

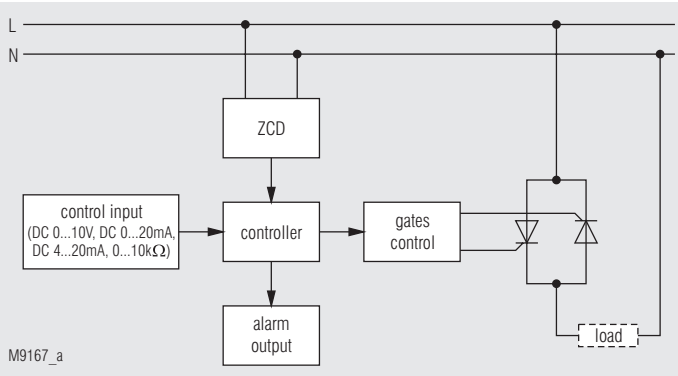
POWERSWITCH
Solid-State Contactor With Analogue Input
For Pulsed Output BF 9250/0_2

Translation
of the original instructions



- According to IEC/EN 60947-4-2, IEC/EN 60947-4-3
- Analogue controller for accurate process temperature control
- Burst firing control of heaters
- Control input optional with DC 0 ... 10 V, DC 4 ... 20 mA, 0 ... 10 kΩ
- Reverse action operation possible
- Rated operational voltage range up to 480 V
- Rated operational current is up to AC 50 A
- Zero cross switching
- Protected by varistors
- Temperature protection of the power semiconductors
- LED indications for supply, output status and alarm status
- Alarm indication on mains synchronisation failure
- Alarm indication on control input failure
- Alarm indication on over temperature of power semiconductors
- DIN-rail mountable
- BF 9250/0_2 to 10 A: Width 22.5 mm
- BF 9250/0_2 to 25 A: Width 45 mm
- BF 9250/0_2 to 50 A: Width 90 mm

Block Diagram



M9167_a

Approvals and Markings



Applications

- Analogue control for precise temperature control
- Fast and noiseless switching of heating elements

Indicators

Normal operation

- Green LED: ON
- Yellow LED: ON according to output status
- Red LED: OFF

Mains synchronisation failure alarm

- Green LED: Flashing
 - Yellow LED: OFF
 - Red LED: Flashing
- (This alarm status is not latched)

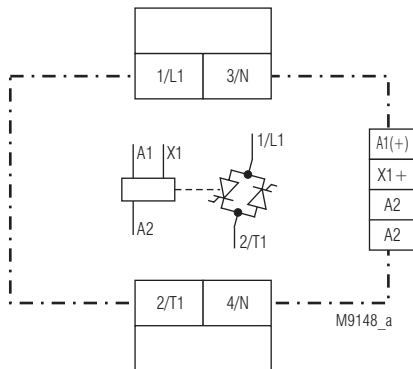
Control input failure

- Green LED: ON
 - Yellow LED: OFF
 - Red LED: Flashing
- (This alarm status is not latched)

Over temperature of power semiconductors alarm

- Green LED: ON
 - Yellow LED: OFF
 - Red LED: ON
- (This alarm status is latched. Supply on A1+/A2 has to be switched off and back on after a short time to reset this status)

Circuit Diagrams



M9148_a

Connection Terminals

Terminal Designation	Signal Designation
A1 (+)	+ / L
A2	- / N
X1	Control input
L1, N	Mains connection
T1, N	Load output

Technical Data

Input

Supply voltage U_H

A1/A2: AC/DC 24 V
Supply current: < 26 mA at DC 24 V

Control Input

Current controlled input

Control current range: DC 0 ... 20 mA or DC 4 ... 20 mA
Allowable input current: < 35 mA
Over current protection: YES
Alarm for over current: YES
Reverse polarity protection: YES
Voltage drop: 1.02 V at 20 mA

Voltage controlled input

Control voltage range: DC 0 ... 5 V or DC 0 ... 10 V
Control input current: < 0.01 mA at DC 10 V

Potentiometer controlled input

Potentiometer value: 10 k Ω \pm 10 %

Control accuracy

Range: 0 ... 100 %
Step: 1.5625 %

Output

Rated load voltage range: AC 24 ... 115 V; AC 110 ... 240 V or AC 230 ... 480 V

Load current I_L : AC 10 A, 25 A, 50 A

Minimum operational current: AC 40 mA

Operating mode: Continuous

Current reduction over 40°C

I_L AC 10 A: 0.2 A / °C

I_L AC 25 A: 0.4 A / °C

I_L AC 50 A: 0.6 A / °C

Frequency range: 45 ... 65 Hz

Varistor voltage: AC 510 V

Load types: Resistive

Power loss: 1.2 (V) \times I_L (A) approx.

Average power output: 0 ... 100 %

Output power resolution

at BF 9250/002: 1.5625 %

at BF 9250/042: 5 %

Zero crossing detection: YES

Off state leakage current at

rated voltage and frequency: 1.0 mA
(T_j = 125°C max.)

I^2t for fusing $t = 1$ to 10 ms

I_L AC 10 A, 25 A: 800 A²s

I_L AC 50 A: 1800 A²s

Peak inverse voltage: \pm 1200 V_p

Note: Higher current capacities on request

Installation

Recommended distance with max. load current and 100 % duty cycle upper / lower side

to cable duct: 20 mm
left / right: 10 mm

Technical Data

General Data

Maximum humidity: 75 %, no condensation

Operating temperature: 0 ... 40 °C

Maximum temperature: 60° (using appropriate derating)

Storage temperature: - 20 ... + 80 °C

Cooling: Natural convection

Junction temperature: < 125 °C

Rated withstand voltage

input to output: 3500 V

Degree of protection

Housing: IP 40 IEC/EN 60529

Terminals: IP 20 IEC/EN 60529

Mounting: DIN rail IEC/EN 60715

Wire fixing

Wire connection: DIN 46228-1/-2/-3/-4

Load terminals: 1 x 10 mm² solid

1 x 6 mm² stranded ferruled

Control terminals: 1 x 0.75 mm² stranded ferruled (isolated)

DIN 46228-1/-2/-3/-4

1 x 1.5 mm² stranded ferruled

DIN 46228-1/-2/-3

Box terminals

Control terminals: Cage clamp terminals "Push-In"

Fixing torque: 1.2 Nm

Weight

BF 9250/0_2 to 10 A: 350 g

BF 9250/0_2 to 25 A: 580 g

BF 9250/0_2 to 50 A: 1094 g

Dimensions

Width x height x depth

BF 9250/0_2 to 10 A: Width 22,5 x 85 x 120 mm

BF 9250/0_2 to 25 A: Width 45 x 85 x 120 mm

BF 9250/0_2 to 50 A: Width 90 x 85 x 120 mm

UL-Data according to UL508

Input

Wire connection: 60°C / 75°C copper conductors only
AWG 28 - 14 Sol/Str

Control input

Current input: DC 4 ... 20 mA

Voltage input: DC 0 ... 5 V bzw. DC 0 ... 10 V

Potentiometer input: 10 k Ω \pm 10 %

Load circuit

Fixed screw terminal: 75°C copper conductors only
AWG 18 - 8 Sol Torque 0.8 Nm or
AWG 18 - 10 Str Torque 0.8 Nm
(only possible at variants up to 30 A)

Temperature range: 0 ... 40 °C

Frequency range: 50 / 60 Hz

Pollution degree: 2

In the final circuit an overvoltage protector R/CSPD (VZCA2/8) with min. 480V AC, 50/60Hz, VPR=2500V, Type 3 has to be installed.



Technical data that is not stated in the UL-Data, can be found in the technical data section.

Standard Type

BF 9250.91/042 U_H AC/DC 24 V DC 0 ... 10 V AC 230 ... 480 V AC 10 A

Article number: 0059168

• 1-pole

• Control input: DC 0 ... 10 V

• Auxiliary voltage: AC/DC 24 V

• Load voltage: AC 230 ... 480 V

• Load current: AC 10 A

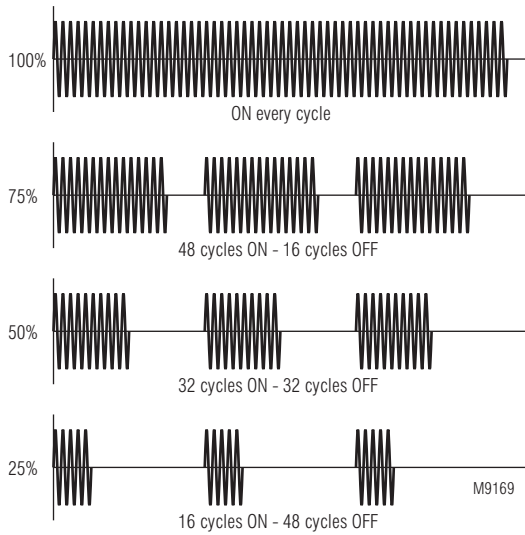
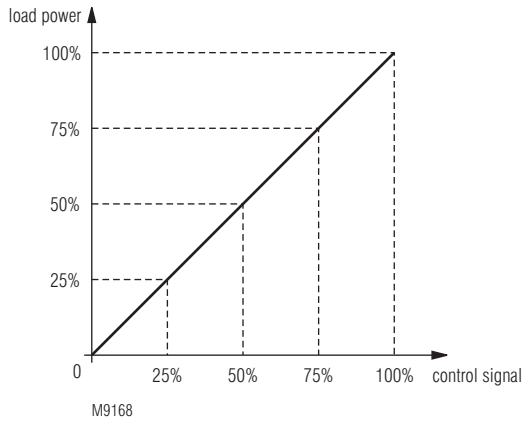
• Width: 22.5 mm

Variants

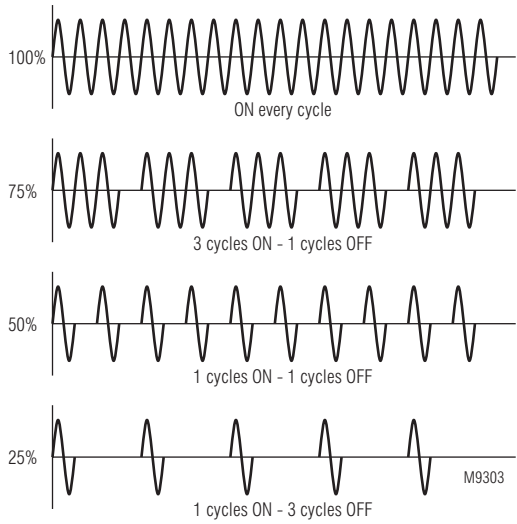
BF 9250/002: Output control with fixed period of 64 cycles, pulse-space ratio according to input signal

BF 9250/042: Self optimising, to achieve as short as possible control periods, suitable for infrared lamps

Characteristics



Variant BF 9250/002



Variant BF 9250/042

Application Examples

