# OV-24DC …

## Solid-State Relays


## INTERFACE

Data Sheet
103082_01_en



## Description

**OV-24DC …** solid-state relays for electrical isolation can be mounted directly on the PCB as interfaces or plugged in using the SIM-AMS socket, which can be soldered.

The solid-state relays are suitable for switching ohmic, capacitive or inductive loads. Relays for switching AC circuits have a zero point switch to switch on loads that are in the zero voltage crossing. They are switched off in the zero current crossing.

DC loads can switch up to 1 A at 350 V DC and up to 4 A at 60 V DC, while AC loads can switch up to 5 A at 480 V AC. Inductive loads must be provided with an appropriate protective circuit (e.g., free-wheeling diode or RC element).

The electronic load relays have the following advantages:

– No wear, even at high switching frequencies
– No contact bounce – no movable parts
– No electromagnetic interference
– Electrically insulated housing
– Compact dimensions
– High test voltage of up to 4 kV between control and load circuits

Make sure you always use the latest documentation.
It can be downloaded at www.download.phoenixcontact.com.

A conversion table is available on the Internet at
www.download.phoenixcontact.com/general/7000_en_00.pdf.

This data sheet is valid for all products listed on the following page:

## Ordering Data

### Solid-State Relays With DC Voltage Output

| Description | Type | Order No. | Pcs./Pck. |
|---|---|---|---|
| Solid-state relay, for signal amplification and electrical isolation of the control and load circuits, can be plugged into the SIM-AMS plug-in base, which can be soldered, or mounted directly on the PCB with PCB connection, input/output: DC voltage (350 V DC, maximum) | OV-24DC/350DC/1 | 2982634 | 10 |
| Solid-state relay, for signal amplification and electrical isolation of the control and load circuits, can be plugged into the SIM-AMS plug-in base, which can be soldered, or mounted directly on the PCB with PCB connection, input/output: DC voltage (60 V DC, maximum) | OV-24DC/ 60DC/4 | 2982647 | 10 |

### Solid-State Relays With AC Voltage Output

| Description | Type | Order No. | Pcs./Pck. |
|---|---|---|---|
| Solid-state relay, for signal amplification and electrical isolation of the control and load circuits, can be plugged into the SIM-AMS plug-in base, which can be soldered, or mounted directly on the PCB with PCB connection, input: DC voltage/output: AC voltage | OV-24DC/480AC/5 | 2982650 | 10 |

### Accessories

| Description | Type | Order No. | Pcs./Pck. |
|---|---|---|---|
| Plug-in base | SIM-AMS ... | See INTERFACE catalog | |

## Technical Data

| Input Data | ...350DC/1 | ...60DC/4 | ...480AC/5 |
|---|---|---|---|
| Nominal input voltage $U_N$ | 24 V DC | 24 V DC | 24 V DC |
| Operating voltage range | 4.25 V DC ... 32 V DC | | 4 V DC ... 32 V DC |
| Voltage switching threshold | | | |
| "0" signal | < 1 V DC | < 1 V DC | < 1.2 V DC |
| "1" signal | > 3.3 V DC | > 3.3 V DC | > 3.5 V DC |
| Typical input current at $U_N$ | 15 mA | 15 mA | 10 mA |
| Typical switch-on time | < 100 µs | < 100 µs | 1/2 period, maximum |
| Typical switch-off time | < 250 µs | < 250 µs | 1/2 period, maximum |
| Switching frequency for ohmic nominal load | 100 Hz | 100 Hz | 25 Hz |

| Output Data | ...350DC/1 | ...60DC/4 | ...480AC/5 |
|---|---|---|---|
| Nominal output voltage range | 1 V DC ... 350 V DC | 1 V DC ... 60 V DC | 12 V AC ... 530 V AC |
| Periodic peak reverse voltage | – | – | 1000 V |
| Limiting continuous current (see derating curves) | 1 A | 4 A | 5 A |
| Minimum load current | 1 mA | 1 mA | 20 mA |
| Surge current | 20 A (tp = 1 s) | 25 A (tp = 1 s) | 80 A (tp = 20 ms) |
| Voltage drop at maximum limiting continuous current (2-wire) | 0.5 V | 0.5 V | 1.2 V |
| Maximum load value $I^2t$ | – | – | 50 $A^2s$ |
| Leakage current when switched off | 100 µA | 100 µA | 1 mA |
| Maximum phase shift (inductive loads) | – | – | cos φ = ≥ 0.5 |
| Protective circuit | Diode for protection against polarity reversal | Diode for protection against polarity reversal | – |

| General Data | ...350DC/1 | ...60DC/4 | ...480AC/5 |
|---|---|---|---|
| Test voltage input/output | 4 $kV_{rms}$ | 4 $kV_{rms}$ | 4 $kV_{rms}$ |
| Ambient temperature range | -20°C ... +80°C | | -20°C ... +70°C |
| Operating mode | 100% operating factor | 100% operating factor | 100% operating factor |
| Assembly | Directly on the PCB or can be plugged in with a SIM-AMS socket, which can be soldered | | |

| Conformance With EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC | |
|---|---|
| **Noise Immunity Test According to EN 61000-6-2[1]** | |
| Electrostatic discharge (ESD) | EN 61000-4-2 |
| Electromagnetic HF field | EN 61000-4-3 |
| Fast transients (burst) | EN 61000-4-4 |
| **Noise Emission Test According to EN 61000-6-4** | |
| Noise emission of housing | EN 55011[2] |

[1] EN 61000 corresponds to IEC 61000

[2] EN 55011 corresponds to CISPR11

| Approvals | |
|---|---|
| UL | |

### Dimensions

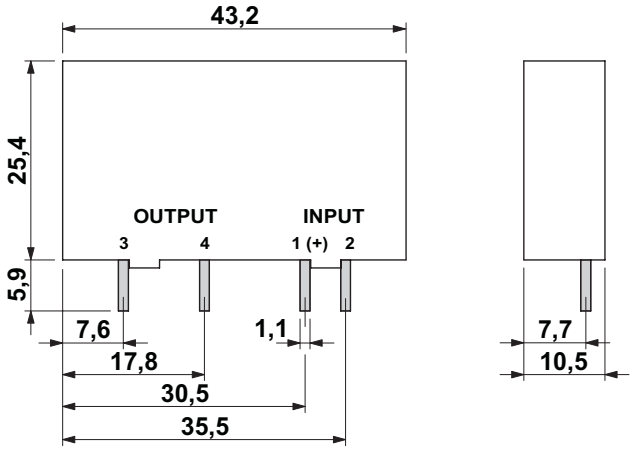


Figure 1 Dimensions (in mm)

### Block Diagrams

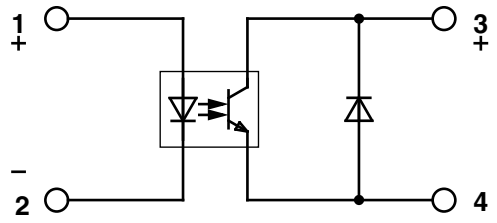


Figure 2 Block diagram for OV-24DC/350DC/1 and OV-24DC/ 60DC/4

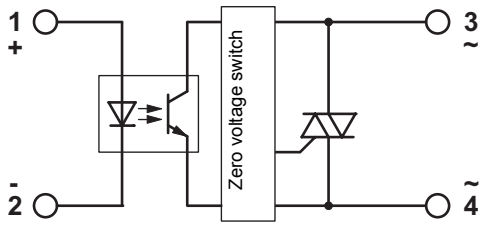


Figure 3 Block diagram for OV-24DC/480AC/5

## Derating Curves

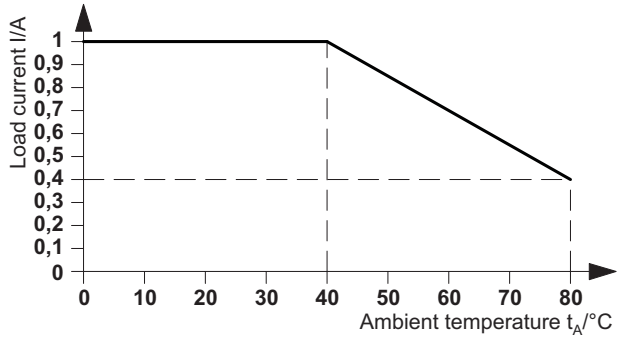


Figure 4 Derating curve for OV-24DC/350DC/1

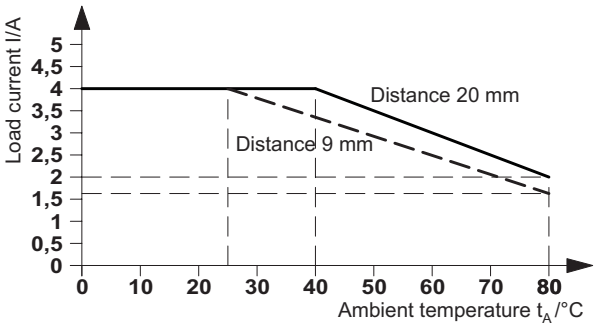


Figure 5 Derating curve for OV-24DC/ 60DC/4

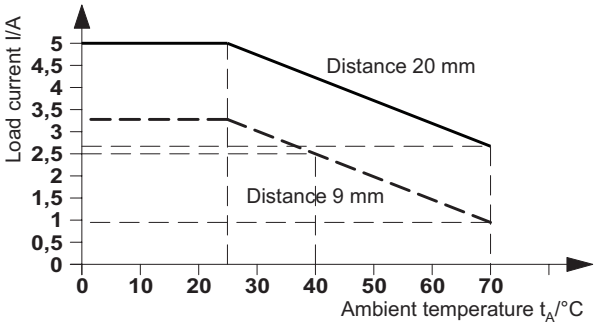


Figure 6 Derating curve for OV-24DC/480AC/5




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