

DC-DC Converter AVP-2B/K and ...2D/K

Output power up to 51 Watts

Isolated – Bipolar (...-2B...) and dual (...-2D...) Output
PCB (.../Ksp) and Chassis Mounting (.../Ks)



Technology

- Power section in 67kHz-MOSFET-technology
- Regulator section in SMT

Special Features

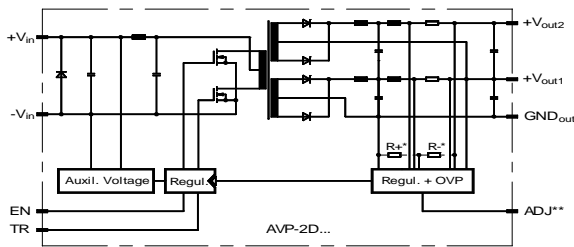
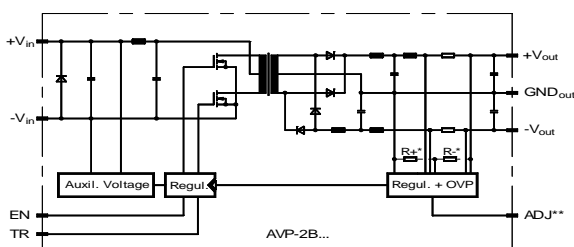
- Burst transients according to EN 61000-4-4:2004 (class 3): 2 kV
- Surge according to EN 61000-4-5:2006 (class 2): 0,5 kV symmetric
- Conducted emission: Input filtering according to EN 55022:2006, class B****
- Reverse polarity protection
- Zero load operation and short circuit protected
- Distribution of the total output power on to both outputs is possible up to a proportion of 1 : 4****
- Overtemperature shutdown
- No overshoot of output voltage at switching on
- Remote off (EN) with TTL – L-signal
- Ovoltage protection in the output circuit, at the main voltage even in case of external supply (OVP)
- Extremely low thermal stress of sensitive components due to dissipated power loss over mounting surface
- Vibration resistant and indifferent to humidity due to encapsulated case

Specifications

at $\vartheta_{amb}=25^{\circ}\text{C}$, $V_{in\ nom}$, $0,77 I_{out\ nom}$

Temperature	
Ambient air	$\vartheta_{amb} = -40^{\circ}\text{C}...+85^{\circ}\text{C}$
Storage	$\vartheta_s = -40^{\circ}\text{C}...+100^{\circ}\text{C}$
Rise in case	$\Delta\vartheta_{Cperm} \leq 20\text{ K}$
Permissible rise on base plate	$\Delta\vartheta_{Bperm} \leq 25\text{ K}$
Output voltages	
Tolerance	$\Delta V_{out1}/\Delta V_{out2} \leq \pm 0,25\%/ \pm 3$
Output ripple at $\vartheta_{amb} = -40^{\circ}\text{C}...+85^{\circ}\text{C}$	$V_{out\ ripple} \leq 3,5\%$
Temperature coefficient	$TC \leq 0,016\%/K$
Regulation at $\vartheta_{amb} = -40^{\circ}\text{C}...+85^{\circ}\text{C}$	
Line reg. for V_{in} range	$\Delta V_{out} \leq 2\text{ mV}$
Load reg. static	$\Delta V_{out1}/\Delta V_{out2} \leq 0,6/100\text{ mV/A}^{***}$
Load change (25°C)	$\Delta V_{out1} \leq 55\ (130)\text{ mV/A}^{***}$
	$\Delta V_{out2} \leq 25\ (85)\text{ mV/A}^{***}$
OVP	
Starting point /%	$\leq 130\% V_{out\ nom}$
admissible continuous external current / _{ext}	$\leq 3,5\text{ A}$
Isolation voltage-strength	
In-/Output	$\geq 1,5\text{ kVrms}$
Input to base plate	$\geq 1,5\text{ kVrms}$
Output to base plate	$\geq 0,3\text{ kVrms}$
Resistance In-/Output	$R_{iso} \geq 1,5\text{ GOhm}$
Capacitance In-/Output	$C_{iso} \geq 2200\text{ pF}$
Weight AVP-2B/K / AVP-2D/K	$M = 330\text{ g}$

Block Diagrams



* = At AVP-.../Ks (sideway connector)

** = at AVP-.../Ksp

* At 5 V: 0,5%

** $I_{out\ min} = 0,1 I_{out\ nom}$

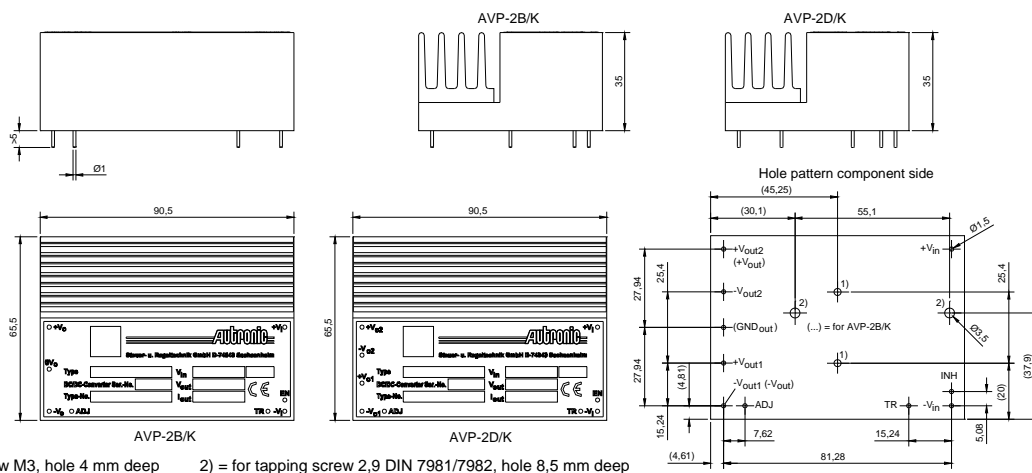
*** The respective other output burdens with $I_{out\ nom}$

**** At 09 18 62 0117 9 up to a proportion of 1:3

***** In built-in condition our devices may show different EMC properties

Drawings

1. Dimensions in mm
2. Unless otherwise specified, general tolerances $\pm 0,5$ are for values in brackets (XX)
Values not in brackets are according to ISO-2768-m



Operating Instructions

Installation: The converters have to be installed according to the guidelines currently in force, like other open electronic component assemblies. Attention must be paid to sufficient ventilation, fastening and protection against accidental contact! Pay attention to ESD handling procedures.

Caution: The Pins on the PCB can carry dangerous voltages!

Reverse polarity protection: If reverse polarity connection of the input voltage can not be excluded, an external time-lag fuse must be installed. Size: $I_{rat} = 1,5 \times I_{in,max}$ (max. 10 A). Pay attention on sufficient current of source in case of short-circuit!

Excess temperature protection: In case temperature exceeds 101°C , typ. 105°C , (due to inadmissible operation conditions) the output voltages are automatically switched off and restarted after cooling down about 10 K.

Overvoltage protection: Internally caused overvoltages at the outputs lead to a thyristor-controlled short-circuit of output 1 for AVP-2B and for output 2 for AVP-2D and all outputs shut down. External caused overvoltages at output 1 for AVP-2B and output 2 for AVP-2D lead also to a thyristor-controlled short-circuit of these outputs. After elimination of the overvoltages the outputs restart automatically.

External shut down (EN): $V < 0,8 \text{ V}$ at pin "EN" to pin $-V_{in}$ switches off the output. $I_{source} 500 \mu\text{A}$.

Current limiting: $I_{out,lim} = 1,1 \dots 1,2 I_{out,nom}$. At more than 50% overload and in case of short circuit (even at one output only), both outputs switch off and restart automatically latest after 1 s of elimination of the overload.

Tracking operation: If the TR pins of two or more converters are connected, the output voltages in case of short-circuit or overload go synchronously down.

Adjustment: Connection of the pins "ADJ" and "GND_{out}" for the AVP-2B respectively pins "ADJ" and "GND_{out}" for the AVP-2D increases at the AVP-2B both output voltages of about 8% and V_{out2} of about 6%. Intermediate values are obtained by means of a resistor. By connecting "ADJ" and "+V_{out}" pins with a resistor (AVP-2B) i.e. "ADJ" and " V_{out1} " pins (AVP-2D) ensures that the output voltages may be lowered down by max. 8%.

Standard converters AVP-2B/K and AVP-2D/K

$V_{out1/2}$	$I_{out1/2\ nom}^{2)}$	$V_{in\ nom}$	$V_{in\ range}$	$I_{in\ max}$	$\eta^{3)}$	f	Type	Order number
V	A	V	V	A	%	kHz		
+12/-12	1,7/1,7	12/24	9...40	5,6	83	67	AVP-2B/K	09 18 62 0112 7
	2,0/2,0 ⁴⁾	12/24	9...40	5,6	83			09 18 62 0117 9
	1,9/1,9	24	15...36	3,8	86			09 18 92 0112 1
	2,0/2,0	48	32...74	1,8	87			09 18 52 0112 9
	2,0/2,0	110	66...154	0,9	88			09 18 72 0112 5
+15/-15	1,3/1,3	12/24	9...40	5,2	83	67	AVP-2B/K	09 18 63 0112 6
	1,6/1,6	24	15...36	3,6	87			09 18 93 0112 9
	1,7/1,7	48	32...74	1,8	88			09 18 53 0112 8
	1,7/1,7	110	66...154	0,9	89			09 18 73 0112 4
+5 ¹⁾ /+12	3,2/1,4	12/24	9...40	4,9	80	67	AVP-2D/K	09 20 62 0112 7
	3,6/1,6	24	15...36	3,1	81			09 20 92 0112 1
	3,9/1,8	48	32...74	1,7	81			09 20 52 0112 9
	3,9/1,8	110	66...154	0,8	82			09 20 72 0112 5
+5 ¹⁾ /+15	3,2/1,2	12/24	9...40	4,9	80	67	AVP-2D/K	09 20 63 0112 6
	3,6/1,4	24	15...36	3,4	81			09 20 93 0112 9
	3,9/1,4	48	32...74	1,7	81			09 20 53 0112 8
	3,9/1,4	110	66...154	0,9	82			09 20 73 0112 4

1) Adjusted to 5,1 V

2) For $\vartheta_{amb} = -40^{\circ}\text{C} \dots 55^{\circ}\text{C}$. Derating from 55°C to 85°C : $0,77\%/^{\circ}\text{C}$,
 I_{out} between 85°C and 95°C linear decreasing to 0 A

3) At $V_{in\ nom}$ and $0,77 I_{out\ nom}$

4) Derating from 50°C : $0,8\%/^{\circ}\text{C}$; Distribution of the output power up to a proportion of 1:3 possible

Autronic Steuer- und Regeltechnik GmbH
Siemensstr. 17
D-74343 Sachsenheim
Tel. +49 (0) 7147/24-240
Fax +49 (0) 7147/24-252
<http://www.autronic.de>
E-Mail: vertrieb@autronic.de
DIN EN ISO 9001 certified