

**FEATURES**

The DVPWR6 power supply (POWER ONE BP 3020-7RD) is DC/DC converter, which serves to supply the baths of ZAT-DV set of ZAT-2000 MP control system. The output voltages and their tolerance, time course of logical signals and their load-carrying capacity correspond to VME specification according to CSN EN 60821 standard, design form to CSN IEC 297-1,2,3 standard. The power supplies use for parallel sequencing such characteristic of circuit, which distributes the load uniformly between the supplies connected in parallel (current sharing). Such method is able to solve the current power drains and any requirements for power supply redundancy.

**FUNCTIONAL DESCRIPTION**

DVPWR6 power supply is switched three-level power supply of modern design. From the functional point of view, it can be divided to network circuits, circuit of main regulation loop and control voltage +5 V, control output voltages ±12 V, current sharing circuit and circuit of logical signals for VME bus.

At input of network part, there are fusing and protection circuits and two-stage filter. The power supply input connects the internal drop out fuse, which disconnects the power supply from input conductor in case of fault.

After rectification, the +5 V output voltages are filtered by set of filters and capacitors. To sense the output voltage at +5 V branch, there are +S and -S signals, used to exactly set the output voltage in location of needed off take.

The power supply is located in compact metallic box for location to 19" rack having the 3 HE height and 4 TE width. The front panel has three green LED indicators. The LED indicator InOK shows the presence of power supply voltage and LED indicators OutOK show the proper function of power supply. The rear side of power supply has standardized H15 connector (according to CSN EN 60603-2), which enables easy removal and installation into the rack.

The power supply is designed as protection device of class I, with protective PE terminal, which must be permanently connected to protective grounding system during operation (according to CSN EN 61140 ed.2). The power supply may work in TN-S systems (system with

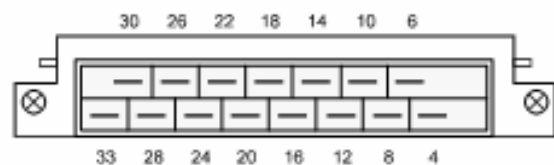
separated protective and zeroing conductor), and in isolated systems with protective grounding (IT) (according to CSN 33 2000-4-41).

To reach the high level of resistance against the disturbances and lower radiation levels, it is necessary to properly ground the rack, where the power supply is used and to use the dual-stage single phase overvoltage protection within the power supply connection, having the high-frequency filter, e.g. HAKEL, type PI-k8/24-Z.

**VIEW OF DVPWR6 POWER SUPPLY**



**VIEW OF CONNECTOR H15 PLUG**



Pin – number:	Electric limitation	Pin assignment:
4	Output voltage 1+	Vo1+
6	Output voltage 2+	Vo2+
8	Output voltage 1-	Vo1-
10	Output voltage 2-	Vo2-
12	Sense 1+	S1+
14	Sense 1-	S1-
16	Control $U_{\text{vyst } 1}$	R1
	Current sharing (Current sharing)	T1
18	Output voltage 3+	Vo3+
20	Output voltage 3-	Vo3-
22	Proper output voltage	OutOK+
	Second blocking -	i+
24	Proper output voltage	OutOK-
	Second blocking -	i-
26	Protective grounding	PE
28	Blocking	i
	Synchronization	W
30	Input voltage +	Vi+
32	Input voltage -	Vi-

### Characteristics of DVPWR6 power supply outputs

Output 1			Output 2			Output 3		
$U_{\text{out nom}}$	$P_{\text{out nom}}$	$P_{\text{out max}}$	$U_{\text{out nom}}$	$P_{\text{out nom}}$	$P_{\text{out max}}$	$U_{\text{out nom}}$	$P_{\text{out nom}}$	$P_{\text{out max}}$
[V DC]	[W]	[W]	[V DC]	[W]	[W]	[V DC]	[W]	[W]
5,1	61	90	12	30	48	12	30	48

### INPUT

Input voltage 16 – 36 V DC

### OUTPUT

Nominal output current $I_{\text{out } 1, 2, 3, 4 \text{ nom}}$	$P_{\text{out nom}}$ /number of outputs/ $U_{\text{out } 1, 2, 3, 4 \text{ nom}}$
Maximum output current $I_{\text{out } 1, 2, 3, 4 \text{ max}}$	$P_{\text{out max}}$ /number of outputs/ $U_{\text{out } 1, 2, 3, 4 \text{ nom}}$
Effectivity	$U_{\text{out nom}}, I_{\text{out nom}}$ Up to 92 %
Adjustment of voltage	$U_{\text{out nom}}, I_{\text{out nom}}$ $\pm 1,5 \% U_{\text{out nom}}$
Minimum output current 1, 4	Not required in parallel configuration 0 A In independent or serial configuration 5 % $I_{\text{out } 1, 4 \text{ nom}}$
Minimum output current 2, 3	Not required in parallel configuration 0 A In independent or serial configuration 5 % $I_{\text{out } 2, 3 \text{ nom}}$
Regulation of output 4 load	$I_{\text{out } 1, 4 \text{ min}}, I_{\text{out } 1, 4 \text{ max}}$ type 100 m $\Omega$ • ( $I_{\text{out } 1} \dots I_{\text{out } 4}$ )
Regulation of output 3 load	$I_{\text{out } 2, 3 \text{ min}}, I_{\text{out } 2, 3 \text{ max}}$ type 100 m $\Omega$ • ( $I_{\text{out } 2} \dots I_{\text{out } 3}$ )

Pulse disturbing voltage of outputs	CSN EN 61204, total, peak to peak	type 0.4 % $U_{out\ nom}$
Common limitation of power supply	$(P_{out\ 1} + P_{out\ 2})$ , rectangular U/I characteristics	type 130 % $P_{out\ max} / 2$
	$(P_{out\ 2} + P_{out\ 3})$ , rectangular U/I characteristics	type 130 % $P_{out\ max} / 2$

## PROTECTIONS

Reversing of input polarity	Integrated fuse	
Blocking of input undervoltage		type 90 % $U_{in\ min}$
Blocking of input overvoltage		type 110 % $U_{in\ max}$
Input overvoltage fusing	varistor	
Output	With zero load, protection against overloading and short circuit	
Output overvoltage fusing	varistor	type 125 % $U_{out\ nom}$
Exceeding of temperature	Switch off with automatic restart	$T_C$ type 100 °C

## CONTROL PARAMETERS

Adjustment of output voltage	Output 1, 4	60/80 ... 110 % $U_{out\ nom}$
Blocking at input side	TTL input, outputs inactivated upon interrupted circuit	
Signalling	LED diodes: OK – illuminates; inactive – extinguished	
Output signal OK	Isolated, switching transistor	

## EMC tests

Electrostatic discharge	CSN EN 61000-4-2, level 4 (8/15 kV)	B criterion
Electromagnetic field	CSN EN 61000-4-3 ed.2, level 3 (10V/m)	A criterion
Fast transients	CSN EN 61000-4-4 ed.2, output/input, level 3/4 (2/4 kV)	B criterion
Surge	CSN EN 61000-4-5, input, level 2/3 (1/2 kV)	B criterion
Injected disturbances	CSN EN 61000-4-6, level 2/3 (3/10 V)	A criterion
Electromagnetic radiation	CSN EN 55022	B class

## Environment

Working temperature	$U_{in\ nom}$ , $P_{out\ nom}$	-25 ... 71 °C
Operating temperature of components		-25 ... 95 °C
Storage temperature		-40 ... 100 °C
Irregular vibrations	CSN EN 60068-2-64, 20 ... 500 Hz	4,9 $g_{n\ rms}$