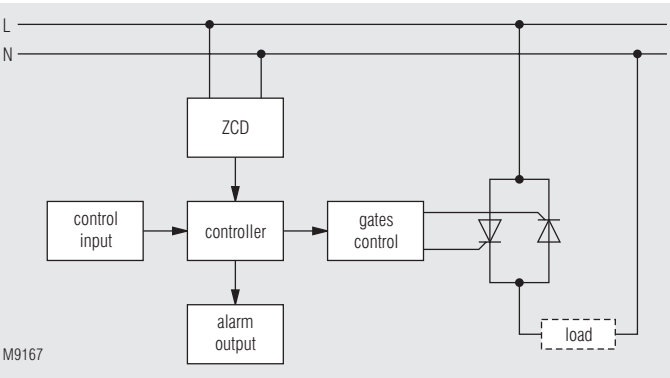


POWERSWITCH
Semiconductor Contactor With Analogue Input
For Pulsed Output BF 9250/0_2



- 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

Approvals and Markings



Applications

- Analogue control for precise temperatur 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)

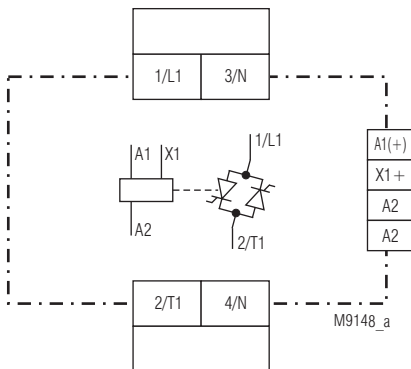
Control input failure

- 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

Nominal load voltage:	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 ($T_j = 125^\circ\text{C}$ max.)
--	---

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

I_L AC 10 A, 25 A:	800 A ² s
----------------------	----------------------

I_L AC 50 A:	1800 A ² s
----------------	-----------------------

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 60 529
Terminals:	IP 20	IEC/EN 60 529
Mounting:	DIN rail	IEC/EN 60 715

Wire fixing

Wire connection

Load terminals:	1 x 10 mm ² solid 1 x 6 mm ² stranded wire with sleeve 1 x 0.75 mm ² stranded wire with sleeve and with insulation 1 x 1.5 mm ² stranded wire with sleeve and with insulation
-----------------	--

Control terminals:

Load terminals:	box terminals
Control terminals:	cage clamps

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 24 - 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.

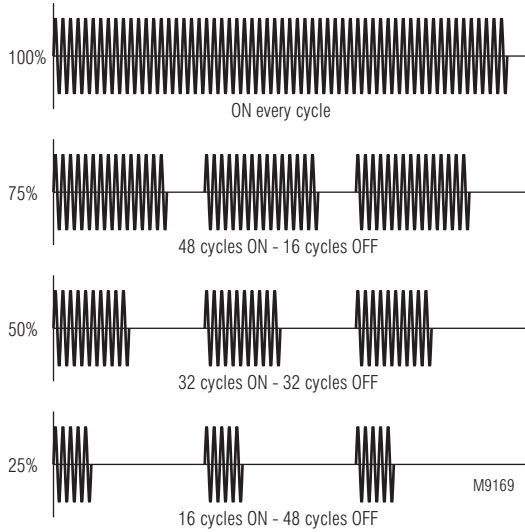
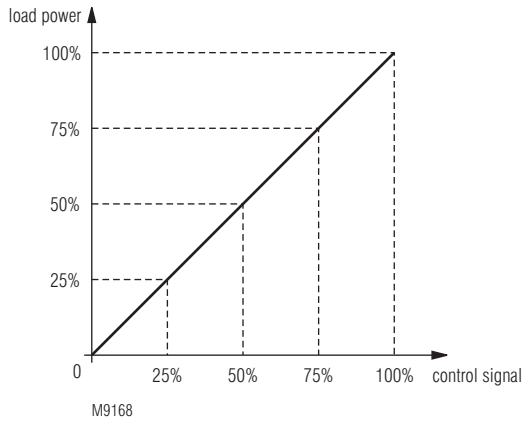
Standard Type

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		

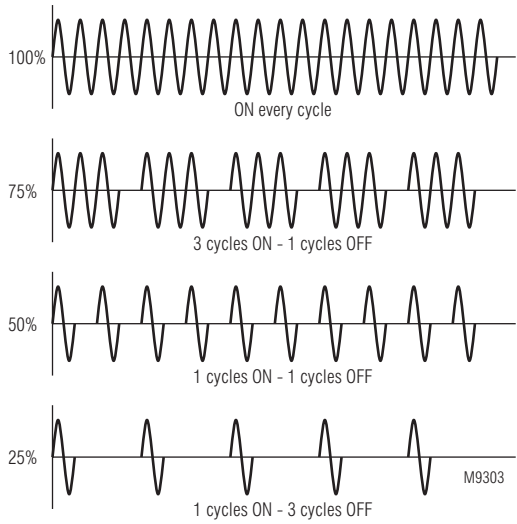
Variants

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

