

OPTOCOUPLER MODULES

woertz



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Optocoupler modules

Introduction

The function of optocouplers can be compared to the function of relay couplers.

Optocouplers are used:

- as logical decouplers for input / output systems
- as logical elements free from chatter, for digital applications
- for the galvanic separation between control circuit (input unit such as detector) and power circuit (output unit such as actuator) of a control system.

Combined with the Woertz MPS system, optocouplers on PCB's can quickly and easily be mounted on DIN rails in control cabinets.

General

Advantages compared to single relay couplers:

- Shorter response time than relays
- High operating security: LED indicates any failure
- Long life expectancy: no contact oxidation
- Chatter-free switching
- High power even in the case of inductive loads

Note: Optocouplers are more sensitive to overvoltage and to high temperature than relay couplers.

Applications

The advantage of optocouplers is that they can be used in most cases where galvanic separation and secure switching are necessary.

The reliable operation of a machine is dependent on the right choice and use of the components. The search for the most suitable optocoupler always takes technical and economical aspects into account.

The Woertz range of optocouplers can be divided into two groups:

- | | |
|------------------------------|------------------------------|
| - Signal optocouplers | - Power optocouplers |
| Input voltage 5-110 V DC | Input voltage 5-110 V DC |
| Input voltage 24-230 V AC/DC | Input voltage 24-230 V AC/DC |
| Output current up to 100 mA | Output current up to 7 A |

These two types of optocouplers can be distinguished by their different switching capacity and their structure.



Properties

- Signal and power optocoupler in 5.08mm wide terminal housing
- LED indicating on state
- Large product range
- High fidelity
- For many applications where rapid and reliable switching is important
- An end barrier should be placed at the end of the terminal block
- Available for all common industrial voltages



Accessories

30407T	End barrier
30403	Compatible 3-level terminal
30413RO	Cross connection 20-pole red
30413BL	Cross connection 20-pole blue
30790	Cross connection 10-pole grey
81535/x	Isolated cross connections w. screws x = 2, 3, 4, 5, 10 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB /5 x 5



Technical data ($T_a = 25^\circ\text{C}$)

Output

Max. switching voltage
Max. continuous current single/stacked
Max. transient current

Voltage drop (at $0.5 \times I_{\text{max}}$)

Input

Operating voltage tolerance

Input current at rated voltage

Switch on level

Switch off level

Max. transmission frequency (res. load) max.

General data

Input / output dielectric strength/ creepage distance

Operating temperature range

Rated cross section of connecting terminals

Max. torque

Size W x H x D (from rail)



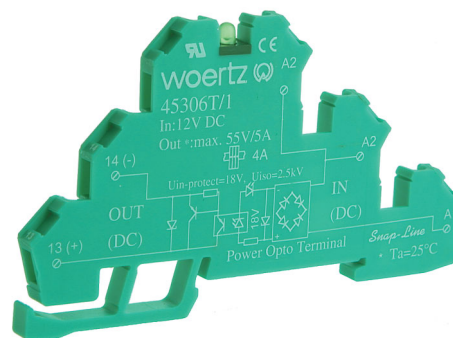
Order numbers

5 V DC
12 V DC
24 V DC
48 V DC
110 V DC
24 V AC/DC
115 V AC/DC
230 V AC/DC

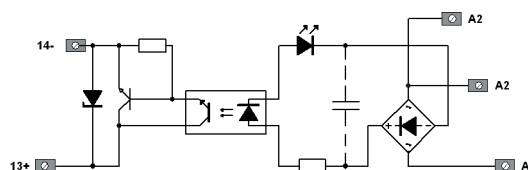
45305T/7
45305T/1
45305T/2
45305T/3
45305T/9
45310T/12
45310T/15
45310T/14

45306T/7
45306T/1
45306T/2
45306T/3
45306T/9
45311T/12
45311T/15
45311T/14

45307T/7
45307T/1
45307T/2
45307T/3
45307T/9
45312T/12
45312T/15
45312T/14



45306T/1



5V versions without rectifier

100 mA

150 V DC, 45310: 50 V DC
100 mA / 100 mA
45305: 0.15 A / 0.1 ms
45310: 0.5 A / 10ms
45305: about 0.7 V
45310: about 0.1 V

$\pm 20\%$
110 - 230 V: $\pm 15\%$
6 - 9 mA
110 - 230 V: 2 - 3 mA
 $> 0.8 \times U_N$
 $< 0.4 \times U_N$
45305: 600 Hz, T/9: 300 Hz
45310: 10 Hz

2.5 kV / 3 mm
-25°C up to +45°C
2.5 mm² (AWG 2 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

5 A

55 V DC
5 A / 4 A
25 A / 0.1 ms
max. 0.2 V

$\pm 20\%$
5, 115, 230 V: $\pm 15\%$
about 5 mA
110 - 230 V: 2 - 3 mA
 $> 0.8 \times U_N$
 $< 0.4 \times U_N$
45306: 10 Hz, T/9: 5 Hz
45311: 5 Hz

2.5 kV / 3 mm
-25°C up to +45°C
2.5 mm² (AWG 2 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

7 A

55 V DC
7 A / 6 A
100 A / 0.1 ms
max. 0.1 V

$\pm 20\%$
5, 115, 230 V: $\pm 10\%$
about 5 mA
110 - 230 V: 2 - 3 mA
 $> 0.8 \times U_N$
 $< 0.4 \times U_N$
45307: 1 Hz, T/9: 0.5 Hz
45312: 0.5 Hz

2.5 kV / 3 mm
-25°C up to +45°C
2.5 mm² (AWG 2 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

Optocoupler modules for DC loads

Input 15 - 60 V DC, Output 100 mA



Properties

- High reliability
- Chatter-free switching
- Integrated low-pass filter

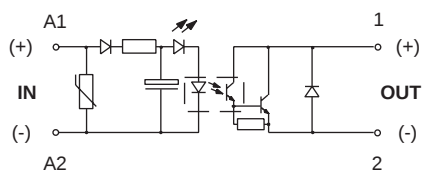


On request

Modules with different pole numbers
Output current from 100 μ A up to 500 mA
Modules with other filter characteristics



45140A



Technical data

Input voltage range
Input current range
Max. output voltage
Max. output current
Voltage drop
Filter delay
Operating temperature
Rated cross section of connecting terminals
Size W x H x D

With 2 optocouplers

15 - 60 V DC
2 - 10 mA
60 V DC
100 mA
1.0 V
5 - 10 ms
-20°C up to +70°C
2.5 mm² (AWG 24 - 14)
30 x 83 x 43 mm



Order numbers

45140 A

Optocoupler modules for DC loads

Input 15 - 60 V DC, Output 100 mA



Properties

- High reliability
- Rebound-free switching
- Integrated low-pass filter

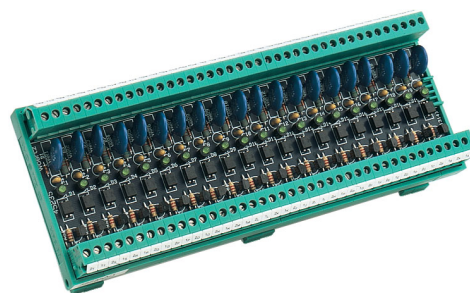


On request

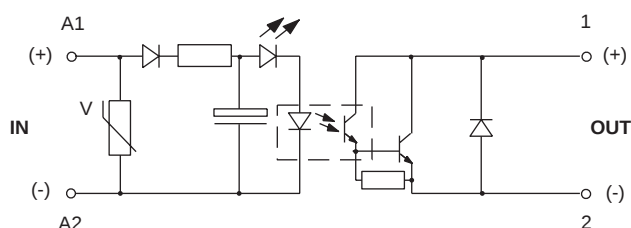
Modules with different pole numbers
Output current from 100 μ A up to 500 mA
Modules with other filter characteristics



45156A



45235A/1



Technical data

Input voltage range
Input current range
Max. output voltage
Max. output current
Voltage drop
Filter delay
Operating temperature
Rated cross section of connecting terminals
Size W x H x D

With 4 optocouplers

15 - 60 V DC
2 - 10 mA
60 V DC
100 mA
1.0 V
5 - 10 ms
-20°C up to +40°C
2.5 mm², (AWG 24 - 14)
50 x 83 x 43 mm

45156 A

With 20 optocouplers

15 - 60 V DC
2 - 10 mA
60 V DC
100 mA
1.0 V
5 - 10 ms
-20°C up to +40°C
2.5 mm², (AWG 24 - 14)
210 x 83 x 43 mm

45235 A/1



Order numbers

Optocoupler modules for DC loads

Input 15 - 60 V AC/DC resp. 90 - 250 V AC/DC, Output 100 mA



Properties

- High reliability
- Rebound-free switching
- Integrated low-pass filter

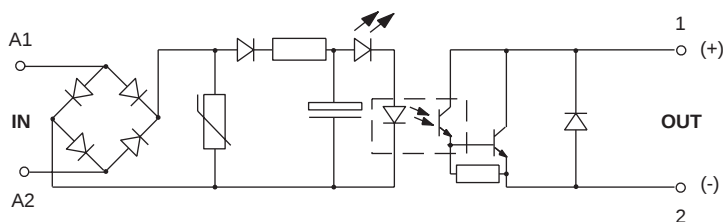


On request

Modules with different pole numbers
Output current from 100 μ A up to 500 mA
Modules with other filter characteristics



45165B/1



Technical data

Input voltage range:
Module 45165 B/1
Module 45165B/2
Input current range
Max. output voltage
Max. output current
Voltage drop
Filter delay
Operating temperature
Rated cross section of connecting terminals
Size W x H x D

With 4 optocouplers

15 - 60 V AC/DC
90 - 250 V AC/DC
2 - 10 mA
60 V DC
100 mA
1.0 V
5 - 10 ms
-20°C up to +40°C
2.5 mm², AWG 24 - 14
50 x 83 x 43 mm



Order numbers

Input voltage 15 - 60 V
Input voltage 90 - 250 V

45165B/1
45165B/2



Properties

- High speed active (push-pull) signal isolator in terminal housing, 5.08mm wide
- LED indicating on state
- For isolated data transmission up to 1.5Mb/s
- As level shifter between systems with different voltage or earth potential
- As booster / amplifier of weak signals
- Direct interface to capacitive loads like MOSFETs and IGBTs
- Proximity switch interface: PNP booster or NPN to PNP inverter
- As sinus to square wave converter
- Available for all common industrial voltages



Accessories

- | | |
|------------|--|
| 30407T | End barrier |
| 30403 | Compatible 3-level terminal |
| 30413RO | Cross connection 20-pole red |
| 30413BL | Cross connection 20-pole blue |
| 30790 | Cross connection 10-pole grey |
| 81535/x | Isolated cross connections w. screws
x = 2, 3, 4, 5, 10 poles |
| 30411, 12 | Isolation strip red, blue |
| 80247, 48 | Test plug red, black |
| 35455/55xx | Labels for custom use RB / 5 x 5 |



Technical data ($T_a = 25^\circ\text{C}$)

Supply

Supply voltage
Supply current (no load)

Output

Output voltage (no load)

Max. transmission frequency

(res. load, DC = 50%, $i = 30\text{ mA}$)

Max. output current (Source & Sink, $f < 500\text{ kHz}$)

Transient current max. (Source & Sink)

Input

Input voltage tolerance

Input current at rated voltage (U_N)

Switch on level

Switch off level

General data

Input/Output dielectric strength

Input/Output creepage distance

Operating temperature range

Rated cross section of connecting terminals

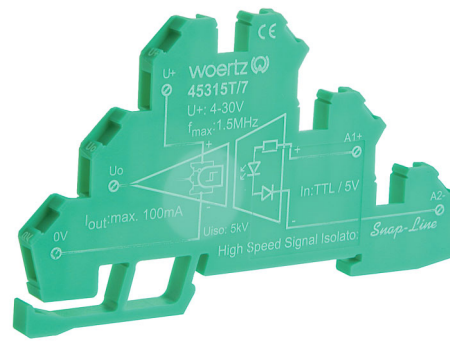
Max. torque

Size L x W x H (from rail)

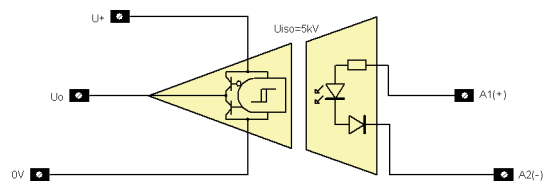


Order numbers

TTL / 5 V DC
12 V DC
24 V DC
48 V DC
110 V DC
24 V AC/DC
115 V AC/DC
230 V AC/DC



45315T/7



AC versions with rectifier circuit instead of diode

High-Speed input

4 - 30 V DC
8 mA (DC), 17 mA (1.5 MHz)

"0" < 0.3 V, "1" > $U^+ - 2\text{ V}$
eg. for TTL output: $U^+ = 5\text{ V}$

1.5 MHz
100 mA
0.4 A

$\pm 20\%$

about 5 mA, 110 V: about 3 mA
> $0.8 \times U_N$
< $0.2 \times U_N$

5 kV
3.0 mm
-10°C up to +45°C
2.5 mm² (AWG 24 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

45315T/7
45315T/1
45315T/2
45315T/3
45315T/9

AC/DC input

4 - 30 V DC
8 mA

"0" < 0.3 V, "1" > $U^+ - 2\text{ V}$
eg. for TTL output: $U^+ = 5\text{ V}$

10 Hz ($f_{AC} > 45\text{ Hz}$)
100 mA
0.4 A

$\pm 20\%$

115, 230 V: $\pm 15\%$
about 5 mA, 115 - 230 V: 2 - 3 mA
> $0.8 \times U_N$
< $0.2 \times U_N$

5 kV
3.0 mm
-10°C up to +45°C
2.5 mm² (AWG 24 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

45316T/12
45316T/15
45316T/14

Optocoupler terminals

SnapLine, for AC/DC loads



Properties

- Optocoupler in 5.08mm wide terminal housing, for medium AC/DC loads
- LED indicating on state
- Versions for high voltages
- For many applications where isolation, size and reliable switching are important
- Available for all common industrial voltages



Accessories

30407T	End barrier
30403	Compatible 3-level terminal
30413RO	Cross connection 20-pole red
30413BL	Cross connection 20-pole blue
30790	Cross connection 10-pole grey
81535/x	Insulated cross-connections w. screws x = 2, 3, 4, 5, 10 Pole
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB 5 x 5



Technical data (T_a = 25°C)

Output

Max. switching voltage
Max. continuous current single/stacked
Max. transient current during on state
Voltage drop (at 0.5 x I_{max})

Input

Operating voltage tolerance

Input current at rated voltage

Switch on level

Switch off level

Max. transmission frequency (res. load)

(at DC = 50%, i = 0.5 x I_{max}, U_{switch} = 0.5 x U_{max})

General data

Dielectric strength input / output

Creepage distance input / output

Operating temperature range

Rated cross section of connecting terminals

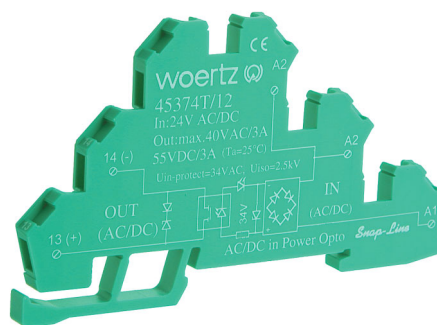
Max. torque

Size W x H x D (from rail)

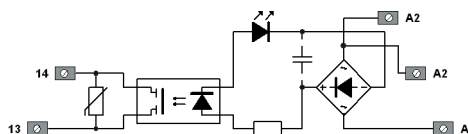


Order numbers

5 V DC
12 V DC
24 V DC
48 V DC
110 V DC
24 V AC/DC (50 - 60 Hz)
115 V AC/DC (50 - 60 Hz)
230 V AC/DC (50 - 60 Hz)



45374T/12



5 V version without rectifier

4 A (low voltage)

40 V AC / 55 V DC
4 A / 3.5 A
25 A / 0.1 ms
about 0.2 V

± 20%
5, 115, 230 V: ± 15%
about 5 mA, 110 - 230 V: 2 - 3 mA
> 0.8 x U_N
< 0.4 x U_N
45373: 10 Hz
45374: 5 Hz

2.5 kV
3.0 mm
-25°C up to +45°C
2.5 mm² (AWG 24 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

45373T/7
45373T/1
45373T/2
45373T/3
45373T/9
45374T/12
45374T/15
45374T/14

1 A (high voltage)

250 V AC / 300 V DC*
1 A / 0.8 A
10 A / 0.1 ms
about 1 V

± 20%
5, 115, 230 V: ± 15%
about 5 mA, 110 - 230 V: 2 - 3 mA
> 0.8 x U_N
< 0.4 x U_N
45375: 5 Hz
45376: 1 Hz

2.5 kV
3.0 mm
-25°C up to +45°C
2.5 mm² (AWG 24 - 14)
0.4 Nm
5.08 x 86.5 x 44 mm

45375T/7
45375T/1
45375T/2
45375T/3
45375T/9
45376T/12
45376T/15
45376T/14

For protection against accidental contact, an end barrier (30407T) should be placed at the end of a SnapLine block.

* Can switch up to 400VAC / 550VDC (0.2A), but due to limitations in isolation voltage and creepage distance, it must not be used where danger or damage can occur.



Properties

- AC optocoupler in 5.08mm wide terminal housing, for small and medium AC loads
- LED indicating on state
- Switching voltage up to 250 V AC
- For many applications where isolation and rapid switching are important
- Available for common industrial voltages



Accessories

30407T	End barrier
30403	Compatible 3-level terminal
30413RO	Cross connection 20-pole red
30413BL	Cross connection 20-pole blue
30790	Cross connection 10-pole grey
81535/x	Isolated cross connections w. screws x = 2, 3, 4, 5, 10 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB / 5 x 5



Technical data ($T_a = 25^\circ\text{C}$)

Output

Max. switching voltage
Max. continuous current single/stacked
Max. transient current during on state
Voltage drop (at $0.5 \times I_{\text{max}}$)

Input

Operating voltage tolerance 5 V DC
 12 and 24 V DC
 48 V DC

Input current at rated voltage
Switch on level
Switch off level
Max. transmission frequency (res. load)

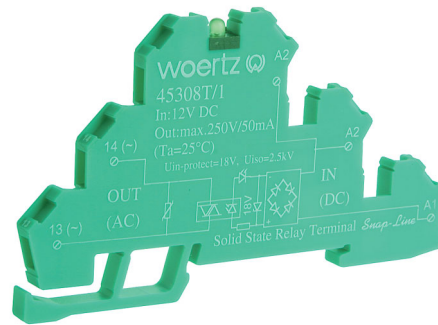
General data

Dielectric strength input / output
Creepage distance input / output
Operating temperature range
Rated cross section of connecting terminals
Max. torque
Size W x H x D (from rail)

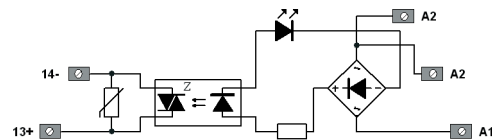


Order numbers

5 V DC
12 V DC
24 V DC
48 V DC



45308T/1



5 V version without rectifier

50 mA

250 V AC*
50 mA / 50 mA
0.5 A / 0.1 ms
about 2 V

± 10%

± 20%

± 15%

11 mA

> $0.8 \times U_N$

< $0.4 \times U_N$

10 Hz

3.75 kV

3.0 mm

-25°C up to +45°C

2.5 mm² (AWG 24 - 14)

0.4 Nm

5.08 x 86.5 x 44 mm

45308T/7

45308T/1

45308T/2

45308T/3

1 A

250 V AC*
1 A / 0.8 A
20 A / 0.1 ms
about 1.5 V

± 10%

± 20%

± 15%

11 mA

> $0.8 \times U_N$

< $0.4 \times U_N$

10 Hz

3.75 kV

3.0 mm

-25°C up to +45°C

2.5 mm² (AWG 24 - 14)

0.4 Nm

5.08 x 86.5 x 44 mm

45309T/7

45309T/1

45309T/2

45309T/3

For protection against accidental contact, an end barrier (30407T) should be placed at the end of a SnapLine block.

* If high voltage, high dV/dt or dI/dt, it is recommended to use an RC network (snubber) across terminals 13 and 14

* If high voltage, high dV/dt or dI/dt, it is recommended to use an RC network (snubber) across terminals 13 and 14

Modules with power optocouplers for DC loads

Input 24 V DC, Output 5 - 60 V DC / 2 A



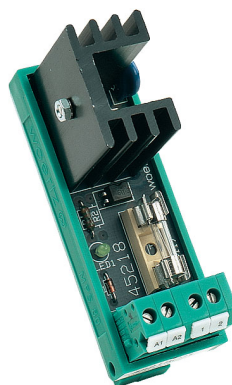
Properties

- With discrete components
- With protection diode against reverse battery
- With 1 LED (green) as operation indicator
- With fuse protected output side

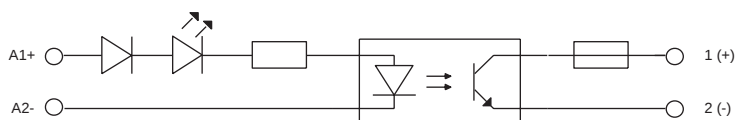


On request

Optocouplers with different input voltage / Output voltage combinations



45218C/1



Technical data

Input

Switch on level range
Switch off level range
Input resistance
Max. switching frequency

Output

Max. output voltage
Max. output current
On delay at full res. load
Off delay at full res. load
Voltage drop over transistor (full load)
Fuse

General data

Dielectric strength In- / Output
Operating temperature
Size L x W x H

With 1 optocoupler

15 - 30 V DC
0 - 2 V DC
min. 2.2 k Ω
500 Hz

60 V DC
2 A (8 A for 5 s.)
max. 40 μ s
max. 150 μ s
max. 2.5 V DC
2 A

1500 V
-20°C up to +65°C
30 x 83 x 58 mm

45218C/1



Order numbers

Modules with power optocouplers for DC loads

DC inputs, outputs 5 - 60 V DC / 2 A



Properties

- High reliability
- Fast switching
- Chatter-free switching

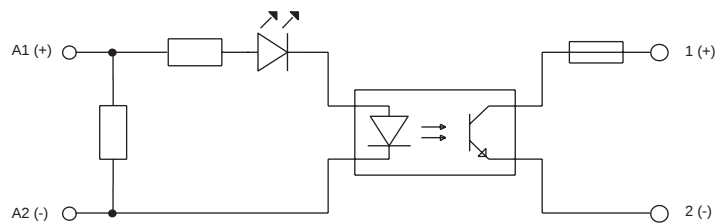


On request

Optocouplers with different input / output voltage combinations



45148C/1



Technical data

Input

Current (at rated voltage)

Output

Max. voltage

Operating voltage range

Output current at 45°C

Output current at 70°C

Fuse (I_{ag})

Off time

On time

Operating temperature

Size W x H x D



Order numbers

Rated voltage 5 V DC (2.5 - 8 V DC) without LED
15 V DC (9 - 16 V DC)
24 V DC (18 - 32 V DC)

With 1 optocoupler

12 mA

60 V DC

5 - 60 V DC

3 A

2 A

2 A

750 μs

100 μs

-20°C up to +40°C

(24 V DC up to +58°C)

30 x 83 x 58 mm

45148C/1

45148C/2

45148C/3

Modules with power optocouplers for AC loads

Input 24 V DC, Output 250 V AC / 1 A

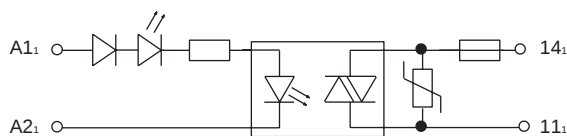


Properties

- Input: polarity protection
- Green LED as operation indicator
- Output: protection through varistor and fuse



45219C/1



Technical data

Input

Rated voltage
Operating voltage tolerance
Input resistance

Output

Output voltage
Max. output current
Fuse (I_{ag})
Dielectric strength In- / Output
Operating temperature
Size W x H x D

With 4 optocouplers

24 V DC
+/- 25%
min. 1.5 kΩ

max. 250 V AC
1.5 A
1 A
1000 V
-20°C up to +70°C
50 x 83 x 57 mm

45219C/1



Order numbers

Modules with power optocouplers for AC loads

Input 24 V DC, Output 250 V / 2 A



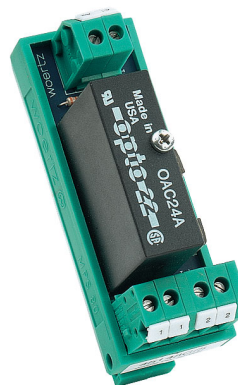
Properties

- High reliability
- Fast switching
- Chatter-free switching

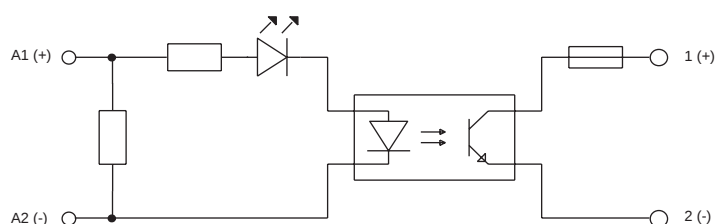


On request

Optocouplers with different input / output voltage combinations



45148C/5



Technical data

Input

Rated voltage
Input voltage range
Current at rated voltage

Output

Max. voltage
Operating voltage range
Output current at 45°C
Output current at 70°C
Fuse (lag)
Off time
On time
Operating temperature
Size W x H x D

With 1 optocoupler

24 V DC
18 - 32 V DC
18 mA

280 V AC
24 - 280 V AC
3 A
2 A
2 A
750 μs
100 μs
-20°C up to +40°C
30 x 83 x 58 mm

45148C/5



Order numbers

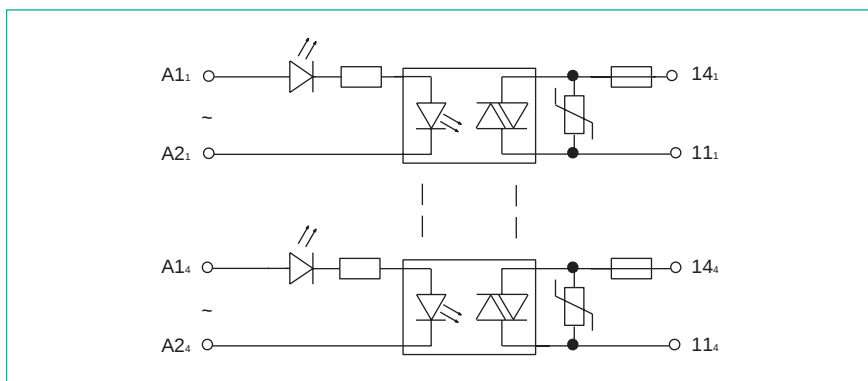
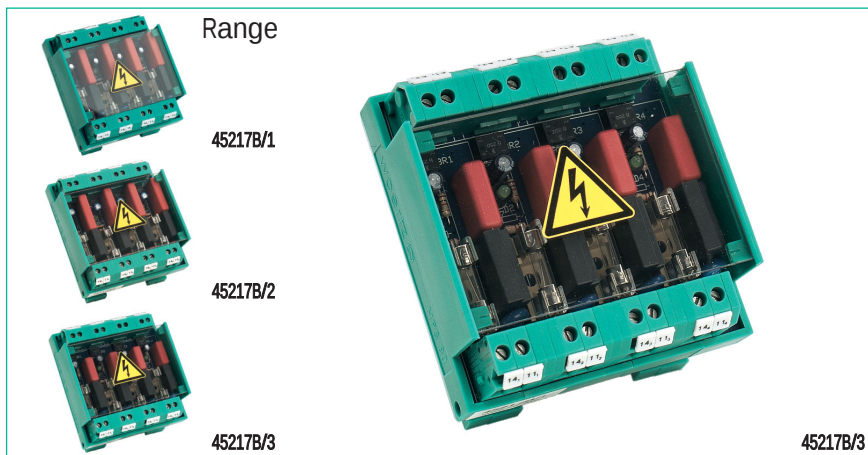
Modules with power optocouplers for AC loads

AC input, Output 250 V / 1 A



Properties

- Green LED as voltage indicator
- Output: varistor protection against overvoltage and fuse protection against overcurrent



Technical data

Input

Rated voltage

Output

Max. output voltage

Max. output current

Fuse (I_{ag})

Dielectric strength In- / Output

Operating temperature

Size L x W x H

With 4 optocouplers 24 V

24 V AC

250 V AC

1.5 A

1 A

1000 V

-20°C up to +40°C

80 x 83 x 45 mm

45217B/1

With 4 optocouplers 115 V

115 V AC

250 V AC

1.5 A

1 A

1000 V

-20°C up to +40°C

80 x 83 x 45 mm

45217B/2

With 4 optocouplers 230 V

230 V AC

250 V AC

1.5 A

1 A

1000 V

-20°C up to +40°C

80 x 83 x 45 mm

45217B/3



Order numbers

Modules with optocoupler sockets

for 1 changeover contact 250 V AC, 16 A



Properties

- 4kV/ 8mm between inputs and outputs on the circuit board (test voltage)
- For relays and optocouplers with 5mm pin spacing
- Plastic clips for 16 mm and 25 mm high relays (to order separately)
- State indicator on the circuit board
- Compact design
- Two common terminals on coil side allow easy jumpering to next module
- Clearly structured modules
- Marking possibilities
- Complete range: 1, 4, 8 or 16 plug-in bases per module



Accessories

- 30413RO Cross connection 20-pole red
- 31413BL Cross connection 20-pole blue
- 45294/20 Marking label 10 x 20mm
- 45294/30 Marking label 10 x 30mm
- 30374 Plastic clips for 16 mm high relays
- 30375 Plastic clips for 25 mm high relays



Technical data

Circuit elements: Required specifications

Pin spacing

Total height

Type of contact

Possible relays (incomplete listing)

Possible optocouplers (incomplete listing)

Output

Max. voltage

Max. switching current

Max. continuous current

Number of contacts per circuit element

Control side

Operating voltage tolerance

Protection element for DC types

General data

Operating temperature

Rated cross section of connecting terminals

Size W x H (from rail)

Length



Order numbers

- 12 V DC
- 24 V DC
- 48 - 60 V DC
- 24 V AC/DC
- 115 - 230 V AC

Range



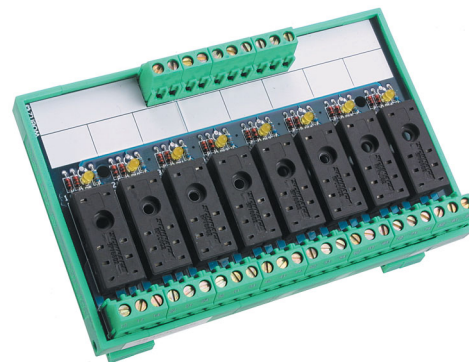
45351C/2E



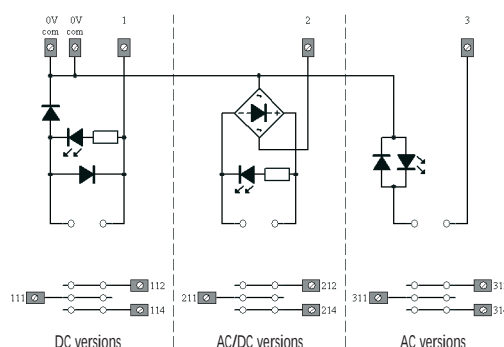
45352C/2E



45354C/2E



45353C/2E



1 base

4 base

8 base

16 base

5 mm

16 mm und 25 mm

1 changeover contact, 1 NO or 1 NC contact

Siemens: RT2, RT3, RPxx0, RPxx1, RP3SL

Finder: 40.51, 40.61, 41.61

Woertz: 45331, 45337, 45338, 45339

250 V AC

16 A

12 A

1 changeover contact

given range $\pm 20\%$

polarity protection diode and recovery diode

-40°C up to +60°C

2.5 mm²

83 x 53 mm

20 mm

65 mm

130 mm

250 mm

1 base

4 bases

8 bases

16 bases

45351C/1E

45351C/2E

45351C/19E

45351C/12E

45351C/45E

45352C/1E

45352C/2E

45352C/19E

45352C/12E

45352C/45E

45353C/1E

45353C/2E

45353C/19E

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45354C/1E

45354C/2E

45354C/19E

45354C/12E

45354C/45E

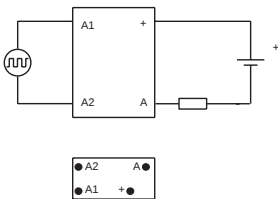
Miniature optocouplers for DC loads

Output 100 mA

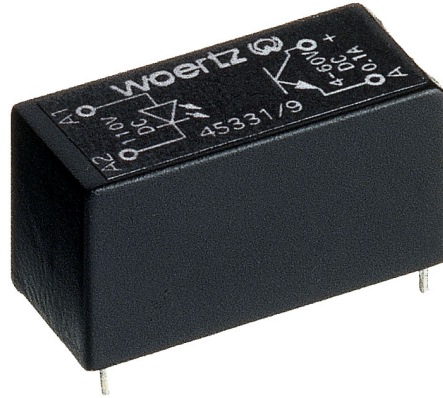
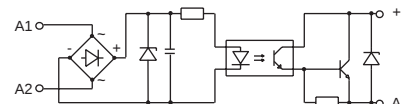
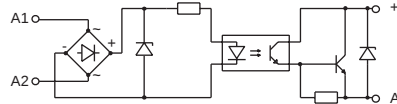


Properties

- Optocoupler for signal currents
- To solder or to plug in base elements (5 mm pin grid)
- Available with input voltages from 5 to 110 V DC or 24 to 230 V AC
- With integrated output polarity protection
- Input independent of polarity
- With defined on and off thresholds



View of the connections



45331/9



Technical data

Input

Control voltage range

Input current at U_n

Switching level: off / not permitted / on

Max. transmission frequency

(Res. load, $T_a = 25^\circ\text{C}$, DC = 50%, $i = 0.5 \times I_{\text{max}}$)

Output

Max. voltage

Max. current

Residual voltage drop ($I_{\text{Load}} = 10 \text{ mA}$)

Output circuit*

General data

Testing voltage

Temperature range

Size L x W x H

Connecting pins

PCB hole diameter

DC input / output 100 mA

$U_n \pm 20\%$
about 5 mA (110 V: about 3 mA)
 $< 0.4 U_n / 0.4 - 0.8 U_n / > 0.8 U_n$
 $U_{\text{Aus}} = 60 \text{ V: } 600 \text{ Hz (45331/9: } 300 \text{ Hz)}$
 $U_{\text{max}} = 150 \text{ V: } 100 \text{ Hz}$

$U_{\text{max}} = 150 \text{ V DC}$
 $I_{\text{max}} = 100 \text{ mA}$
about 0.7 V
2 wires

2.5 kV
-25°C up to +45°C
29 x 12.5 x 15 mm
0.64 x 0.64 mm
1.0 - 1.3 mm

AC/DC input / output 100 mA

$U_n \pm 20\%$ (115 V, 230 V: $\pm 15\%$) AC
about 5 mA (115 V, 230 V: about 2 mA)
 $< 0.4 U_n / 0.4 - 0.8 U_n / > 0.8 U_n$
 $U_{\text{max}} = 50 \text{ V: } 10 \text{ Hz}$

$U_{\text{max}} = 50 \text{ V DC}$
 $I_{\text{max}} = 100 \text{ mA}$
about 0.1 V
2 wires

2.5 kV
-25°C up to +45°C
29 x 12.5 x 15 mm
0.64 x 0.64 mm
1.0 - 1.3 mm



Order numbers

$U_n =$
5 V DC
12 V DC
24 V DC
48 V DC
110 V DC
24 V AC/DC
115 V AC/DC
230 V AC/DC

45331/7
45331/1
45331/2
45331/3
45331/9

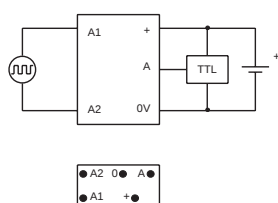
45337/12
45337/15
45337/14

* If the loads are inductive, a surge protection must be provided



Properties

- Optocoupler for TTL interface
- To solder or to plug in base elements (5 mm pin grid)
- Available with input voltages from 5 to 110 V DC or 24 to 230 V AC
- With integrated output polarity protection
- Input independent of polarity
- With defined on and off thresholds



View of connections



Technical data

Input

Control voltage range

Input current at U_N

Switching level: off / not permitted / on

Max. transmission frequency

(res. load, $T_A = 25^\circ\text{C}$, DC = 50%, $i = 0.5 \times I_{\text{max}}$)

Output

Operating voltage

Max. current

Residual voltage drop (at "H" level)

Resistance

Output circuit*

General data

Test voltage

Temperature range

Size L x W x H

Connecting pins

PCB hole diameter

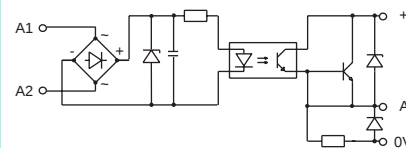
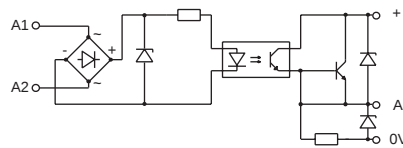


Order numbers

$U_N =$ 5 V DC
12 V DC
24 V DC
48 V DC
110 V DC
24 V AC/DC
115 V AC/DC
230 V AC/DC



45338/2



DC input / output TTL 100 mA

$U_N \pm 20\%$
about 5 mA (110 V: about 3 mA)
 $< 0.4 U_N / 0.4 - 0.8 U_N / > 0.8 U_N$
2 kHz

5 V $\pm 20\%$
 $I_{\text{max}} = 100 \text{ mA}$
about 0.8 V
about 390 Ω (Fan-Out = 1 at standard TTL)
with earth, 3 wires

2.5 kV
-25°C up to +45°C
29 x 12.5 x 15 mm
0.64 x 0.64 mm
1.0 - 1.3 mm

45338/7
45338/1
45338/2
45338/3
45338/9

AC/DC input / output TTL 100 mA

$U_N \pm 20\%$ (115 V, 230 V: $\pm 15\%$) AC
about 5 mA (115 V, 230 V: about 2 mA)
 $< 0.4 U_N / 0.4 - 0.8 U_N / > 0.8 U_N$
10 Hz

5 V $\pm 20\%$
 $I_{\text{max}} = 100 \text{ mA}$
about 0.1 V
ca. 390 Ω (Fan-Out = 1 at standard TTL)
with earth, 3 wires

2.5 kV
-25°C up to +45°C
29 x 12.5 x 15 mm
0.64 x 0.64 mm
1.0 - 1.3 mm

45339/12
45339/15
45339/14

* If the loads are inductive, a surge protection must be provided.

