



**Produktions- und Vertriebs-
GmbH für Stromversorgungen**

Description DC-DC Converter
Type P550
Variant No 278B
Date 15.11.2010
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Pages total 4

Hans-Sachs-Str.2
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Input

Input voltage	DC 220 V \pm 15%
Inrush current	<30 Apk limited with NTC
Nominal input power	680 VA max.
Hold-up-time	>20 ms at full load and nominal input voltage
RFI line conducted	curve A filter in accordance with EN55011 and EN55082
Isolation	8 mm input – output / 3 mm input – case / 2 mm output – case
Efficiency	typ. 80%
High voltage test	EN60950 without Y-caps
Safety	EN60950
ESD	EN61000 -4 - 2: 8 kV
Burst	EN61000 -4 - 4: 4 kV

Output

Output ripple rms/pp	0,2% rms	1% pp bandwidth 30 MHz
Dynamic voltage regulation	\pm 2%	load changed \pm 10% (50% load)
Line regulation	0,02%	output decoupling diode
Output voltage	26 V	
Output current	20 A	
Output voltage adjustment range	24-28 V	
Temperature-coefficient	0,02%/K	

Safety functions and control signals

Power limitation	550 W \pm 5%
DC good relay	60 V/ 1 A contact closed: <21 V/ contact open: >23 V
Current limitation	constant current >110%
Overvoltage protection	120-130% reset: line disconnection

Ambient

Temperature range	0-60°C without derating
Storage temperature range	-25°C to +85°C
Rel. humidity	0-90% not condensed

Mechanics

Dimensions	see drawing
Input terminal	screw terminals max. 4.0 mm ² (X1/3 way)
Output terminal	screw terminals max. 4.0 mm ² (X1/8 way)
Fitting screws	4 fixing screws M3 must not penetrate by more than 5 mm

Änderung vorbehalten/ subject to change without notice

Pfad/Path \\server06\E\Dokumentation\P350-550\V278-Sie\Doku\Dat-278B-E1.doc



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Input

The input is protected by fuse F1 and is taken to connector X1 of converter P550 via screw terminals. The high switch-on currents of the input capacitors are reduced via the NTC R1. R1 is bypassed by relay K1 when output voltage rises. DC-supply filtering is ensured by components, L1, L2 together with capacitors C1, C3 between the plus and minus lines. Primary Y capacitors C4, C5, C62, C63 and secondary capacitor C6 also serve for suppressing unbalanced spurious components with reference to the protective-earthing potential. The DC Supply is protected against reverse voltages with a Diode fuse combination. For the symmetric filtering between the plus and minus and the hold-up-time of the unit are placed electrolytic capacitors C8, 9, 58, 59.

Input terminals

X1/1 + input voltage (115 Vdc)
X1/2 - input voltage
X1/3 PE

Output

The pulsing rectangular AC voltage is rectified by power diodes V13, 14 and integrated via choke L6. The LC modules after the choke are for filtering the DC voltage (C23, 24, 25, 26). The output voltage is decoupled with Diode V41.

The power supply is able to work in parallel standby with a 24 V-battery. When the output voltage before diode V41 drops below 21 Vdc, relay K2 is closed. The relay contact is opened if the voltage is greater than 23 Vdc.

Output terminals

X3/A relay common contact
X3/B relay normally closed contact
X2/2-4 V1 = 24 V/ 18 A (default setting)
X2/5-7 0 V

Voltage regulation

For voltage regulation, a voltage is tapped off the output +24 V and routed to SMD

subassembly A2 for the comparison of nominal / actual values. Voltage deviations are converted into a mark-to-space variation via the error amplifier and the following stages; this variation acts on the bases of primary switching transistors V5, 6 via driver transformer T3. Load resistors R23 ensure unimpaired open-circuit characteristics.

Primary switching circuit

The halved DC voltage is applied to switching transistors V5 and V6 via splitting capacitors C10, 11, current, driver and main transformers (T4, 3, 5). The switching transistors operate in push-pull half-wave circuit at a switch-mode frequency of approx. 42 kHz. The components fitted in the base circuit of the switching transistors ensure the generation of optimum base current and their protection. When the transistors V5, 6 are conducting, energy is transferred from T5 to the secondary through the primary windings.

Current regulation

The primary current is monitored via current transformer T4. R31 is the load of the secondary winding for the current signal. The current signal is connected to SMD subassembly A2 the same as for the voltage regulation and compared with the nominal value. In the current-limiting mode, the mark-to-space ratio is reduced by the control circuit depending on the current signal and routed to the driver circuit. The current-limiting circuit has a constant current characteristic.

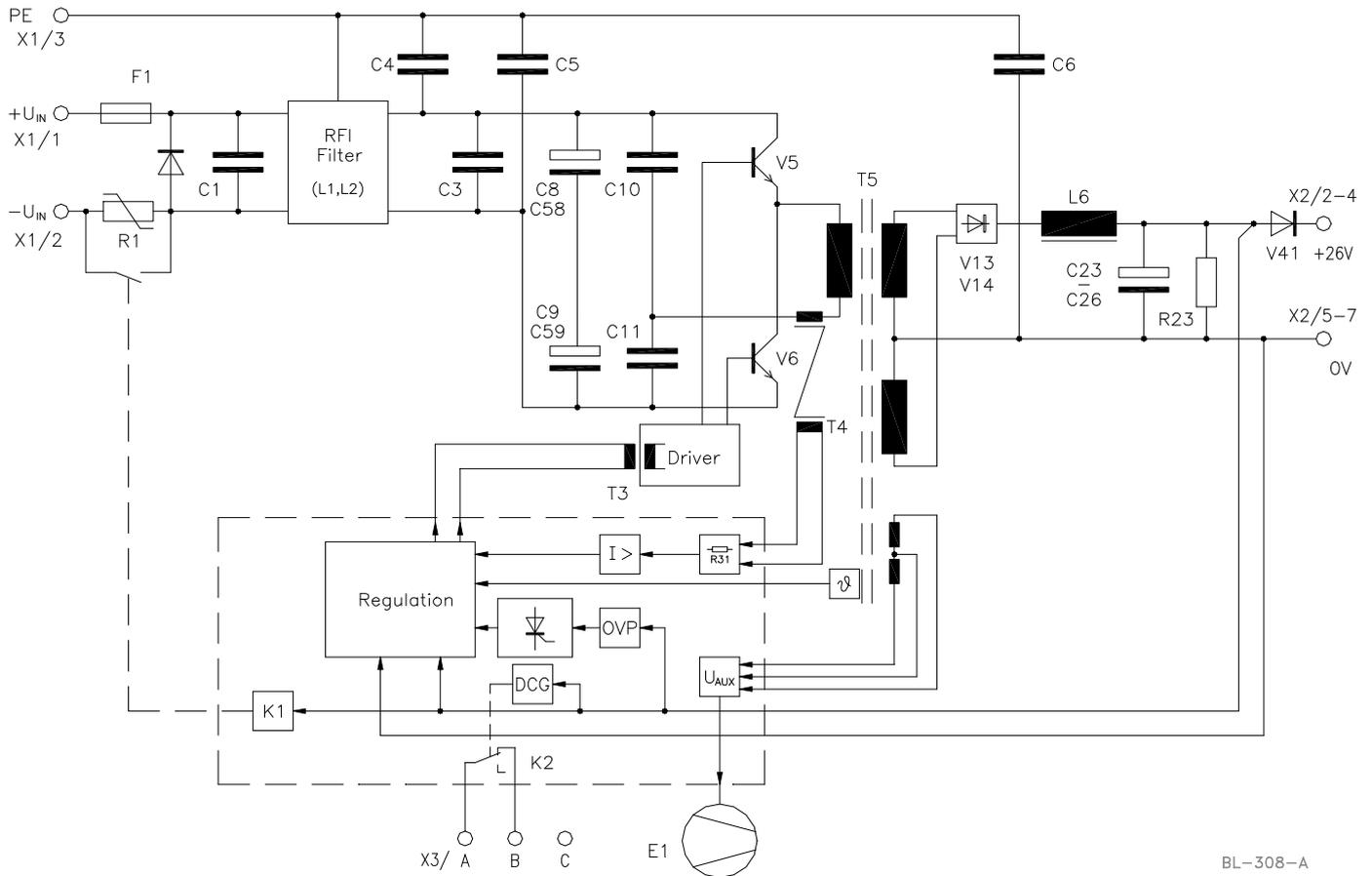
Overvoltage, overtemperature

Overvoltage inside and outside the unit or overtemperature causes the converter to be set to the low-power mode. Overvoltage is detected via a second voltage path on the SMD subassembly A2; a small-signal thyristor inhibits the output stage. After eliminating the overvoltage or overtemperature, the power supply has to be reset by switching off the DC supply.

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Block diagram



BL-308-A