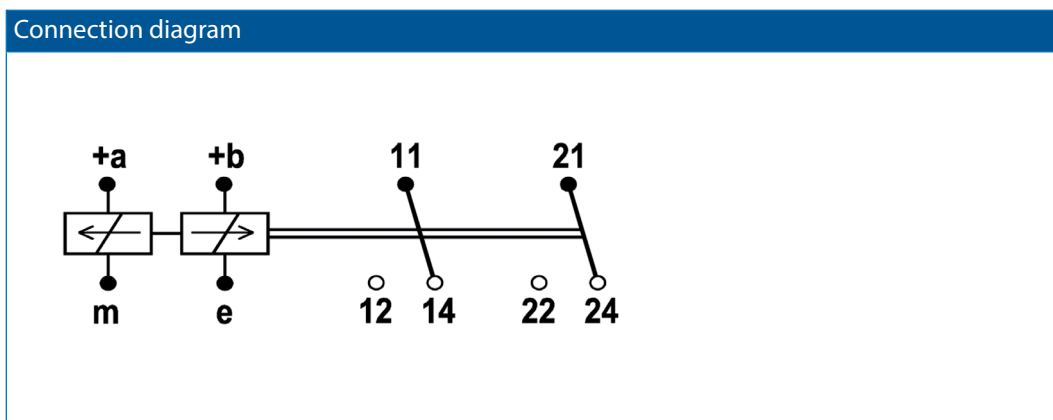
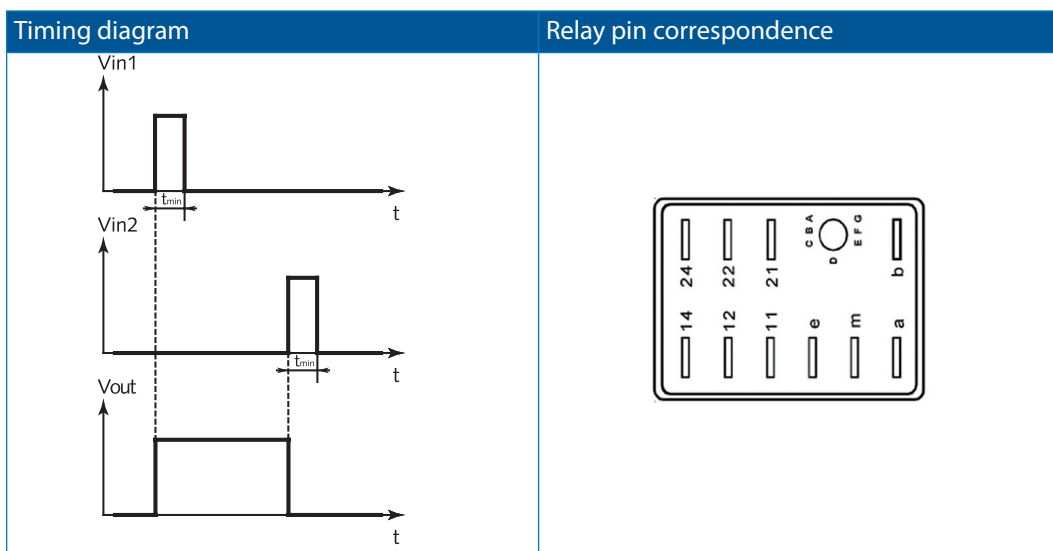


KCS-U200 relay

Technical specifications



Functional and connection diagrams



KCS-U200 relay

Technical specifications

Coil characteristics

Minimum impulse time	25 ms
Operating voltage range	0.7...1.25 U_{nom}
Nominal power consumption	- during interval time < 1.1 W - after pulse time 25 ms

Type	U_{nom} (VDC)	U_{min} (VDC)	U_{max} (VDC)	R_{coil} (Ω)*	I_{nom} (mA)
KCS-U201	24	16.8	30	500	48
KCS-U202	48	33.6	60	2060	23
KCS-U203	72	50.4	90	3200	15
*	110	77.0	137.5	**	12
KCS-U205	96	67.2	120	7800	12
KCS-U206	12	8.4	15	137	88
KCS-U207	36	25.2	45	1300	29

Other types on request

* The R_{coil} is measured at room temperature and has a tolerance of $\pm 10\%$

** For 110 VDC: use KCS-U205 in series with external seriesresistor of $1800 \Omega / 0.4 \text{ W}$

Remarks:

- U_{min} is the must-operate voltage at which the relay has picked up in all circumstances (worst-case situation), in practice the relay picks up at a lower voltage
- Always select the nominal voltage as close as possible to the actual voltage on the application

Contact characteristics

Amount and type of contacts	2 C/O
Maximum make current	15 A
Maximum continuous current	6 A (AC1 ; IEC 60947)
Maximum switching voltage	300 VDC (then max. current = 300 mA) 250 VAC (then max. current = 2.6 A)
Maximum switching capacity	See graph page 6
Contact resistance	15 m Ω (initial)
Material	Ag standard (optional Au on Ag)
Contact gap	0.3 mm
Contact force	> 200 mN

Note : contacts cannot have a different position (forced contacts, weld-no-transfer)



KCS-U200 relay

Technical specifications

Electrical characteristics

Dielectric strength	EN 50155
Pole-pole	IEC 60255-5 3 kV, 50 Hz, 1 min
Cont-coil	IEC 60077 3 kV, 50 Hz, 1 min
Insulation between open contacts	1 kV; 50 Hz; 1 min
Pulse withstanding	IEC 60255-5 5 kV (1.2 / 50 μ s)

Mechanical characteristics

Mechanical life	30 x 10 ⁶ operations
Maximum switching frequency	Mechanical: 3600 ops/h Electrical: 1200 ops/h
Weight	75 g

Environmental characteristics

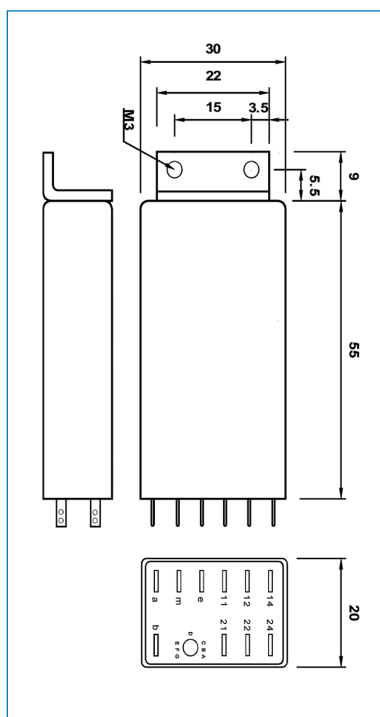
Environmental	EN 50125-1 and IEC 60077-1
Vibration	IEC 61373, Category I, Class B, Body mounted
Shock	IEC 61373, Category I, Class B, Body mounted
Operating temperature	-25 °C...+85 °C (optional: -40 °C)
Humidity	90 %
Salt mist	IEC 60068-2-11, class ST4
Damp heat	IEC 60068-2-30, Test method Db variant 1
Protection	IEC 60529, IP40 (relay on socket)
Fire & smoke	NF F 16-101, NF F16-102, TS 45545-2
Insulation materials	Cover: polycarbonate Base: polyester



KCS-U200 relay

Technical specifications

Dimensions (mm)



KCS-U200 relay

Technical specifications

Options

Code	Description	Remark	Cannot be combined with:
B	Magnetic arc blow out		
C	Low temperature (-40 °C)		
E*	Au; Gold plated contacts (10 µm)		
Y	Double make / double break contacts	1 C/O DM/DB	
Keying	Coil coding relay and socket		
Colour coding	Coloured cover for coil voltage coding		
* Gold plated contacts characteristics			
Material		Ag, 10 µm gold plated	
Maximum switching voltage		60 V (higher voltages may be possible, contact Mors Smitt for more information)	
Maximum switching current		400 mA (at higher rate gold will evaporate, then the standard silver contact rating of minimum 10 mA and 12 V is valid)	
Minimum switching voltage		5 V	
Minimum switching current		1 mA	

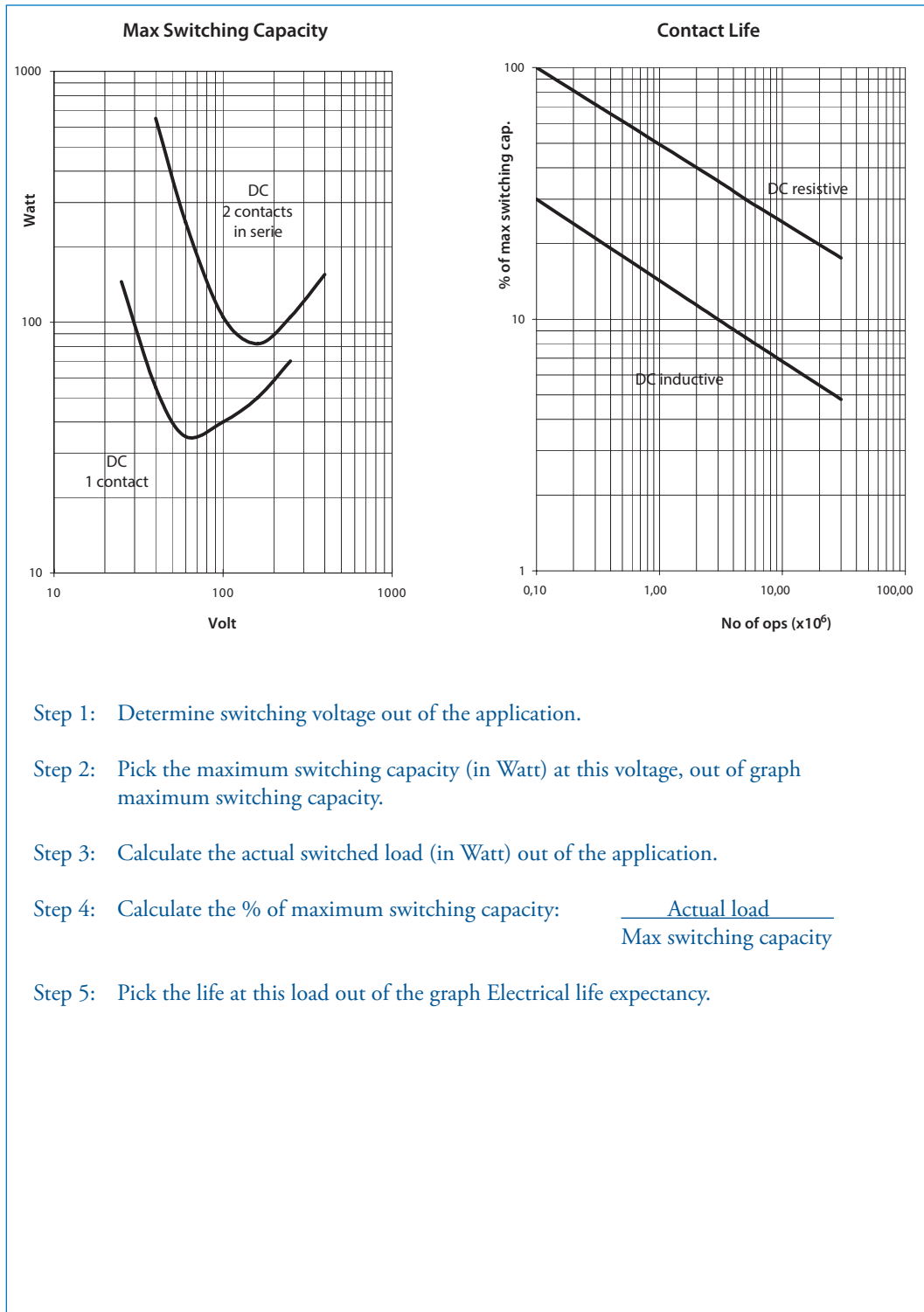
Also version with PCB mounting available: KCP-U200 relay



KCS-U200 relay

Technical specifications

Current breaking capacity



KCS-U200 relay

Instructions

Installation, operation & inspection

Installation

Before installation or working on the relay: disconnect the power supply first! Connect wiring according to the terminal identification. Check to ensure that the coil connection polarity is not reversed. Relays can be mounted tightly together to save space.

Warning!

- Never use silicon in the proximity of the relays.
- Do not use the relay in the presence of flammable gas as the arc generated from switching could cause ignition.

Operation

After installation always apply the rated voltage to the coil to check correct operation.

Before actual use of relays, it is advised to switch the load several times with the contacts. The contacts will both be electrically and mechanically cleaned due to the positive wiping action. Sometimes a contact can build up increased contact resistance ($\leq 15 \text{ m}\Omega$ when new). When using silver contacts one can clean the contact by switching a contact load a few times using $>24 \text{ VDC}$ & $\sim 2 \text{ A}$. Increased contact resistance is not always problematic, as it depends on circuit conditions. In general a contact resistance of 1Ω is no problem, consult Mors Smitt for more information.

Condensation in the relay is possible when the coil is energised (warm) and the outside, environmental temperature is cold. This is a normal phenomenon and will not affect the function of the relay. Materials in the relay have no hygroscopic properties.

Inspection

Correct operation of the relay can easily be checked as the transparent cover provides good visibility of the moving contacts. If the relay does not seem to operate correctly, check for presence of the appropriate coil voltage and polarity using a suitable multimeter.

If the relay doesn't work after inspection, replace the relay unit with a similar model. Do not attempt to open the relay cover or try to repair. Contacts are calibrated and in balance, touching can affect proper operation. Also re soldering may affect correct operation.

Most relay defects are caused by installation faults such as over voltage, spikes/transients, high/short current far exceeding the relay specifications. When returning the relays for investigation, please provide all information on the RMA form. Send defective relays back to the manufacturer for repair or replacement. Normal wear and tear or external causes are excluded from warranty.



KCS-U200 relay

Ordering scheme

Configuration:



1. Relay model

2. Coil voltage

3. Options

This example represents a **KCS-U202-E**

Description: KCS-U200 series relay, U_{nom} : 48 VDC, gold plated contacts

1. Relay model

KCS - U2

2. Coil voltages

01	24 VDC
02	48 VDC
03	72 VDC
05	96 VDC (*)
06	12 VDC
07	36 VDC

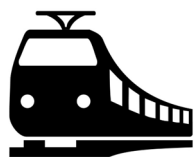
* can be used for 110 VDC with an external series resistor of 1800 Ω / 0.4 W

3. Options

B	Magnetic arc blow out
C	Low temperature (-40 °C)
E	Gold plated contacts
Y	Double make / double break

Upon ordering indicate keying if necessary.





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