PW100DC Series – Introduction

The main features of the 3U, M-type, 100 W output DC/DC power supply unit PW100DC are described in the following table:

Features

FEATURES	SPECIFICATIONS
Form Factor	3U
Front Panel Size	60.62 mm x 128.4 mm
Mechanics	19” rack
Weight	1 kg
Plug-In Compatibility	Yes (no hot plug or hot swap)
Power Supply Connector	DIN M24/8 connector
Input Voltage	16.8 … 137.5 VDC Ultra Wide Input Range
Output Power	100W
Output Voltages / Currents	V_1 = + 3.3 V at 12 A V_2 = + 5V at 10 A V_3 = + 12 V at 4.8 A
Cooling	Free convection
Status Indication	LED’s for Power Good/Error and Input Power
Standard	According to EN50155
Hold-up Time	> 10ms
Wide Temperature Range	-40°C to +70°C; up to +85°C for 10 minutes at full load
Special Feature(s)	Left slot version available (requires appropriate backplane for left slot usage)

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Mechanical Specifications

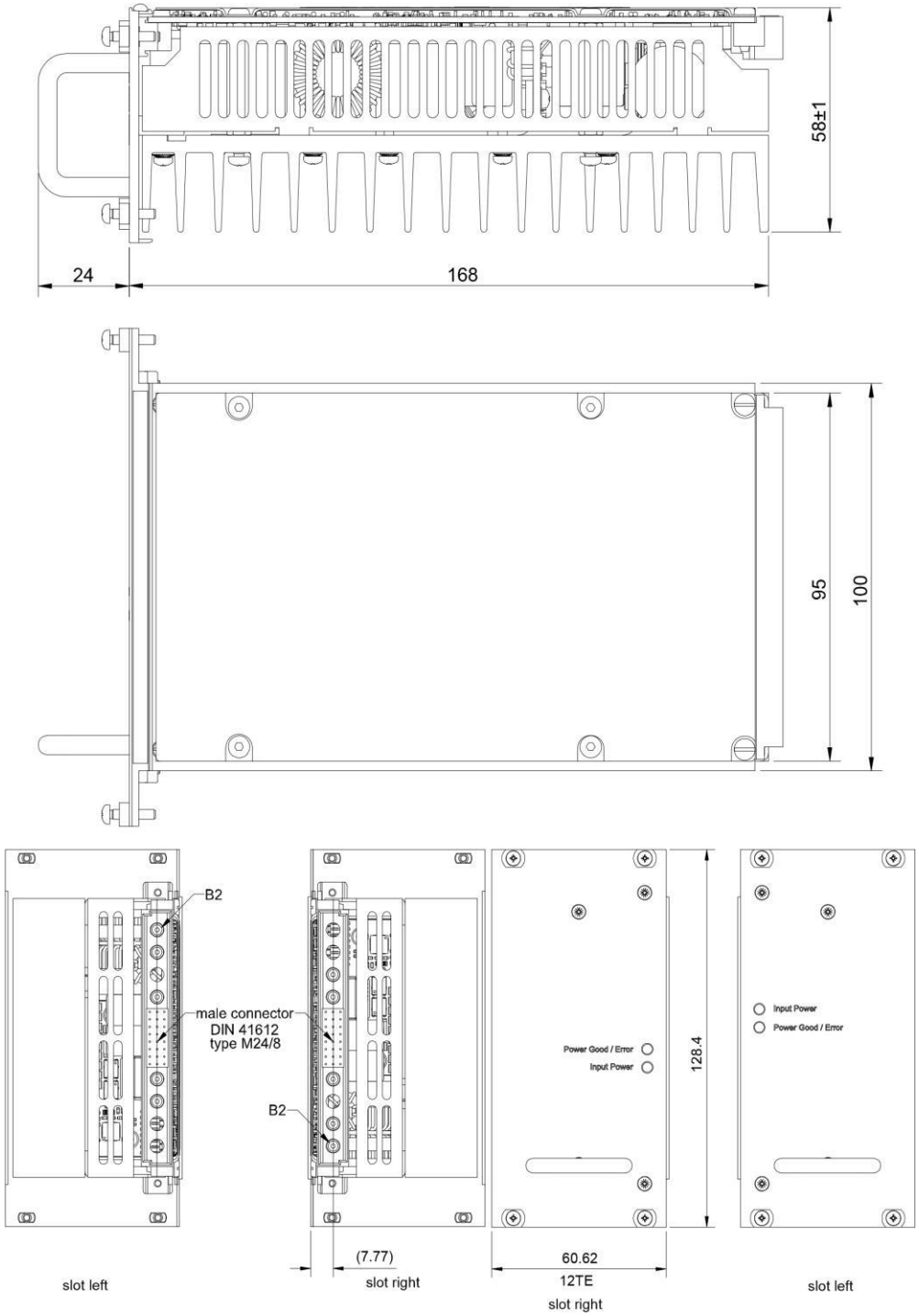

Figure 1 - Mechanical Specifications

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Power Supply Connector

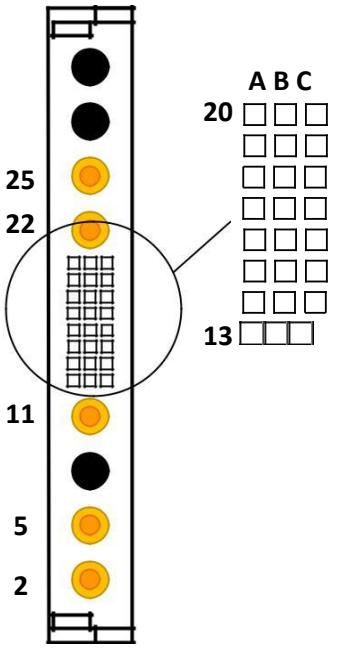

Figure 2- DIN M24/8 Power Supply Connector

The V1 ... V3 output voltages from the power supply unit to the backplane are connected via a 32-pole DIN 24/8 male power supply connector.

For the pinouts of the DIN M24/8 power supply connector please refer to the following table.

PIN	FUNCTION	PIN	FUNCTION
2	Vin +	B.17	+3.3VL
5	Vin -	B.18	+3.3VL
11	PE	B.19	+12VL
A.13	NC	B.20	NC
A.14	INH	C.13	EN
A.15	NC	C.14	DEG
A.16	0VF (5V sense -)	C.15	FAL
A.17	+5VF (5V sense +)	C.16	+3.3VL
A.18	+3.3VL	C.17	+3.3VL
A.19	+12VL	C.18	+3.3VL
A.20	NC	C.19	+12VL
B.13	+3.3VL	C.20	NC
B.14	+3.3VL	22	+5VL
B.15	+3.3VL	25	OVL (GND)
B.16	+3.3VL		

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Installation

Thanks to its plug-in compatibility this DIN M-type power supply unit allows for an easy installation, by which the power supply unit's male DIN M24/8 power connector is inserted into the backplane's mating female connector without the need of any intermediate adaptation.

Warning!

To ensure a safe 5V operation of your equipment it is necessary that on the backplane 5VL is connected to 5VF and 0VL to 0VF.

The maximum voltage compensation is +/- 0.15V per line

Warning!

Handling of a hot power supply unit with bare hands can cause burns.

This power supply unit will get hot during operation. Under constant maximum load the front panel temperature can be up to 15°C higher than the ambient air temperature. In addition, the PSU heat sink and metal housing may reach temperatures in excess of 85°C.

To replace a hot PSU, wear thermal protective gloves. Allow sufficient cooling down of a hot PSU before further handling with bare hands.

Note …

If the main power input is switched off, the supply voltages will not go to 0V instantly. It will take a couple of seconds until the capacitors are discharged. If the voltage rises again before it has gone below a certain level, the circuits may enter a latch-up state where even a hard RESET will not help any more. The system must be switched off for at least 3 seconds before it may be switched on again. If problems still occur, turn off the main power for 30 seconds before turning it on again.

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Electrical Specifications

Overview

INPUT	Input Voltage Nominal	24V DC	36V DC	48V DC	72V DC	110V DC
	Under Voltage Turn-on	<16,8V DC				
	Under Voltage Turn-off	<14,4V DC (14,4V < Vin < 16,8V at t > 1 sec.)				
	Input Current @ Full Load	5.29A	3.43A	2.54A	1.67A	1.08A
OUTPUT		Output 1		Output 2		Output 3
	Output Voltage Nominal	3.3V DC		5V DC		12V DC
	Output Current Nominal	12A (14A for 20 ms)		10A (12A for 20 ms)		4.8A (10.5A for 20 ms)

Input

Input voltage ranges	14.4V..154V DC (t ≤ 0.1 sec; EN50155) 16.8..137.5V DC (constant)
Efficiency	Typ. 85%
Input current limitation	Yes
Fuse	10AT (not user serviceable)
Enable / Inhibit Signal	EN connected to Vin+: ON EN open or connected to Vin-: OFF
Active Reverse Polarity Protection	Max.160 V
Inrush Current Limitation Hold-	Max. 20 A
up-time	> 10 ms at full load
False Signal	Open-collector output, active low

Output

Output Voltage	3.3 V / 5 V / 12 V
Temperature coefficient	No derating over the specified temperature range
Switch on / switch off performance	No overshooting (soft-start)

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Rise-delay time	< 100ms
Start-up time	≤ 20ms
Minimum load	No minimum load required
Initial Set Accuracy	< 1.0 % (no load)
Short circuit	Continuous short circuit proof
Ripple & Noise	Output 1 and 2: < 50 mV pk-pk, 20 MHz bandwidth Output 3: < 240 mV pk-pk, 20 MHz bandwidth 500 uF x Iout nom
Max. Output Capacitance	
Temperature Coefficient	< 0.02 %/°C
Regulation	
Line regulation	< 0.3% for 5V and 3.3V
Load regulation	≤ 1.0 % at Iout 0 - 100% < 1ms at 25..75%
Response time	
Protection and Control	
Overvoltage protection	115% to 130% Vout Automatic repetition
Overcurrent protection	Output 1: At overload and short circuit the converter switches off the output and tries to restart after 2 sec. Output 2: At overload and short circuit the converter switches off the output and tries to restart after 2 sec. Output 3: At overload and short circuit the converter switches off the output and tries to restart after 2 sec.
Current limitation	14 .. 17A for 3.3V

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	12 .. 15A for 5V 10.5 .. 12 for 12V Effective for all outputs, outputs short-circuit proof
Overtemperature protection	Shutdown at +97°C to 103°C baseplate temperature with about 10°C hysteresis and auto recovery.
Signal DEG (Derate)	Open-collector output, low active
Signal FAL (False)	Open-collector output, low active
Input EN (enable)	Power is ON only with EN low (TTL) Power
Input INH (inhibit)	always OFF with INH low (TTL)
Status indications	LED's for: **Power Good / Error** all output voltages activated = **green** voltage out of tolerance, over heating or other error = **red** **Input Power** Vin > 16.8V DC = **green** Vin < 16.8V DC = **red**

Operating Data

Temperature range: operating	-40°C..+70°C with free convection +85°C for 10 minutes
Temperature range: storage	-40°C..+100°C

Warning!

Adequate thermal cooling of the power supply must be ensured. Therefore do not obstruct or hinder cooling air circulation or heat conduction within the power supply or surrounding equipment.

Failure to comply with this warning may result in damage to your equipment.

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Standards

REQUIREMENT	STANDARD	SPECIFICATION
ITE Safety	EN 60950-1	n.a.
Thermal Operating	EN 50155	Class TX -40 to +70°C +85°C for 10min
Climatic Test Damp heat, cyclic	EN 50155	IEC 60068-2-30 95% RH @ +25 to +55°C 2 cycles, each 24h
Random Vibration Operating	EN 50155	EN 61373 Class 1B
Shock	EN 50155	EN 61373 Class 1B
EMC Emission	EN 50155	EN 55011 Class B radiated and conducted
EMC Immunity	EN 50155	EN 50121-3-2

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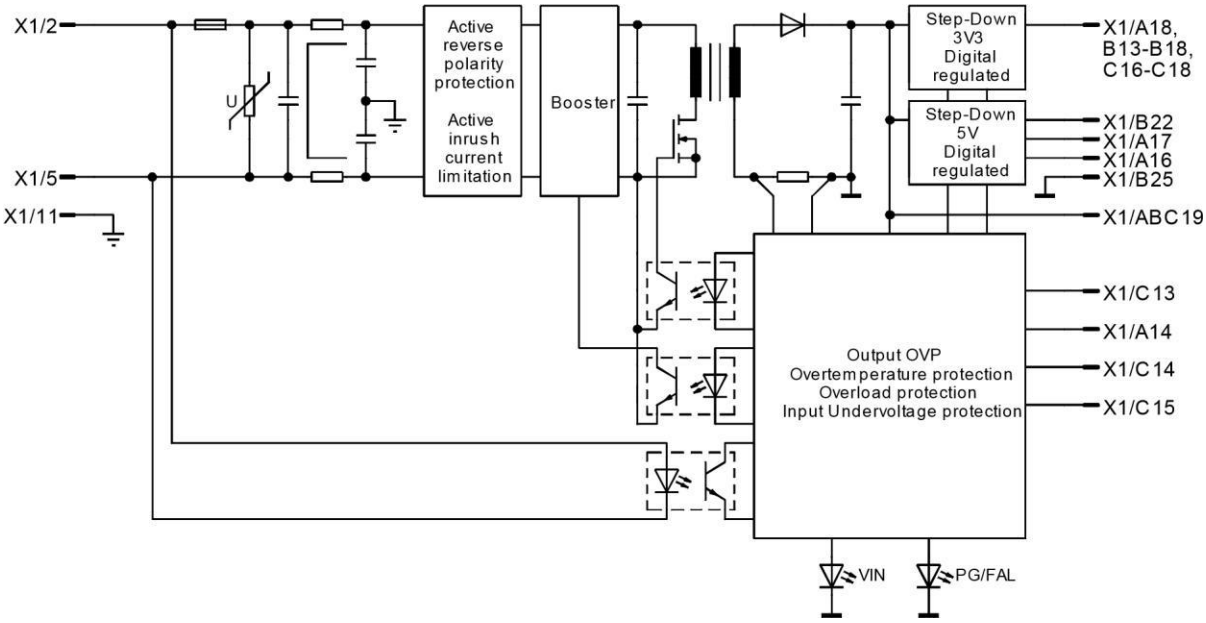
Block Diagram



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