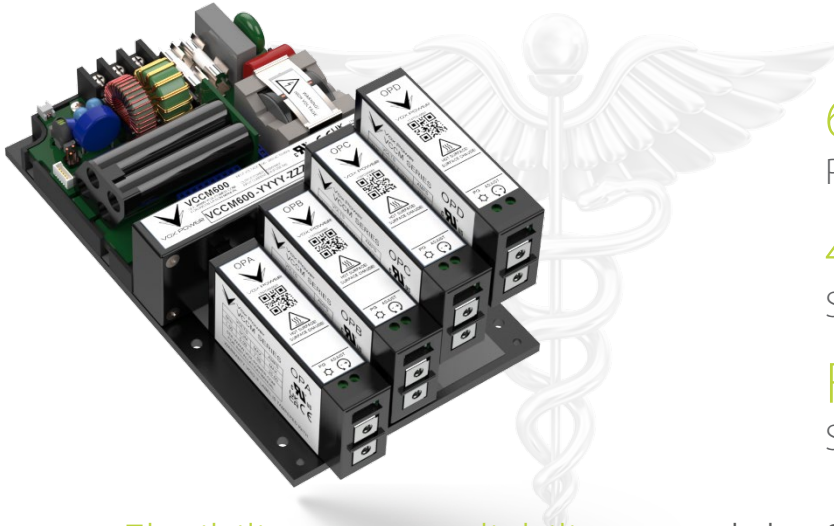


# VCCM600M

## MEDICAL DATASHEET

### AC/DC Conduction Cooled Configurable PSU



600W

Powerful

4" x 7" x 1.61"

Small

Fan-less

Silent

Flexibility meets reliability - modular & fan-less

Vox Power's VCCM600 conduction cooled configurable power supply series combines the advantages of a modular power supply with the high reliability of a fan-less architecture and offers unrivalled performance and flexibility. The VCCM600S power supply delivers a silent 600 Watts, and up to 750 Watts of peak power for 5 seconds, in a rugged 4" x 7" x 1.61" package. The VCCM600 series is the ultimate power solution for demanding medical, industrial, lighting and military applications where reliability, multiple output voltages, user controllable functions and audible noise are of utmost importance.

The VCCM600 series can accommodate up to 4 isolated DC output modules with outputs from 1.5 to 58VDC at 150 Watts per channel. Each output module is produced using 100% SMT components to ensure minimal touch which in turn ensures long term reliability. Each VCCM600 series module can be connected in parallel or series to achieve higher power or voltage levels which can be controlled using the on-board signal functionality. Additional features include a standard 5V/1A bias supply, selective conformal coating, programmable start-up, standby power operation and a standard 5-year warranty.



## MAIN FEATURES & BENEFITS

- 600 Watts output ( $V_{in} > 120V_{RMS}$ )
- 750 Watts peak rating (5 seconds)
- Small 7" x 4" x 1.61", 13.3W/in<sup>3</sup>
- Up to 4 isolated output modules
- Wide output adjust range from 1.5-58V<sub>DC</sub> at 150W per channel
- Programmable start-up state (laser applications)
- Standby power  $\leq 1$ Watts (In primary inhibit mode)
- Instant & fully safety approved power solutions based on proven technology
- Approved to latest safety standards: IEC/UL60601-1-2 4<sup>th</sup> Edition (EMC)
- Fan-less & conduction cooled
- Unique module design (100% SMT)
- Efficiency up to 92%
- Remote current/voltage programming
- Parallel & series connection of modules
- 5V 1A bias supply
- Accurate current sharing
- 24-hour samples from distribution
- Supplier & technology consolidation
- SEMI F47 compliant
- MIL-STD 810G, MIL-STD 461F & MIL-STD 704F
- Expert technical support
- 5 year warranty

## APPLICATIONS



- Medical & diagnostic equipment
- Test & Measurement equipment
- Robotics
- Oil & Gas
- Telecommunications
- Laboratory & Analysis equipment
- Display
- Avionics
- Lasers
- LED lighting
- High vibration & shock
- Retrofit of legacy PSUs



# SPECIFICATIONS

INPUT MODULE SPECIFICATIONS					
Parameter	Details	Min	Typical	Max	Units
AC Input Voltage	Nominal range is 100V <sub>RMS</sub> to 240V <sub>RMS</sub>	85		264	V <sub>RMS</sub>
AC Input Frequency	Contact factory for 400Hz operation.	47	50/60	63	Hz
DC Input Voltage	Not covered by safety approvals. Contact Vox Power.	120		370	V <sub>DC</sub>
Output Power Rating	De-rate linearly from 600Watts at 120V <sub>RMS</sub> to 425Watts at 85V <sub>RMS</sub>			600	Watts
Input Current	600Watts output at 120 V <sub>RMS</sub> input			6	Amps
Input Current Limit			7		Amps
Inrush Current	265V <sub>RMS</sub> , 25°C (cold start)			20	Amps
Fusing	Each line fused (5x20 Fast acting)			8	Amps
Efficiency	See graphs			90	%
No load Power consumption	All outputs fitted and disabled/enabled		10/21		Watts
Standby Power	Latched off state, 120V <sub>RMS</sub>		0.5	1	Watts
Power Factor			0.99		
Holdup	600Watts output at 120V <sub>RMS</sub> input	17	20	21	mS
UVP	Turn on under voltage protection	78		84	V <sub>RMS</sub>
Over temperature	Internally monitored.	115		125	°C
Reliability <sup>(1)</sup>	Input module			1.1	FPMH
	Transformer module			0.4	FPMH
Warranty	Standard terms and conditions apply			5	Years
Size	177.8 (L) x 101.6 (W) x 41.0 (H). See diagram for tolerance details				mm
Weight	650 + 100 per output module				Grams
Note 1.	30°C base & ambient, 100% load, SR332 Issue 2 Method I, Case 3, Ground, Fixed, Controlled To ensure reliability, component temperatures must be maintained below recommended levels in the end application. The "System cooling" section of the user manual should be reviewed in detail and temperatures verified in the end application.				

GLOBAL SIGNALS SPECIFICATIONS					
Parameter	Details	Min	Typical	Max	Units
Bias Voltage		4.8	5	5.2	Volts
Bias Current				1	Amps
AC_OK Voltage	Low output level High output level	0 4.8	0.03 5	0.1 5.2	Volts
AC_OK Current				10	mA
Power Good Voltage	Open collector output. Low output level. All slots. Absolute maximum = 6V.	0.1		0.3	Volts
Power Good Current	Open collector output. Current sink only. All Slots.			50	mA
Tsns Voltage	Typical at 0°C internal temperature, 19.5mV/°C	0	0.4	5	Volts
Tsns Current				100	uA
Inhibit Voltage	Low input level. All slots. High input level. All slots.	0 2.5		0.8 6	Volts
Inhibit Current	10k input impedance. All slots.			1	mA

OUTPUT MODULE SPECIFICATION SUMMARY												
MODEL	Output Voltage			Output Current	Rated Power	Peak <sup>(3)</sup> Power	Load Reg.	Line Reg.	Cross Reg.	Ripple & Noise	FPMH <sup>(1)</sup>	Feature Set <sup>(2)</sup>
	Min.	Nom.	Max.									
OPA	1.5V	<b>5V</b>	7.5V	25A	125W	187.5W	±50mV	±5mV	±10mV	50mV <sub>PP</sub>	0.5	ABCDEFGF
OPB	4.5V	<b>12V</b>	15V	15A	150W	225W	±100mV	±12mV	±24mV	120mV <sub>PP</sub>	0.5	ABCDEFGF
OPC	9V	<b>24V</b>	30V	7.5A	150W	225W	±150mV	±24mV	±48mV	240mV <sub>PP</sub>	0.5	ABCDEFGF
OPD	18V	<b>48V</b>	58V	3.75A	150W	217.5W	±300mV	±48mV	±96mV	480mV <sub>PP</sub>	0.5	ABCDEFGF
Note 1.	Output module, 30°C base, 100% load, SR332 issue 2 Method I, Case 3, Ground, Fixed, Controlled											
Note 2.	A = Remote Sense, B = External Voltage control, C = External constant current control, D = Current output signal, E = Current share, F = Over Voltage protection, G = Over temperature protection.											
Note 3.	Individual Output Module Peak power available < 5 seconds @ 50% duty cycle, Overall Input Module power must remain within specified limits.											

SAFETY SPECIFICATIONS					
Parameter	Details	Typical	Max	Units	
Isolation Voltages	Input to Output (2 MOPP). Do not perform test on assembled unit <sup>(1)</sup>		4000	V <sub>AC</sub>	
	Input to J2 standby control (2 MOPP)		4000	V <sub>AC</sub>	
	Input to Chassis (1 MOPP)		1500	V <sub>AC</sub>	
	Global signals (J3) to Output/Chassis		500	V <sub>DC</sub>	
	Output to Output/Chassis (Standard modules)		500	V <sub>DC</sub>	
Earth Leakage Current	Normal condition, 264Vac, 63Hz, 25°C	200	300	uA	
Touch Leakage Current	Output to Earth. Standard modules 264Vac, 63Hz, 25°C NC/SFC	21/146	20/250	uA	
Patient Leakage Current	Standard modules 264Vac, 63Hz, 25°C NC/SFC <sup>(2)</sup>		-----	uA	
Note 1.	Testing an assembled unit to 4000V <sub>AC</sub> may cause damage. Please refer to application note (APN-002) on Vox Power website or contact Vox Power representative.				
Note 2.	Not Applicable				

INSTALLATION SPECIFICATIONS			
Parameter	Details	Parameter	Details
Equipment class	I	Flammability Rating	94V-2
Overvoltage category	II	Ingress protection rating	IP10
Material Group	IIlb (indoor use only)	ROHS compliance	2011/65/EU & 2015/863/EU
Pollution degree	2	Intended usage environment	Home Healthcare

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