Product overview


# POWERSWITCH

Reliable solid-state switching devices for frequent switching

DOLD

Our experience. Your safety.

# Reliable solid-state switching devices from DOLD

## POWERSWITCH

**Always safe and reliable switching - with the POWERSWITCH series you get solid-state switching devices with real added value.**

DOLD has been developing and producing solid-state switching devices for industrial switching technology for decades. Thanks to the extensive portfolio from a single source, DOLD solid-state relays / contactors offer the possibility of switching loads in a wide variety of areas.

**Plug-in, connect, done!**
The ready-to-use design, thanks to the optimally adapted heat sink, allows quick and easy commissioning in just a few steps.

**High switching frequencies, long service life**
Wherever high switching frequencies and cycles are required, our solid-state switching devices are the ideal solution. Once installed, the devices remain operational for an almost infinite period of time. Regular time- and cost-intensive device replacement is thus saved.

**Wear-free and noiseless switching**
The POWERSWITCH series is characterized by wear-free and noiseless switching and is capable of safely and reliably withstanding repeated loads and high temperatures. This makes our solid-state switching devices particularly suitable for use in medical applications and stage technology.

### DCB - Technology

DCB Technologie

The DCB technology (Direct-Copper-Bonding-Process) ensures very good heat transfer properties.

**Fields of application**

- Heating controls
- Hot glue robots
- Soldering lines
- Tapping systems
- Pumps
- Photocopying machines
- Automat construction
- Extruder plants
- Injection molding machines
- Furnace controls
- Three-phase motors
- Lighting controls
- Funding agencies
- Packaging machinery

# High switching frequencies, long service life with minimum overall width

## POWERSWITCH - Your advantages at a glance:

**Long service life**
Long service life for high system availability and low maintenance costs

**Noiseless operation**
Since no mechanical components are present, the switching process is noiseless

**High switching frequencies**
Wear-free switching is reliably possible even at high switching frequencies

**Ready to use**
Ready for immediate use thanks to optimally adapted heat sink

**Minimum overall width**
The compact design allows a space-saving installation

**High temperatures**
Reliable switching even under the most difficult environmental conditions

**1-, 2- and 3-pole versions**
For switching 1-, 2- or 3-phase loads up to 600 V

**Version ohmic loads**
The „zero point switching“ method is used to switch ohmic loads

**Version inductive loads**
For inductive loads the „switching at voltage maximun“ version is suitable

**Load monitoring**
For detection of over- and undercurrent in alternating current networks

**Extreme environmental conditions**
Vibration and shock resistant for use even under the most difficult environmental conditions

**Fast commissioning**
Flexible wiring and fast commissioning as well as simple snap-on option on DIN top-hat rail


*Solid-state relay PH 9270*

# More functionality, more possibilities
# Solid-state relay / contactor

**Solid-state relays** of the **POWERSWITCH** series are ideally suited for mounting on existing cooling surfaces and allow fast and simple mounting with just two screws. With a narrow width from 22.5 mm, the solid-state relays are absolutely space-saving.

The DCB technology (Direct-Copper-Bonding-Process) ensures very good heat transfer properties. Depending on the property of the heat sink, continuous currents of up to approx. 90 A are possible. If a large number of resistive loads have to be switched, the solid-state relays can be mounted on a collective heat sink.

Depending on the application, it is recommended to protect the solid-state relays against short circuits with special fuses.

The solid-state relays offer a wide range of applications, e.g. in injection moulding machines in the plastics and rubber industries, in packaging machines, soldering systems and in the food industry.

**Solid-state contactors** of the **POWERSWITCH** series consist of a solid-state relay plus an optimized heat sink and are therefore ready for immediate use. Depending on the version, currents of up to 50 A are permitted.

Like all solid-state switching devices, the solid-state contactors also impress with their narrow and space-saving design. Thanks to the pre-dimensioned heat sink, the devices can easily be snapped onto a DIN rail or mounted on carrier plates using fastening screws.

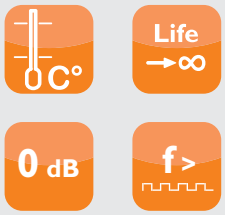
## Overview

| |  |  |  |  | |
|---|---|---|---|---|---|
| Device type | PK 9260 | PK 9261 | PH 9260.91/042 | PH 9260.91 | |
| **Classification** | **Solid-state relay / contactor 1-pole** | **Solid-state relay / contactor 1-pole** | **Solid-state relay / contactor 1-pole** | **Solid-state relay / contactor 1-pole** | |
| **Load voltage** | **230, 480, 600 V** | **480, 600 V** | **480 V** | **240, 480, 600 V** | |
| **Peak reverse voltage** | **650, 1200, 1600 V** | **1200, 1600 V** | **1200 V** | **1200, 1600 V** | |
| **Load current** | **25, 35, 50, 72, 88 A<br>10, 15, 20, 30, 40, 50, 88 A with heat sink** | **7,5, 15 A** | **25, 50 A** | **25, 50 A** | |
| **Control input** | **DC 4 ... 32 V<br>AC 100 ... 230 V<br>AC/DC 18 ... 30 V** | **DC 4 ... 32 V<br>AC 100 ... 230 V** | **DC 4 ... 20 mA** | **DC 4 ... 32 V<br>AC/DC 18 ... 36 V<br>AC/DC 100 ... 240 V** | |
| **Signal output** | — | — | — | — | |
| **Heat sink** | **optional** | **optional** | **optional** | **optional** | |
| **DIN rail** | • | • | • | • | |
| **Approval** | UL [1] | — | — | UL [1] | |
| **Specification** | **for ohmic loads** | **for motor loads** | **with impulse packet control** | — | |
| **Width** | **22,5 mm** | **22,5 mm** | 45 mm | 45 mm | |

[1] Depending on variant

# 1-, 2- and 3-pole versions available


Solid-state contactor PK 9260




### Your advantages at a glance

- Immediately ready for use - thanks to optimally adapted heat sinks
- Long service life for high system availability
- Noiseless and wear-free switching
- Simple mounting on the heat sink
- Easy integration into existing automation systems
- Compact design from 22.5 mm overall width
- 1-, 2- and 3-pole versions available
- Use even under extreme environmental conditions (vibration and shock resistant)

| | | | |
|---|---|---|---|
|  |  |  |  |
| PH 9270.91/003 | PH 9270.91 | PH 9260.92 | PI 9260.92 /.93 |
| **Solid-state relay / contactor 1-pole** | **Solid-state relay / contactor 1-pole** | **Solid-state relay / contactor 2-pole** | **Solid-state relay / contactor 2-, 3-pole** |
| **240 V** | **480 V** | **240, 480 V** | **230, 480, 600 V** |
| **800, 1200 V** | **1200 V** | **1200 V** | **650, 1200, 1600 V** |
| **25, 45 A** | **40 A** | **2 x (32, 48 A)** | **20, 30, 50, 60 A<br>2 x (20, 30 A) with heat sink<br>3 x 20 A with heat sink** |
| **DC 20 ... 32 V** | **DC 20 ... 32 V** | **DC 18 ... 30 V** | **DC 10 ... 32 V<br>AC 100 ... 230 V** |
| **0 ... 10 V** | **—** | **—** | **—** |
| **optional** | **optional** | **optional** | **optional** |
| **•** | **•** | **•** | **•** |
| **—** | **—** | **—** | **—** |
| **with load circuit monitoring and analogue output** | **with load circuit monitoring and PNP semiconductor output** | **—** | **2- or 3-phase controlled version** |
| 45 mm | 45 mm | 45 mm | **67,5 mm** |

# Solid-state contactors, also with load monitoring

The **solid-state contactors** of the **POWERSWITCH** series are particularly suitable for installation in switch cabinets due to their simple snap-on mounting on the DIN rail and are available in 1-, 2- and 3-pole versions. Optionally up to 3 separate solid-state contactors in one device.

The devices are characterized by a compact and space-saving design and allow fast mounting by snapping onto the DIN rail. Due to the ready-to-use design, the devices are immediately ready for use.

With the device characteristics „zero point switching“ or „instantaneous switching“ you are equipped for all applications with AC loads.

Whether current monitoring, load control or analogue control, the solid-state contactors offer a wide range of applications, such as switching motors, heaters, valves or lighting. Special solid-state contactors can also monitor the load circuit.

The solid-state contactors operate in a load voltage range of up to 600 V and, thanks to the wide control voltage range, can be operated with a PLC or simple temperature controllers. The devices cover a current range up to 90 A with only a few versions.

## Overview

| |  |  |  | |
|---|---|---|---|---|
| Device type | BF 9250/001 | BF 9250/003 | **BF 9250/008** | |
| **Classification** | **Solid-state contactor 1-, 2-, 3-pole** | **Solid-state contactor 2-, 3-pole** | **Solid-state contactor 1-, 2-, 3-pole** | |
| **Load voltage** | **480 V** | **480 V** | **230, 480 V** | |
| **Peak reverse voltage** | **1200 V** | **1200 V** | **1200 V** | |
| **Load current** | **10, 25, 50 A<br>2 x (6,5, 15, 25 A)<br>3 x (5, 10, 15 A)** | **2 x (6,5, 15, 25 A)<br>3 x (5, 10, 15 A)** | **10, 25, 50 A<br>2 x (6,5, 15, 25 A)<br>3 x (5, 10, 15 A)** | |
| **Control input** | **DC 24 V** | **DC 24 V** | **DC 24 V** | |
| **Signal output** | • | — | — | |
| **Heat sink** | • | • | • | |
| **DIN rail** | • | • | • | |
| **Approval** | UL | UL | UL | |
| **Specification** | **with temperature monitoring (storing)** | **Control inputs galvanically isolated from each other** | **Control via separate terminals (A1/A2)** | |
| **Widths** | **22,5, 45, 90 mm** | **22,5, 45, 90 mm** | **22,5, 45, 90 mm** | |

# Versatile options for individual configuration


Solid state contactor BF 9250/008

### Your advantages at a glance

- Long service life for high system availability
- Noiseless and wear-free switching
- Simple mounting by snapping onto DIN rail
- Easy integration into existing automation systems
- For 1-, 2- or 3-pole loads
- Available with UL approval
- With load circuit monitoring (BH 9251)

| | | | | | | |
|---|---|---|---|---|---|---|
| |  | | |  | |  |
| | BF 9250/004 | BF 9250/042 | BF 9250/002 | BH 9250/001 | BH 9250.03/006 | BH 9251 |
| | **Solid-state contactor 2-, 3-pole** | **Solid-state contactor 1-pole** | | **Solid-state contactor 1-, 2-, 3-pole** | **Solid-state contactor 3-pole** | **Solid-state contactor 1-pole** |
| | **480 V** | **115, 240, 480 V** | | **480 V** | | **48, 230, 400 V** |
| | **1200 V** | **1200 V** | | **1200 V** | | **1200 V** |
| | **10, 25, 50 A** | **2 x (6,5, 15, 25 A)<br>3 x (5, 10, 15 A)** | | **10, 25, 50 A<br>2 x (6,5, 15, 25 A)<br>3 x (5, 10, 15 A)** | **3 x 3 A<br>2 x 1 A** | **10, 20, 40 A** |
| | **DC 24 V** | **0 - 10 V<br>4 - 20 mA<br>0 - 10 kΩ** | | **DC 24 V** | | **AC/DC 9,6 ... 270 V** |
| | — | — | | • | — | • |
| | • | • | | • | | • |
| | • | • | | • | | • |
| | UL | UL | | UL | | — |
| | **Control inputs with common ground** | **Output with impulse control** | | **with temperature monitoring (storing)** | **additional 2 semiconductor outputs** | **with load monitoring** |
| | **22,5, 45, 90 mm** | | | **45, 67,5, 112,5 mm** | | **45, 67,5, 112,5 mm** |

# Our experience. Your safety.

## DOLD - Your solution provider with over 80 years of experience


### Hybrid relays - perfectly combined

Hybrid relays combine the advantages of robust relay technology with wear-resistant semiconductor technology in a perfect way.

Classic electromechanical relays offer a significant advantage over solid-state relays. While solid-state relays generate heat permanently due to the forward voltage, which must be dissipated by heat sinks at higher load currents, the current-carrying relay contact has a very low contact resistance and thus generates hardly any heat loss.

Solid-state relays are insensitive to shock and vibration. Their strengths lie above all in the switch-on and switch-off processes. No bouncing, no electric arcs, no mechanical wear - and thus an almost unlimited electrical service life.

The **hybrid relay IK 3070/200** from DOLD perfectly combines the advantages of both worlds. When switched on, the solid-state first switches in the zero crossing of the alternating voltage. A few milliseconds later, the relay contact takes over the continuous current and ensures low power dissipation. When the relay is switched off, the current is first transferred from the relay to the solid-state, which then switches off at zero current. In this way, surge voltages and currents in the load circuit are minimized and minimal electromagnetic interference is caused.

Due to the combination of the different switching technologies, the IK 3070/200 is particularly suitable for applications that require a high switching capacity and a long service life at the same time. It is therefore particularly suitable for systems in which a standstill leads to high costs, i.e. the relay should function reliably over as long a period as possible. Such applications can be found in automation technology and the process industry as well as in offshore wind turbines.

| Technical features | |
|---|---|
| Output contacts max. | 1 NO |
| Thermal current $I_{th}$ max. | 16 A |
| Nominal voltage AC/DC | 24 V |
| Nominal voltage AC | 110 ... 127 V, 220 ... 240 V |
| Electrical lifetime | $10^6$ switching operations with AC 15, 10 A inductive |
| Rated operational current | 20 A |
| Width | 17,5 mm |

More
Info

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