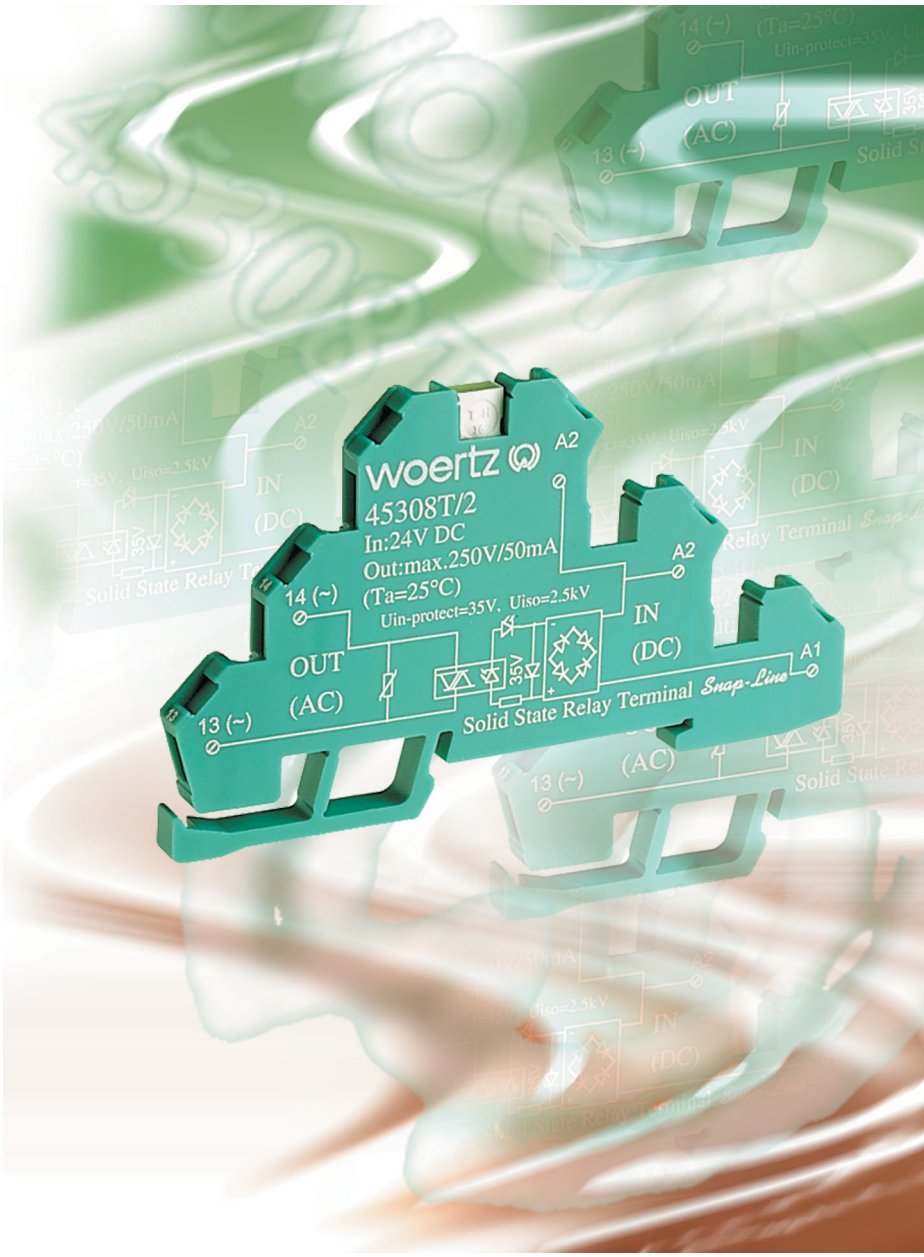
SNAPLINE

woertz

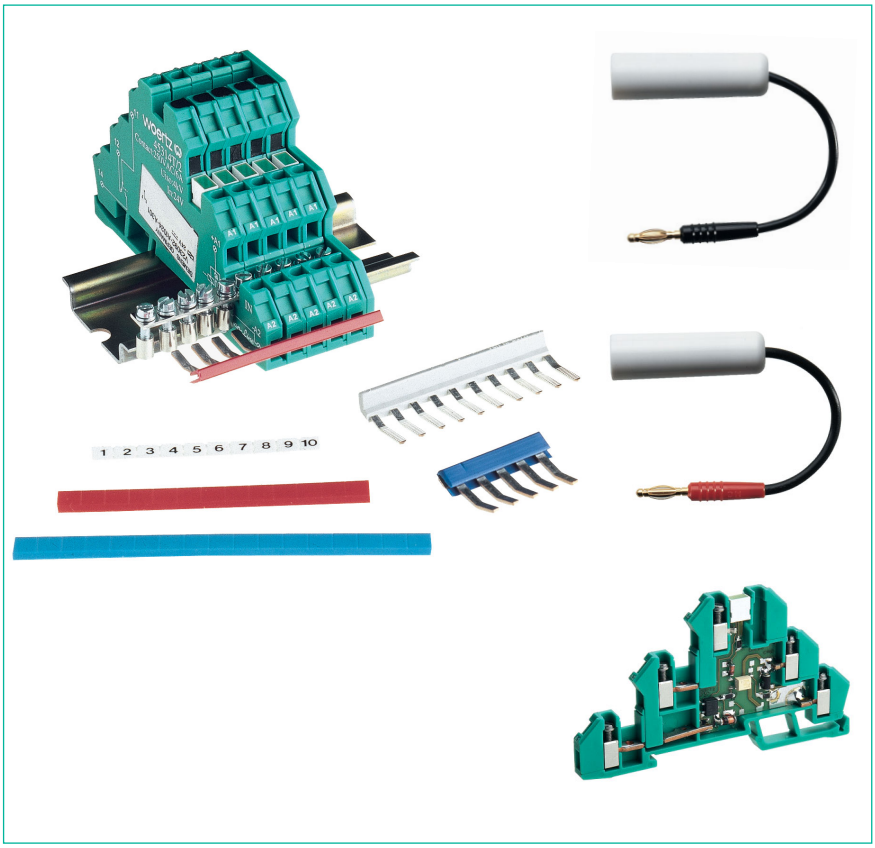


Woertz AG
Hofackerstrasse 47, P.O. Box 948, CH-4132 Muttenz 1, Switzerland
Tel. + +41 61 / 466 33 33, Fax + +41 61 / 461 96 06
http://www.woertz.ch

Woertz-USA
151 Discovery Drive, Unit 111
Colmar PA 18915
Tel. (215) 997 8855, Fax (800) 522-3868
http://www.woertz-usa.com, e-mail: woertz1@erols.com

The Woertz series of SnapLine terminals offer the user a compact, DIN rail mounted method of providing a multitude of control interface functions including:

- Power and signal relays
- Power and signal optocouplers
- Solid State Relays
- Analog converters
- Diodes and overvoltage protection
- Voltage regulation
- PT100 converters
- And more



The compactness of this series (5.08 x 44 x 86.5 mm) makes the relays a hot alternative in new designs and an ideal replacement for existing control units in both industrial and commercial applications.
All SnapLine terminals have identical profiles and are equipped with an LED to indicate operation. The power and signal relays are internally equipped with a freewheel diode and protection against reverse polarity. Other distinct advantages include compatibility with our normal three level terminals for straight connections and a full line of standard or custom marking, test plug accessories, and cross connections.

Order numbers

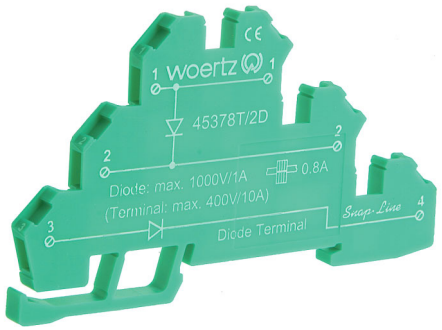
	Compatible 3-level terminals	**30403**	grey
1.	End barrier	**30407T**	
2.	Insulated cross connections with screws	**81535/X**	X = number of poles 2, 3, 4, 5, or 10
3.	Isolation strip, red, blue 10 x 4 x 20-pole	**30411**	red
		30412	blue
4.	Cross connections, 20-pole	**30413RO**	red
		30413BL	blue
	Cross connections, 10-pole	**30790**	grey
5.	Test plug with adapter	**80247**	red
		80248	black
6.	Marking material	**35455/55xx**	see catalog 1

Properties

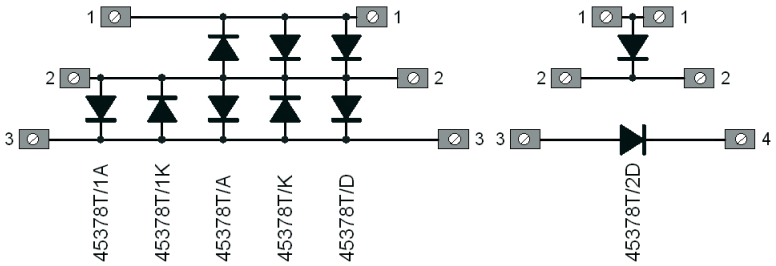
- SnapLine terminals with integrated diodes
- Through-going, lamp control and common alarm functions
- Applications: rectifier, surge suppression, logical functions, polarity protection etc.
- Two SnapLine terminals can easily be connected as a 1.6 A full wave rectifier bridge
- Modular stacking of common alarm or lamp control functions

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 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB/5x5



45378T/2D



Technical data (T_a = 25°C)

Diodes	
Max. reverse voltage	1000 V
Max. continuous current (single terminals)	1 A
Max. continuous current (stacked, continuously operating terminals)	0.8 A
Max. surge current	30 A
Voltage drop over diode	about 0.8 V (max. 1.1 V)
Leakage current	< 10 µA
Terminal	
Max. operating voltage	400 V (SEV), 300 V (UL)
Max. terminal current	10 A
General data	
Operating temperature range	-55°C up to +80°C
Nominal cross section of connecting terminals	2.5 mm² (AWG 24 - 14)
Maximum torque	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm

Order numbers

1 diode, anode in the middle, an additional terminal on top	**45378T/1A**
1 diode, cathode in the middle, an additional terminal on top	**45378T/1K**
2 diodes with common anode (lamp control function)	**45378T/A**
2 diodes with common cathode (common alarm function)	**45378T/K**
2 diodes with serial connection and common middle terminal	**45378T/D**
2 independent diodes	**45378T/2D**

Transient Suppressor

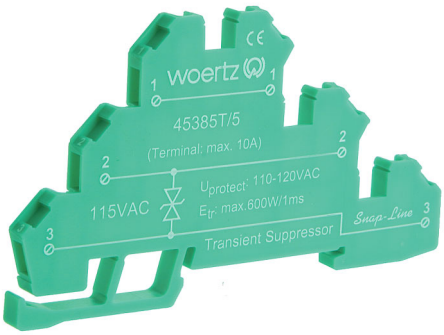
SnapLine overvoltage protection

Properties

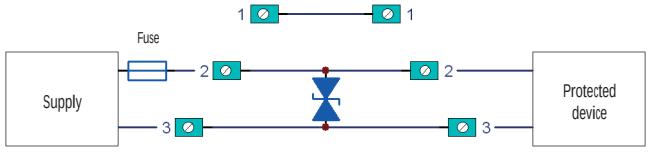
- Very fast overvoltage protection for sensitive devices
- Absorbs power pulses up to 600W during 1ms (10/1000ms wave-shape)
- If overloaded, it makes a short circuit (Serial fuse gives an excellent protection)
- Through-going conductors for high security
- Bidirectional protection
- Integrated, insulated extra terminal

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 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB/5x5



45385T/5



Typical use

Technical data (T_a = 25°C)

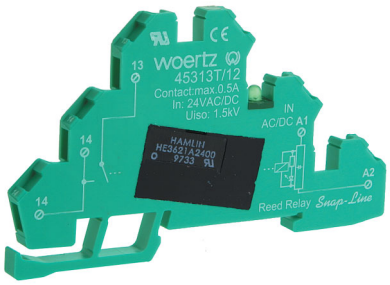
Protection diodes	
Maximum pulse energie	600 W / 1 ms; 2 kW / 100 µs
Maximum surge current (one half wave 60Hz)	100 A
Maximum repetitive surge current 5/ 12/ 24/ 48/ 110 V DC	57 / 33 / 16 / 8.6 / 3.6 A
Maximum repetitive surge current 115/ 230 V AC	2.2 / 1 A
Breakdown voltage at 10 mA: 5 VDC	6.8 V DC ±5%
Breakdown voltage at 1 mA: 12/ 24/ 48/ 110 V DC	13 / 27 / 51 / 120 V DC ±5%
Breakdown voltage at 1 mA: 115/ 230 V AC	141 / 283 V AC ±5%
Maximum continuous overload	2 W (5 W / 60 s)
General data	
Operating temperature range	-55°C up to + 80 °C
Maximum rated current through terminal	10 A
Nominal cross section of connecting terminals	2.5 mm² (AWG 24 - 14)
Maximum torque	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm

Order numbers

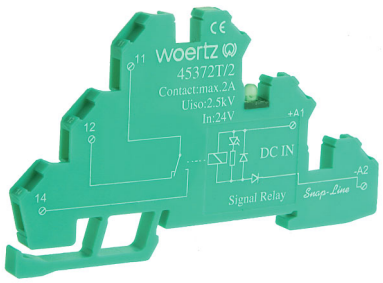
5 V DC	**45385T/7**
12 V DC	**45385T/1**
24 V DC	**45385T/2**
48 V DC	**45385T/3**
110 V DC	**45385T/9**
115 V AC	**45385T/5**
230 V AC	**45385T/4**

Properties

- Signal relay with one changeover contact (type C) or reed relay with a NO contact, in 5.08mm wide terminal housing
- LED indicating on state
- For applications where signal currents must be quickly and reliably switched
- Available for common industrial voltages



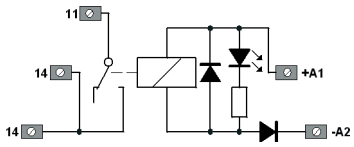
45313T/12



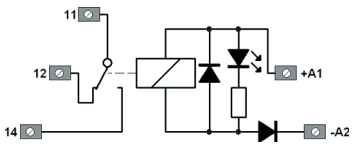
45372T/2

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 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB5x5



AC versions with rectifier instead of diode



AC versions with rectifier instead of diode

Technical data (T_a = 25°C)

	Reed relay	Signal relay
Output		
Max. switching voltage	200 V DC / 125 V AC	200 V DC / 125 V AC
Max. switching current	0.5 A	2 A
Max. breaking capacity (res. load)	10 W	60 W
Contacts	Closing contact (type A)	Changeover contact (type C)
Max. contact resistance	200 mΩ	50 mΩ (1A)
Min. load	µA / mV	µA / mV
Mechanical contact life	10^8 switching cycles	10^8 switching cycles
Electrical contact life	5 x 10^7 (load 24 V DC / 10 mA)	2 x 10^6 (load 24 V DC / 50 mA)
Coil		
Operating voltage tolerance for U_N < 10V	± 15%	± 15%
Operating voltage tolerance for U_N > 10V	± 20%	± 20%
Control current at rated voltage (U_N)	about 17 mA	about 17 mA
General data		
Pickup time / dropout time (DC-Version)	1.0 / 0.5 ms	1.5 / 1.0 ms
Input / output dielectric strength	1.5 kV	2.5 kV
Input / output creepage distance	1.6 mm	3.0 mm
Operating temperature range	-40°C up to +45°C	-40°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm

Order numbers

5 V DC	**45313T/7**	**45372T/7**
12 V DC	**45313T/1**	**45372T/1**
24 V DC	**45313T/2**	**45372T/2**
48 V DC	**45313T/3**	**45372T/3**
24 VAC (50 - 60 Hz) / DC	**45313T/12**	**45372T/12**

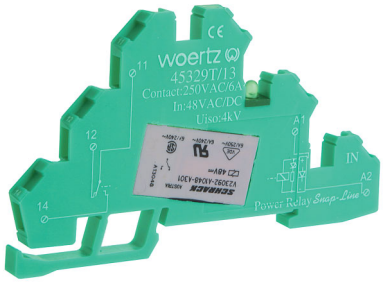
Power relay terminals

SnapLine, 250 V AC / 6 A

Properties

- SnapLine terminals with 1 power relay with changeover contact (type C)
- 250 VAC/ 6 A breaking capacity
- 5.08mm wide terminal housing
- LED indicating on state
- Available for all common industrial voltages
- For many applications where isolation, minimum space and high power switching are required
- An end barrier should be placed at the end of the terminal block

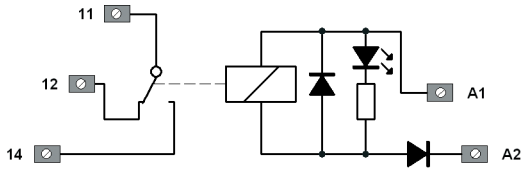
45314T/7



45329T/13

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 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB 5 x 5



AC/DC versions:
with rectifier instead of diode

Technical data (T_a = 25°C)

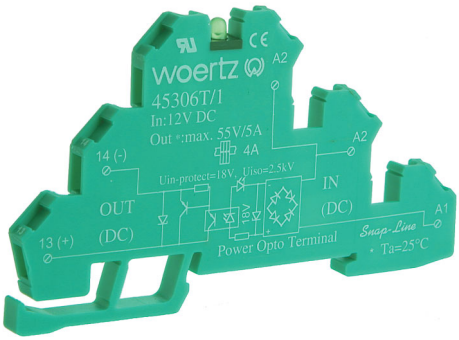
	DC versions	AC/DC versions
Contacts		
Max. switching voltage	250 V AC	250 V AC
Max. switching current	6 A	6 A
Max. continuous current (stacked terminals)	5 A	5 A
Max. breaking capacity	1500 VA	1500 VA
Max. contact resistance	100 mΩ (1A)	100 mΩ (1A)
Min. load	0.1 A / 12 V	0.1 A / 12 V
Mechanical life expectancy	5 x 10^6 cycles	5 x 10^6 cycles
Coil		
Operating voltage tolerance for U_N < 100V	± 20%	± 20%
Operating voltage tolerance for U_N > 100V	± 10%	± 10%
Rated power	0.2 W (110 V : 0.5 W)	0.25 W (115 - 230 V : 0.6 VA)
Frequency		50 - 60 Hz
General data		
Pickup time / dropout time	5 / 6 ms	
Dielectric strength (Input - Output)	4 kV	4 kV
Creepage distance (Input - Output)	8 mm	8 mm
Operating temperature range	-40°C up to +45°C	-40°C up to +45°C
Rated cross section of connecting terminals	2.5 mm^2 (AWG 24 - 14)	2.5 mm^2 (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm

Order numbers

5 V	**45314T/7**	**45329T/12**
12 V	**45314T/1**	**45329T/13**
24 V	**45314T/2**	**45329T/15**
48 V	**45314T/3**	**45329T/14**
110 V	**45314T/9**	
230 V		

Properties

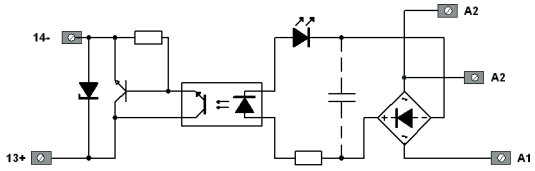
- Signal and power optocoupler in 5.08mm wide terminal housing
- LED indicating on state
- Large product range
- High fidelity
- For many applications where rapid and reliable switching is important
- An end barrier should be placed at the end of the terminal block
- Available for all common industrial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



45306T/1

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



5V versions without rectifier

Technical data (T_a = 25°C)

	100 mA	5 A	7 A
Output			
Max. switching voltage	150 V DC, 45310: 50 V DC	55 V DC	55 V DC
Max. continuous current single/stacked	100 mA / 100 mA	5 A / 4 A	7 A / 6 A
Max. transient current	45305: 0.15 A / 0.1 ms 45310: 0.5 A / 10ms	25 A / 0.1 ms	100 A / 0.1 ms
Voltage drop (at 0.5 x I_{max})	45305: about 0.7 V 45310: about 0.1 V	max. 0.2 V	max. 0.1 V
Input			
Operating voltage tolerance	± 20% 110 - 230 V: ±15%	± 20% 5, 115, 230 V: ±15%	± 20% 5, 115, 230 V: ±10%
Input current at rated voltage	6 - 9 mA 110 - 230 V: 2 - 3 mA	about 5 mA 110 - 230 V: 2 - 3 mA	about 5 mA 110 - 230 V: 2 - 3 mA
Switch on level	> 0.8 x U_n	> 0.8 x U_n	> 0.8 x U_n
Switch off level	< 0.4 x U_n	< 0.4 x U_n	< 0.4 x U_n
Max. transmission frequency (res. load) max.	45305: 600 Hz, T/9: 300 Hz 45310: 10 Hz	45306: 10 Hz, T/9: 5 Hz 45311: 5 Hz	45307: 1 Hz, T/9: 0.5 Hz 45312: 0.5 Hz
General data			
Input / output dielectric strength/ creepage distance	2.5 kV / 3 mm	2.5 kV / 3 mm	2.5 kV / 3 mm
Operating temperature range	-25°C up to +45°C	-25°C up to +45°C	-25°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm

Order numbers

5 V DC	**45305T/7**	**45306T/7**	**45307T/7**
12 V DC	**45305T/1**	**45306T/1**	**45307T/1**
24 V DC	**45305T/2**	**45306T/2**	**45307T/2**
48 V DC	**45305T/3**	**45306T/3**	**45307T/3**
110 V DC	**45305T/9**	**45306T/9**	**45307T/9**
24 V AC/DC	**45310T/12**	**45311T/12**	**45312T/12**
115 V AC/DC	**45310T/15**	**45311T/15**	**45312T/15**
230 V AC/DC	**45310T/14**	**45311T/14**	**45312T/14**

SnapLine high-speed optocouplers

DC or AC input, Push-Pull output

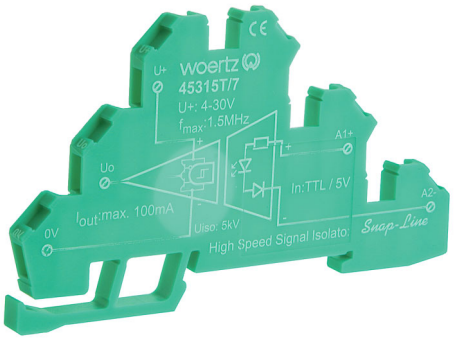
Properties

- 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

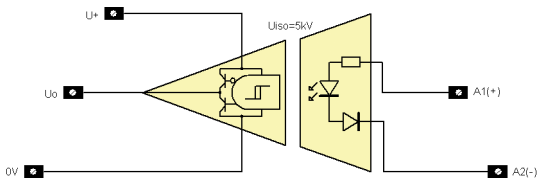
Accessories

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°C)



45315T/7

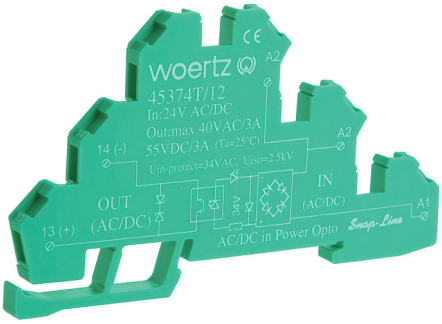


AC versions with rectifier circuit instead of diode

	high-speed input	AC/DC input
Supply		
Supply voltage	4 - 30 V DC	4 - 30 V DC
Supply current (no load)	8 mA (DC), 17 mA (1.5 MHz)	8 mA
Output		
Output voltage (no load)	"0" < 0.3 V, "1" > U^+ - 2 V e.g. for TTL output: U^+ = 5 V	"0" < 0.3 V, "1" > U^+ - 2 V e.g. for TTL output: U^+ = 5 V
Max. transmission frequency (res. load, DC = 50%, i = 30 mA)	1.5 MHz	10 Hz (f_{AC} > 45 Hz)
Max. output current (Source & Sink, f < 500 kHz)	100 mA	100 mA
Transient current max. (Source & Sink)	0.4 A	0.4 A
Input		
Input voltage tolerance	± 20%	± 20% 115, 230 V: ±15%
Input current at rated voltage (U_N)	about 5 mA, 110 V: about 3 mA	about 5 mA, 115 - 230 V: 2 - 3 mA
Switch on level	> 0.8 x U_n	> 0.8 x U_n
Switch off level	< 0.2 x U_n	< 0.2 x U_n
General data		
Input/Output dielectric strength	5 kV	5 kV
Input/Output creepage distance	3.0 mm	3.0 mm
Operating temperature range	-10°C up to +45°C	-10°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm
Size L x W x H (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm
Order numbers		
TTL / 5 V DC	**45315T/7**	**45316T/12**
12 V DC	**45315T/1**	**45316T/15**
24 V DC	**45315T/2**	**45316T/14**
48 V DC	**45315T/3**	
110 V DC	**45315T/9**	
24 V AC/DC		
115 V AC/DC		
230 V AC/DC		

Properties

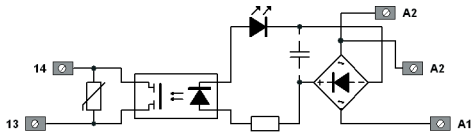
- Optocoupler in 5.08mm wide terminal housing, for medium AC/DC loads
- LED indicating on state
- Versions for high voltages
- For many applications where isolation, size and reliable switching are important
- Available for all common industrial voltages



45374T/12

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



5 V version without rectifier

Technical data (T_a = 25°C)

	4 A (low voltage)	1 A (high voltage)
Output		
Max. switching voltage	40 V AC / 55 V DC	250 V AC / 300 V DC*
Max. continuous current single/stacked	4 A / 3.5 A	1 A / 0.8 A
Max. transient current during on state	25 A / 0.1 ms	10 A / 0.1 ms
Voltage drop (at 0.5 x I_{max})	about 0.2 V	about 1 V
Input		
Operating voltage tolerance	± 20% 5, 115, 230 V: ± 15%	± 20% 5, 115, 230 V: ± 15%
Input current at rated voltage	about 5 mA, 110 - 230 V: 2-3 mA	about 5 mA, 110 - 230 V: 2-3 mA
Switch on level	> 0.8 x U_n	> 0.8 x U_n
Switch off level	< 0.4 x U_n	< 0.4 x U_n
Max. transmission frequency (res. load)	45373: 10 Hz 45374: 5 Hz	45375: 5 Hz 45376: 1 Hz
(at DC = 50%, i = 0.5 x I_{max}, U_{switch} = 0.5 x U_{max})		
General data		
Dielectric strength input / output	2.5 kV	2.5 kV
Creepage distance input / output	3.0 mm	3.0 mm
Operating temperature range	-25°C up to +45°C	-25°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm

Order numbers

5 V DC	**45373T/7**	**45375T/7**
12 V DC	**45373T/1**	**45375T/1**
24 V DC	**45373T/2**	**45375T/2**
48 V DC	**45373T/3**	**45375T/3**
110 V DC	**45373T/9**	**45375T/9**
24 V AC/DC (50 - 60 Hz)	**45374T/12**	**45376T/12**
115 V AC/DC (50 - 60 Hz)	**45374T/15**	**45376T/15**
230 V AC/DC (50 - 60 Hz)	**45374T/14**	**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.

Optocoupler terminals

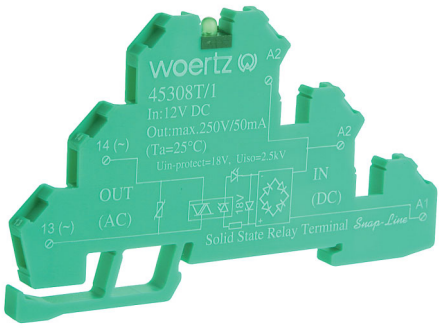
SnapLine, for small and medium AC loads

Properties

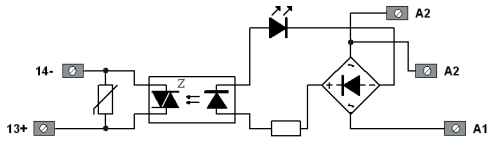
- AC optocoupler in 5.08mm wide terminal housing, for small and medium AC loads
- LED indicating on state
- Switching voltage up to 250 V AC
- For many applications where isolation and rapid switching are important
- Available for common industrial voltages

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



45308T/1



5 V version without rectifier

Technical data (T_a = 25°C)

	50 mA	1 A
Output		
Max. switching voltage	250 V AC*	250 V AC*
Max. continuous current single/stacked	50 mA / 50 mA	1 A / 0.8 A
Max. transient current during on state	0.5 A / 0.1 ms	20 A / 0.1 ms
Voltage drop (at 0.5 x I_{max})	about 2 V	about 1.5 V
Input		
Operating voltage tolerance 5 V DC	± 10%	± 10%
12 and 24 V DC	± 20%	± 20%
48 V DC	± 15%	± 15%
Input current at rated voltage	11 mA	11 mA
Switch on level	> 0.8 x U_n	> 0.8 x U_n
Switch off level	< 0.4 x U_n	< 0.4 x U_n
Max. transmission frequency (res. load)	10 Hz	10 Hz
General data		
Dielectric strength input / output	3.75 kV	3.75 kV
Creepage distance input / output	3.0 mm	3.0 mm
Operating temperature range	-25°C up to +45°C	-25°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm
Order numbers		
5 V DC	**45308T/7**	**45309T/7**
12 V DC	**45308T/1**	**45309T/1**
24 V DC	**45308T/2**	**45309T/2**
48 V DC	**45308T/3**	**45309T/3**

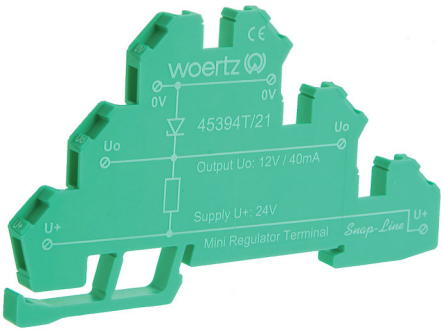
For protection against accidental contact, an end barrier (30407T) should be placed at the end of a SnapLine block.

* 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

Properties

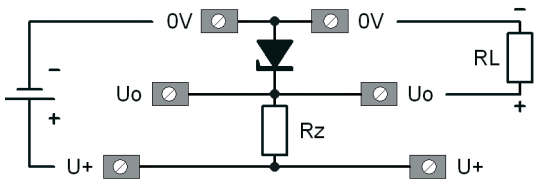
- Low power shunt regulator in 5.08mm SnapLine housing
- Protected against short-circuits (10s.)
- Up to three terminals can be connected in parallel to increase output current
- Available for the most common industrial voltages



45394T/21

Accessories

30407T	End barrier
30403	Compatible 3-level terminals
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 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°C)

Regulator part	
Max. input voltage	U_N + 10 %
Output voltage tolerance (at U_N)	± 5 %
Maximum output current at rated input voltage U_N	see table below
General data	
Max. through-going current (0V/0V or U+/U+)	10 A
Operating temperature range	-55 °C up to +45 °C
Nominal cross section of connecting terminals	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm

Order numbers

U_N: 12 V DC (Rz = 82 Ω,	UO: 5.1 V DC/ 80 mA RL_{min} = 65 Ω)	**45394T/17**
U_N: 24 V DC (Rz = 470 Ω	UO: 5.1 V DC/ 35 mA RL_{min} = 145 Ω)	**45394T/27**
U_N: 24 V DC (Rz = 270 Ω,	UO: 12.0 V DC/ 40 mA RL_{min} = 300 Ω	**45394T/21**
U_N: 48 V DC (Rz = 2.2 kΩ,	UO: 5.1 V DC/ 15 mA RL_{min} = 330 Ω)	**45394T/37**
U_N: 48 V DC (Rz = 1.5 kΩ,	UO: 12.0 V DC/ 20 mA RL_{min} = 600 Ω)	**45394T/31**
U_N: 48 V DC (Rz = 1.0 kΩ,	UO: 24.0 V DC/ 20 mA RL_{min} = 1.2 kΩ)	**45394T/32**

Potentiometer converter

SnapLine R/U converter, output: 0 - 10 V

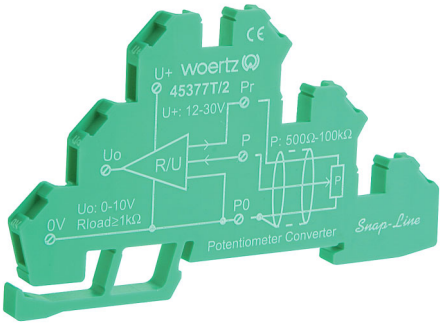
Properties

- 3-wire potentiometer / 0-10V converter
- Not isolated (common negative terminal)
- Integrated low-pass filter suppresses disturbance
- Output protected against overvoltage and short-circuit
- Wide supply voltage range
- Wide range of potentiometers
- LED indicating on-state
- On request: 2-wire version, higher accuracy, wider temperature range

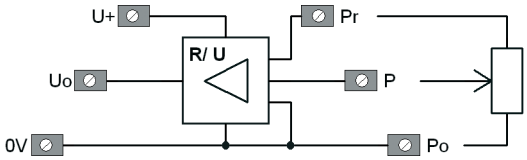
Accessories

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 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°C)



45377T/2



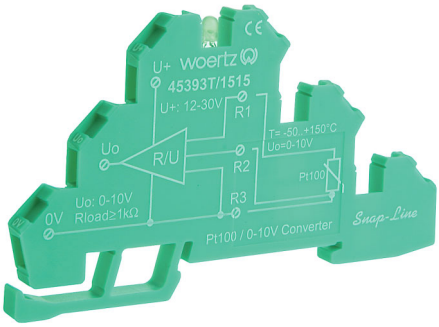
Supply	
Supply voltage	12 - 30 V DC
Supply current (without load)	40 mA (at U+ = 24 V) 30 mA (at U+ = 12 V)
Converter	
Potentiometer range	500 Ω -100 kΩ (higher resistance possible with lower accuracy)
Output voltage	0 - 10 V
Conversion error	< 0.5 % (50 mV) (typ. < 0.2%)
Minimum load	1 kΩ
Low-pass filter	10 Hz
Output protection	11 V
Reference voltage for potentiometer	5 V
General data	
Operating temperature range	0°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm

Order numbers

45377T/2

Properties

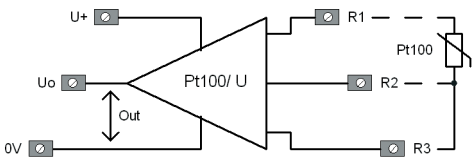
- 5.08mm SnapLine terminal with a Pt100/U Converter 0-10V.
- Integrated low pass filter for suppression of 50-60 Hz and other noise.
- Low current through the sensor reduces self heating
- Wide supply voltage range
- If a 2-wire sensor is used: connect R2 and R3 together



45393T/1515

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 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°C)

Supply	
Supply voltage	12 - 30 V DC
Supply current (Pt100 connected)	max. 25 mA (U+ = 24 V)
Converter	
Temperature range	see table below
Output voltage	0 - 10 V
Sensor current (approx.)	1 mA
Conversion error	< 0.5 % (50 mV) (typ. < 0.2 %)
Min. output load	1 kΩ
Low pass filter cut frequency	12 Hz
Overvoltage protection at the output	12 V
General data	
Operating temperature range	0°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm

Order numbers

-50°C up to +150°C	**45393T/1515**
-50°C up to +50°C	**45393T/155**
-20°C up to +60°C	**45393T/126**
0°C up to +50°C	**45393T/005**
0°C up to +100°C	**45393T/0010**
0°C up to +150°C	**45393T/0015**
0°C up to +200°C	**45393T/0020**
0°C up to +300°C	**45393T/0030**
0°C up to +600°C	**45393T/0060**

On request

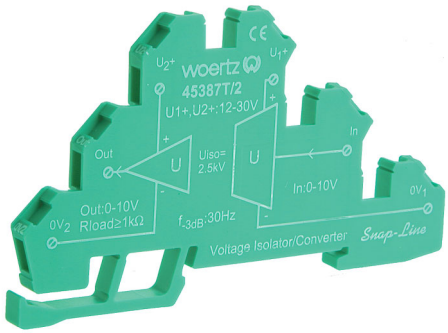
Other temperature range, higher accuracy, other sensors (eg. Pt1000)

Analog converter / Filter / Isolator

SnapLine U/U and I/U separation converter, output: 0-10V

Properties

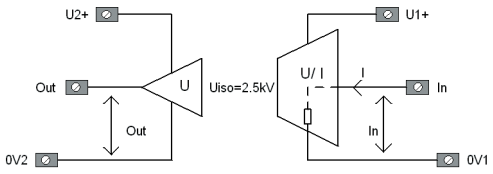
- 5.08mm Snap-Line terminal with an integrated isolation amplifier
- Industrial standard inputs: 0 - 20 mA, 4 - 20 mA and 0 - 10 V. Output: 0 - 10 V
- Standard version with low pass filter for suppression of 50-60 Hz and other noise
- Fast (F) version with a cut frequency of about 20kHz for high speed applications
- Wide supply voltage range
- High isolation voltage



45387T/2

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 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°C)

	Input 0 - 10 V	Input 0 - 20 mA	Input 4 - 20 mA
Supply			
Supply voltage (input and output)	12 - 30 V DC	12 - 30 V DC	12 - 30 V DC
Supply current input (U_1 + = 24 V)	max. 20 mA	max. 20 mA	max. 20 mA
Supply current output (U_2 + = 24 V), without load	max. 5 mA	max. 5 mA	max. 5 mA
Converter			
Input range	0 - 10 V DC	0 - 20 mA	4 - 20 mA
Output voltage range	0 - 10 V DC	0 - 10 V DC	0 - 10 V DC
Input impedance	1 MΩ	47 Ω	47 Ω
Conversion error	< 0.5 % (50 mV) (typ. < 0.2 %)	< 0.5 % (50 mV) (typ. < 0.2 %)	< 0.5 % (50 mV) (typ. < 0.2 %)
Min. output load	1 kΩ	1 kΩ	1 kΩ
Cut frequency of standard version	30 Hz	30 Hz	30 Hz
Cut frequency of fast version (F)	20 kHz	20 kHz	20 kHz
Overvoltage protection at the output	11 V	11 V	11 V
Input / output dielectric strength	2.5 kV	2.5 kV	2.5 kV
Input / output creepage distance	1.5 mm	1.5 mm	1.5 mm
General data			
Operating temperature range	0°C up to +45°C	0°C up to +45°C	0°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm
Order numbers			
Standard version	**45387T/2**	**45388T/2**	**45389T/2**
Fast version	**45387T/2F**	**45388T/2F**	**45389T/2F**

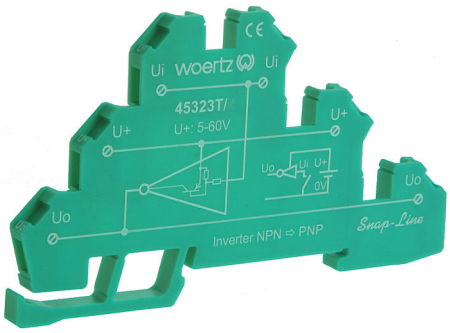
On request

Other input and output voltages and higher accuracy

woertz

Properties

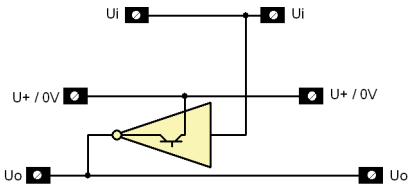
- In terminal housing, 5.08 mm wide
- Easy 2-wire configuration
- Open collector output
- Suitable as proximity switch inverter: PNP/NPN or NPN/PNP
- Wide supply voltage range
- High input resistance
- Can be used as power driver interface for CMOS or TTL circuits

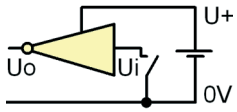


45323T/NP

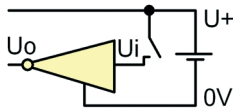
Accessories

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 poles
30411, 12	Isolation strip red, blue
80247, 48	Test plug red, black
35455/55xx	Labels for custom use RB 5 x 5





45323T/NP
NPN to PNP



45323T/PN
PNP to NPN

Technical data (T_a = 25°C)

Supply voltage (U_N)	5 - 60 V DC
Output	
Voltage drop over output switch (i = 30 mA)	1 V
Max. transmission frequency (res. load, DC = 50%, i = 30 mA)	5 kHz
Max. output current, sink (45323T/PN) or source (45323T/NP)	100 mA
Input	
Min. input impedance	12 kΩ
Voltage between Ui and U+/0V terminals for secure on level (i = 10mA)	> 2.5 V
General data	
Max. terminal current	10 A
Operating temperature range	-40 °C up to + 70 °C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm
Size L x W x H (from rail)	5.08 x 86.5 x 44 mm

Order numbers

"0 V" to "U+" out inverter (NPN to PNP)	**45323T/NP**
"U+" to "0 V" out inverter (PNP to NPN)	**45323T/PN**

On request

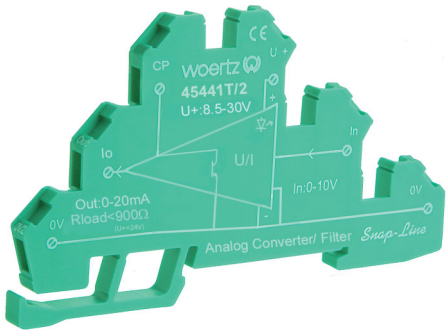
Higher voltage range, higher output current or other input impedance

Analog converter / filter

0-20mA, 4-20mA or 0-10V, output: 0(4)-20mA

Properties

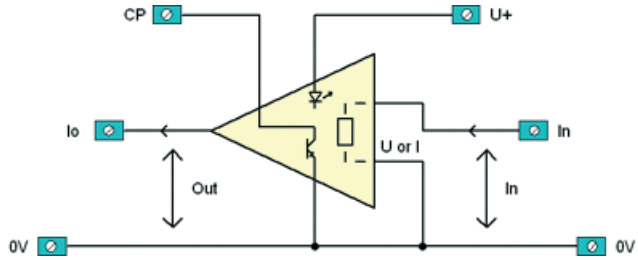
- 5.08 mm SnapLine converter with integrated, non isolated analog converter
- Industrial standard inputs: 0-20 mA, 4-20 mA or 0-10 V, output: 0(4)-20 mA
- Standard version with integrated low-pass filter for suppression of 50 - 60 Hz and other noise
- Alarm output for open output circuit (CP)
- Integrated LED indicating on state
- Wide supply voltage range
- High input impedance for voltage input, low input impedance for current input



45441T/2

Accessories

30407T	End barrier
30403	Compatible 3-step terminal
30413RO, BL	Cross connection 20-pole red, blue
30790	Cross connection 10-pole grey
81535/x	Insulated 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

	Input 0 - 10 V	Input 0 - 20 mA	Input 4 - 20 mA
Supply			
Supply voltage range	8.5 - 30 V DC	8.5 - 30 V DC	8.5 - 30 V DC
Max. supply current (20mA load, U + = 24V)	30 mA	30 mA	30 mA
Converter			
Input range	0 - 10 V DC	0 - 20 mA	4 - 20 mA
Output	0(4) - 20 mA	0(4) - 20 mA	0(4) - 20 mA
Input impedance	100 kΩ	100 Ω	100 Ω
Conversion error	< 0.5 % (100 µA) (typ. < 0.2 %)	< 0.5 % (100 µA) (typ. < 0.2 %)	< 0.5 % (100 µA) (typ. < 0.2 %)
Output load at U + = 24V	max. 750Ω	max. 750Ω	max. 750Ω
Output load at U + = 12V	max. 180Ω	max. 180Ω	max. 180Ω
Cut frequency of the low-pass filter	about 15 Hz	about 15 Hz	about 15 Hz
Output function CP (Current Present)	switch closes towards 0V, if output current > approx. 1 mA	switch closes towards 0V, if output current > approx. 1 mA	switch closes towards 0V, if output current > approx. 1 mA
Max. voltage / Min. load resistance at the CP output	30V / 1kΩ	30V / 1kΩ	30V / 1kΩ
General data			
Operating temperature range	0°C up to +45°C	0°C up to +45°C	0°C up to +45°C
Rated cross section of connecting terminals	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)	2.5 mm² (AWG 24 - 14)
Max. torque	0.4 Nm	0.4 Nm	0.4 Nm
Size W x H x D (from rail)	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm	5.08 x 86.5 x 44 mm
Order numbers			
0-20mA Output	**45441T/2**	**45442T/2***	**45443T/2**
4-20mA Output	**45444T/2**	**45445T/2**	**45442T/2***

On request

Wider temperature range, other input or output ranges, higher accuracy
Fast version (F) with higher cut frequency

* both current ranges included

09.2002 / 1'500 E