/// Plug-in railway relays

Rugged plug-in relays for extreme reliability, within long endurance applications and harsh environments

DDK/DDJ

Diode unit

(DDJ is shown)

Description

The DDK/DDJ diode unit consists of a D-relay housing containing 4/7 electrically isolated diodes. This gives the possibility to use them in different electrical circuits.

Application

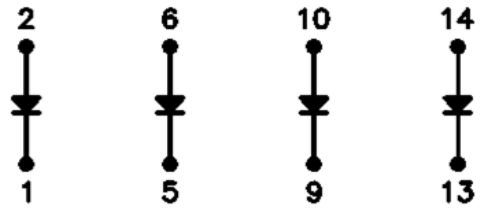
The DDK/DDJ module is designed for demanding rolling stock applications.

Features

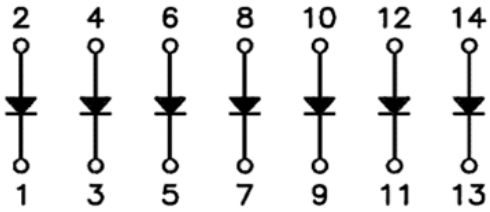
- Can be plugged in into all D-U sockets
- D-relay transparent housing
- Easy way to add/replace blocking diodes, diodes bridges in electrical systems
- Can be used in safety critical applications
- Keying code optional, ensuring easy and correct installation and replacement
- No maintenance needed

Connection diagram

DDK



DDJ

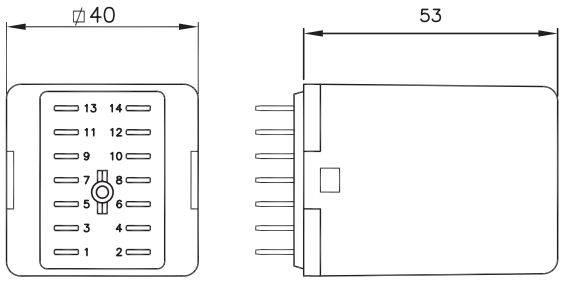


Approvals

EN 50155
EN 50121-3-2
IEC 61373

Diode unit
DDK/DDJ

Dimensions (mm)



Sockets

		Mounting			
		Surface / Wall	35 mm rail	Panel / Flush	PCB
Terminal connection	Screw	V23	V23	-	-
	Screw - wide terminals	V22 BR	V23 BR	-	-
	Spring clamp	V29	V29	V33	-
	Faston	-	-	V31	-
	Crimp	-	-	V26	-
	Solder tag	-	-	V3	-
	PCB	-	-	-	V32

For more information see the respective datasheets

For more detailed technical specifications, drawings and ordering information, go to the product page on www.morssmitt.com

Over 10 million Mors Smitt relays in use in rail transport applications worldwide!

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Technical specifications

Diode unit
DDK/DDJ

Electrical characteristics

Maximum ratings	DDK	DDJ
Repetitive peak reverse voltage	≤ 1000 V	≤ 1000 V
RMS voltage	≤ 700 V	≤ 700 V
DC blocking voltage	≤ 1000 V	≤ 1000 V
DC voltage current	≤ 3 A	≤ 2 A
Peak forward surge current	≤ 200 A (8.3 ms single half sinewave)	≤ 50 A (10 ms single half sinewave)
Forward voltage drop	≤ 1.2 V (at 3 A)	≤ 1.0 V (at 1 A)
DC reverse current	≤ 5 µA V (TA = 25 °C) (a=ambient)	≤ 10 µA (Tj = 90 °C) (j = junction)

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...+70 °C
Humidity	95% (condensation is permitted temporarily)
Protection	IEC 60529, IP40 (relay on socket) (with option K: IP50)
Fire & smoke	NF F 16-101, NF F 16-102, EN 45545-2
Insulation materials	Cover: polycarbonate Base: polyester

Railway compliancy

EN 50155	Electronic equipment used on rolling stock for railway applications
EN 50121-3-2	Electromagnetic compatibility for railway applications
IEC 61373	Rolling stock equipment - Shock and vibration test

Diode unit
DDK/DDJ

Mounting possibilities/sockets

 V3	 V22BR	 V23	 V23BR	 V26
 V29	 V31	 V32	 V33	

Surface/wall mounting

338000302	V22BR	Screw socket, wall mount, front connection (9 mm terminals)
338000580	V23	Screw socket, wall mount, front connection (7.5 mm terminals)
338000610	V29	Spring clamp socket, wall mount, front dual connection (2.5 mm^2)

Rail mounting

338000580	V23	Screw socket, rail mount, front connection (7.5 mm terminals)
338000402	V23BR	Screw socket, rail mount, front connection (9 mm terminals)
338000610	V29	Spring clamp socket, rail mount, front dual connection (2.5 mm^2)

Panel/flush mounting

338100100	V3	Solder tag socket, panel mount, rear connection
328400100	V26	Crimp contact socket, panel mount, rear connection, A260 crimp contact
338000560	V31	Faston connection socket, rear dual connection (4.8 x 0.8 mm)
338000570	V33	Spring clamp socket, flush mount, rear dual connection (2.5 mm^2)

PCB mounting

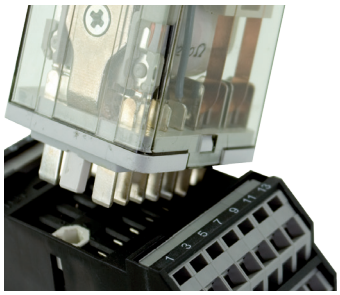
338000561	V32	PCB soldering socket

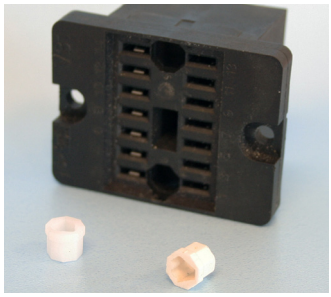
No external retaining clip needed as the ‘snap-lock’ will hold the relay into the socket under all circumstances and mounting directions (according shock & vibration requirements IEC 61373, Category I, Class B, Body mounted). If regulations require external retaining clips, these are available as well.

For more details see datasheets of the sockets on www.morssmitt.com

Diode unit
DDK/DDJ

Mechanical keying relay and socket (optional)





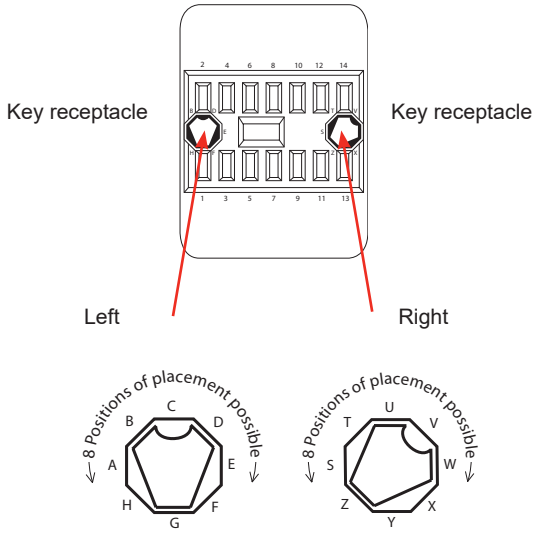
Function:
- To prevent wrong installation
- To prevent damage to equipment
- To prevent unsafe situations

Using keyed relays and sockets prevents a relay is inserted in a wrong socket. For example it prevents that a 24 VDC relay is put in a 110 VDC circuit. Positive discrimination is possible per different function, coil voltage, timing, monitoring, safety and non-safety.

The D relay socket keying option gives 8 x 8 = 64 possibilities. Upon ordering the customer simply indicates the need for the optional keying. Mors Smitt will assign a code to the relay and fix the pins into the relay. The sockets are supplied with loose key receptacles. Inserting the keys into the socket is very simple and self explaining.

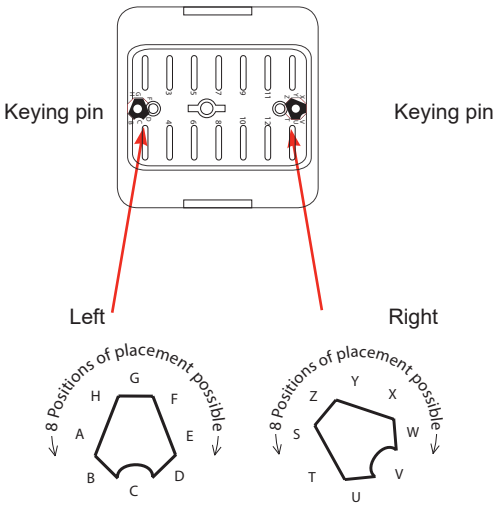
Remark: Sockets and relay shown are examples.

Top view socket



Example keying position G-Z on socket

Bottom view relay



Example keying position G-Z on relay

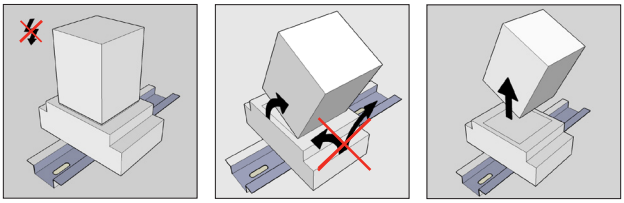
Diode unit
DDK/DDJ

Instructions for use

Installation

Before installation or working on the module: disconnect the power supply first (no hot swapping)! Install socket and connect wiring according to the terminal identification. Plug module into the socket ensuring there is no gap between the bottom of module and the socket. Reverse installation into the socket is not possible due to the mechanical blocking snap-lock feature. Check to ensure that the coil connection polarity is not reversed. Modules can be mounted tightly together to save space. When rail mounting is used, always mount the socket in the direction of the UP arrow, to have proper fixation of the socket on the rail.

Warning!
- Never use silicon in the proximity of the modules
- To remove modules from the socket, employ up and down lever movements.



Inspection / maintenance

If the module doesn't work after inspection, replace the module unit with a similar model. Do not attempt to open the module cover or try to repair. The modules have tamper proof seals fitted and once broken, warranty is void.

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

RMA procedure: www.morssmitt.com/rma country selector.htm

Diode unit
DDK/DDJ

Ordering scheme

DD		
	J	7 diodes
	K	4 diodes