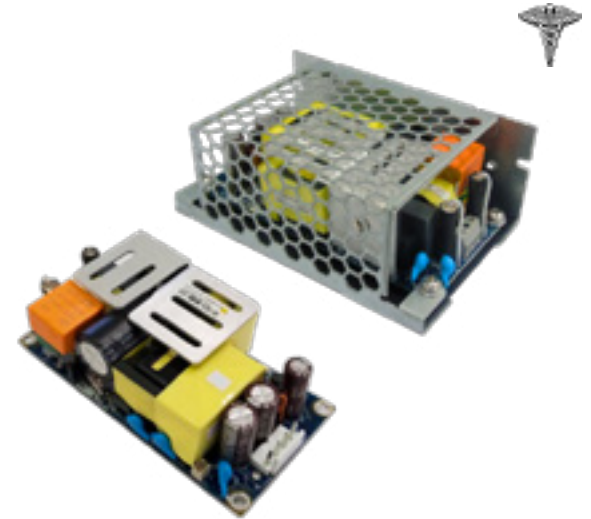


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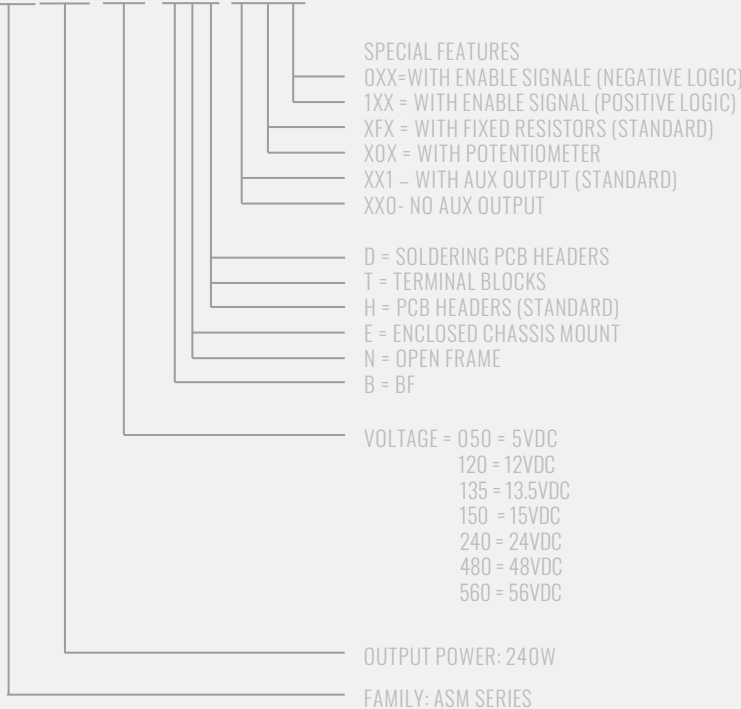
240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

The AstrodyneTDI ASM202 series power supplies are high-power-density designs that are suitable for both medical and industrial applications. Both Class I and Class II protection models have 2 MOPP isolation and BF leakage current, crucial for patient safety either in the hospital or at home. These power supplies operate over the input voltage range of 80 to 264 VAC at 50-60Hz frequency or 120 to 380 VDC and deliver up to 240 Watts of regulated DC output power in a small footprint, low profile form factor. They are compliant with the RoHS directive.



HOW TO ORDER

ASM202-120-BYZ-WWW



FEATURES

UNIVERSAL AC INPUT
 80-264 VAC Input, 50/60 Hz

DC INPUT RANGE
 120-380VDC

OUTPUT RANGE
 240 Watts Output, Forced Air
 140 Watts Output, Convection

OPERATING TEMPERATURE
 ≥ 20 CFM, ≥ 110VAC: full 240W load -40 to +55°C
 convection, ≥ 110VAC: 140W load -40 to +55°C
 all cooling and voltages: up to +85°C at reduced load

SAFETY APPROVALS
 Safety: IEC 60601-1 3rd Ed, Amend 1; IEC 62368-1; CSA C22.2; CB Scheme
 EMC: EN60601-1-2, 4th Ed, Class B

BF Leakage Current, 2 MOPP Isolation
 IEC Class I/II Certified
 Approved for Home Medical Usage
 12V Auxiliary Fan Output
 High Efficiency, up to 95% at 230VAC OR 325VDC

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240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

PARAMETERS

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Input Voltage Range	80-264 VAC 120-380 VDC
AC Input Frequency	47-63 Hz (50/60 Hz nominal)
Input Current	2.3A max at 115VAC/60Hz 1.2A max at 240VAC/50Hz 2.3A max at 120VDC
Inrush Current	30A max at 115VAC, 60Hz 60A max at 240VAC, 50Hz
Power Factor	0.97 min at full load
Earth Leakage Current	300uA max at 264VAC, 50Hz
Patient Leakage Current	75uA typ at 264VAC (BF Rating)
Input Fuse	5A on both ACL and ACN
Output Voltage	See Product Model charts
Output Power	240W max – see derating
Minimum Load	No minimum load required
Set Point Accuracy	±1% max
Load Regulation	±1% max, no load to full load
Line Regulation	±0.5% max, 90-264 VAC
Efficiency	see Product Model charts
Standby Power	0.5-2W typ
Hold-up Time	10ms typ., full load, 115VAC
Ripple and Noise 20 MHz BW, measured with 47uF Alum and 0.1uF Ceramic at output	<18V: 1.5% pk-pk max 18V to 36V: 1.25% pk-pk max >36V: 1.0% pk-pk max
Input to Output	4000 VAC, 2 MOPP
Input to Earth (Class I)	2000 VAC, 1 MOPP
Output to Earth (Class I)	1500 VAC, 1 MOPP
Over Current *	110 to 160% Rated Current †
Short Circuit *	Hiccup Mode, Auto Recovery
Over Voltage *	105 to 140% Vout, Latching; Recycle Input to Reset
Over Temperature *	Latching, Recycle input Reset or Enable

† Rated Current defined by jumper J6, see Thermal Performance. All specifications are typical at nominal input, full load, 25°C unless specified otherwise.

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PARAMETERS

ASM202

Safety Approvals	IEC 60601-1 3 rd Ed, Amend 1; IEC 62368-1; CSA C22.2; CB Scheme
EMC Overall	EN60601-1-2, 4 th Ed, Class B
Conducted and Radiated Emissions	EN 55011 (CISPR11), Class B
Harmonic Current	EN 61000-3-2, Class B
Voltage Fluctuations	EN 61000-3-3
ESD Immunity	EN 61000-4-2, Level 4
RF Field Immunity	EN 61000-4-3, Level 3
EFT Burst Immunity	EN 61000-4-4, Level 3
Surge Immunity	EN 61000-4-5, Level 3
Conducted Immunity	EN 61000-4-6, Level 3
Magnet Field Immunity	EN 61000-4-8, Level 4
Voltage Dips and Interruptions	EN 61000-4-11
Operating Temperature ≥ 20 CFM, ≥ 110VAC: convection, ≥ 110VAC: all cooling and voltages:	(see derating charts for detail) full 240W load -40 to +55°C 140W load -40 to +55°C up to +85°C at reduced load
Cooling	Forced air or free air convection
Storage Temperature*	-40 to +85°C
Operating Humidity*	0% to 95%, non-condensing
Operating Altitude	5000m max
Vibration	2G rms, 5-500Hz, 3 axes, 30min.
MTBF (MIL-HDBK-217, GB)	500K Hrs @ 25C
Size **	2" x 4" x 1.21" 50.8 x 101.6 x 30.7 mm
Weight	1.37 lbs / 620 g
Package Type	Open Frame or Enclosed
** Open frame size- see Outline Drawings for enclosed size *These are stress ratings. Exposure of the devices to any of these conditions may adversely affect long-term reliability. Operation under conditions other than the standard operating conditions is neither warranted nor implied.	

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240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

THERMAL PERFORMANCE

14 CFM Airflow – 12V to 19V Models

14 CFM Airflow – 24V to 36V Models

14 CFM Airflow – 48V to 54V Models

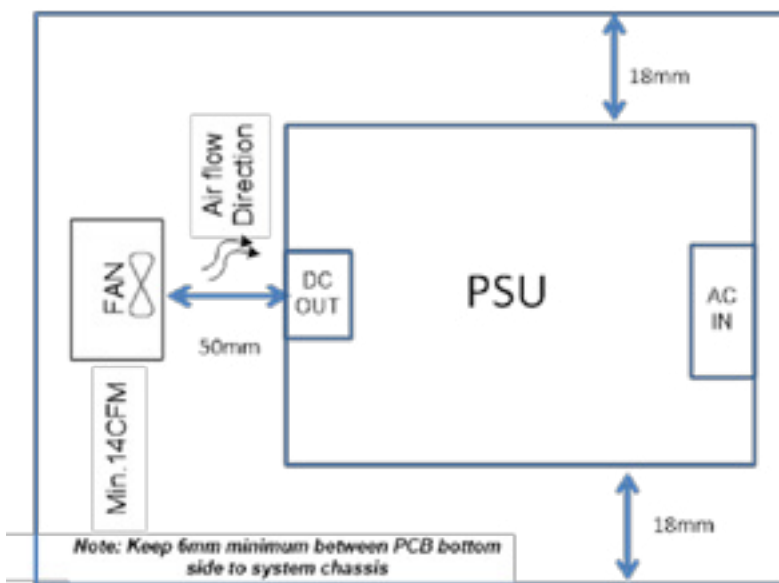
Convection – 12V to 19V Models

Convection – 24V to 36V Models

Convection – 48V to 54V Models

23 CFM Airflow – all models

AIRFLOW GUIDELINES



Maximum Load Power	Application
240 Watts	Air Cooled (min. 22 CFM)
140 Watts	Convection Cooled

Use of Auxiliary Fan Output

The auxiliary supply is designed to serve as a source for an external cooling fan. Do not use this output to drive other devices.

EMC Compliance

For EMC compliance, electrically connect all four mounting holes to a conductive surface.

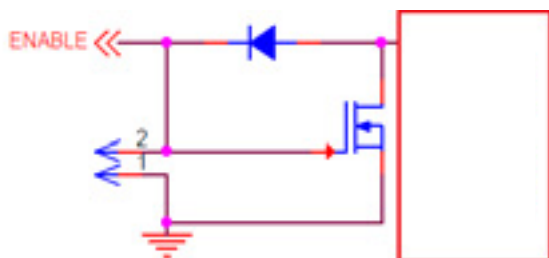
Class I Applications

For Class I protection applications, electrically connect at least one of the four mounting holes to Earth Ground (chassis ground).

APPLICATION INFORMATION

Enable Circuit

The Enable signal function includes positive logic and negative logic circuits. Logic mode is factory set. The figure below shows the enabled signal circuit. Positive logic needs to remove the small signal mosfet and retain the small signal diode, but negative logic needs to remove the small signal diode and retain the small signal mosfet.



Positive Logic :

HIGH : ENABLE
Low : DISABLE

Negative Logic :

HIGH : DISABLE
Low : ENABLE

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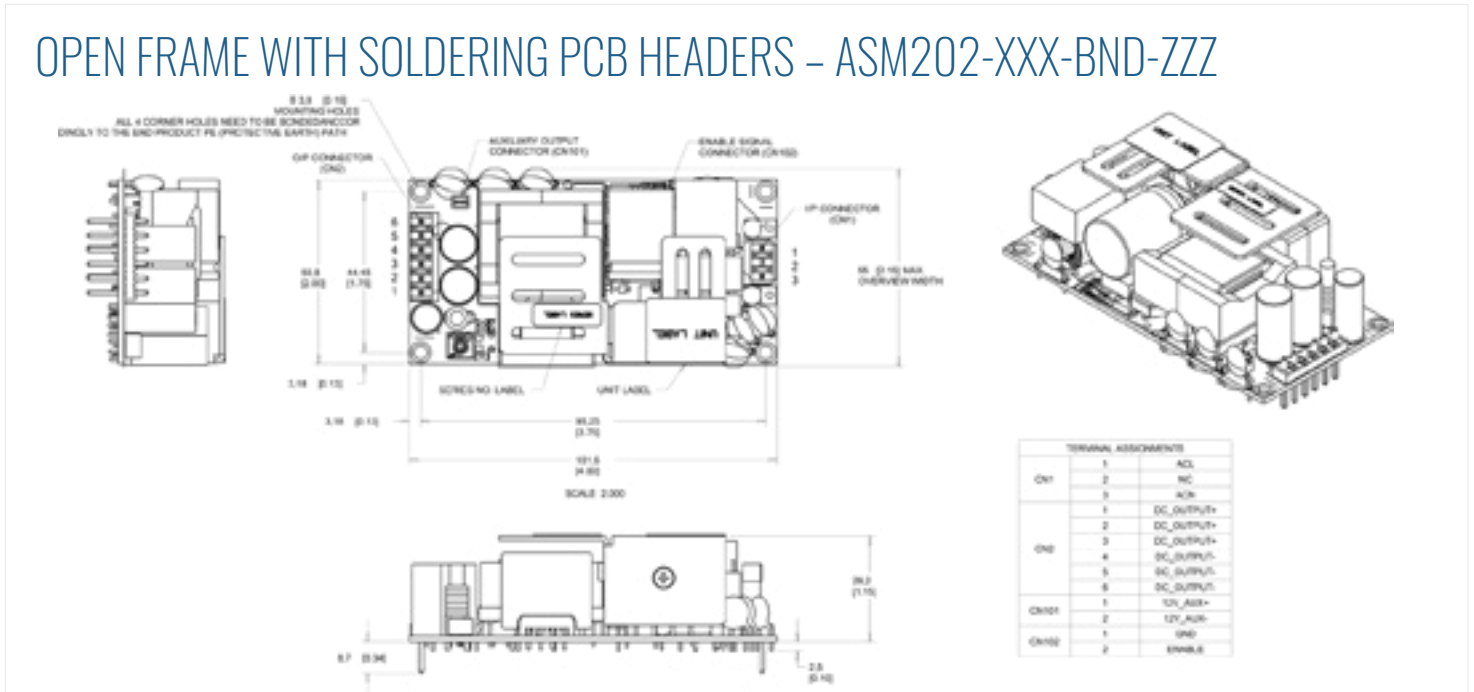
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240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

OPEN FRAME WITH SOLDERING PCB HEADERS – ASM202-XXX-BND-ZZZ



MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT FORCED AIR / CONVECTION ^(1,2)	12V AUX. CURRENT ⁽³⁾	EFFICIENCY (TYP) 230 / 115 VAC
ASM202-120-BNH-OF1	12 VDC	20.0 A / 11.7 A	0.5 A	93 % / 91 %

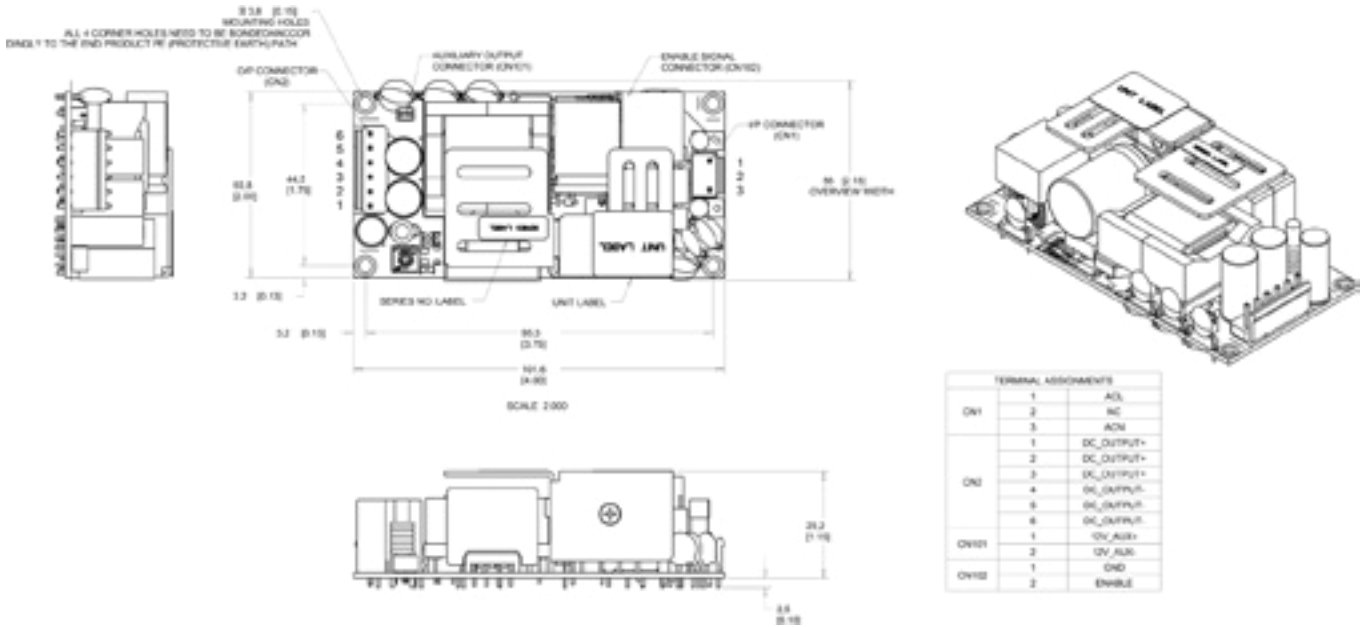
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240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

OPEN FRAME WITH PCB HEADERS (STANDARD) – ASM202-XXX-BNH-ZZZ



MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT FORCED AIR / CONVECTION ^(1,2)	12V AUX. CURRENT ⁽³⁾	EFFICIENCY (TYP) 230 / 115 VAC
ASM201-150-BNH-PF1	12 VDC	20.0 A / 11.7 A	0.5 A	93 % / 91 %
ASM201-180-BNH-PF1				
ASM201-190-BNH-PF1				
ASM201-240-BNH-PF1				
ASM201-280-BNH-PF1				
ASM201-300-BNH-PF1				
ASM201-360-BNH-PF1				
ASM201-480-BNH-PF1				
ASM201-560-BNH-PF1				

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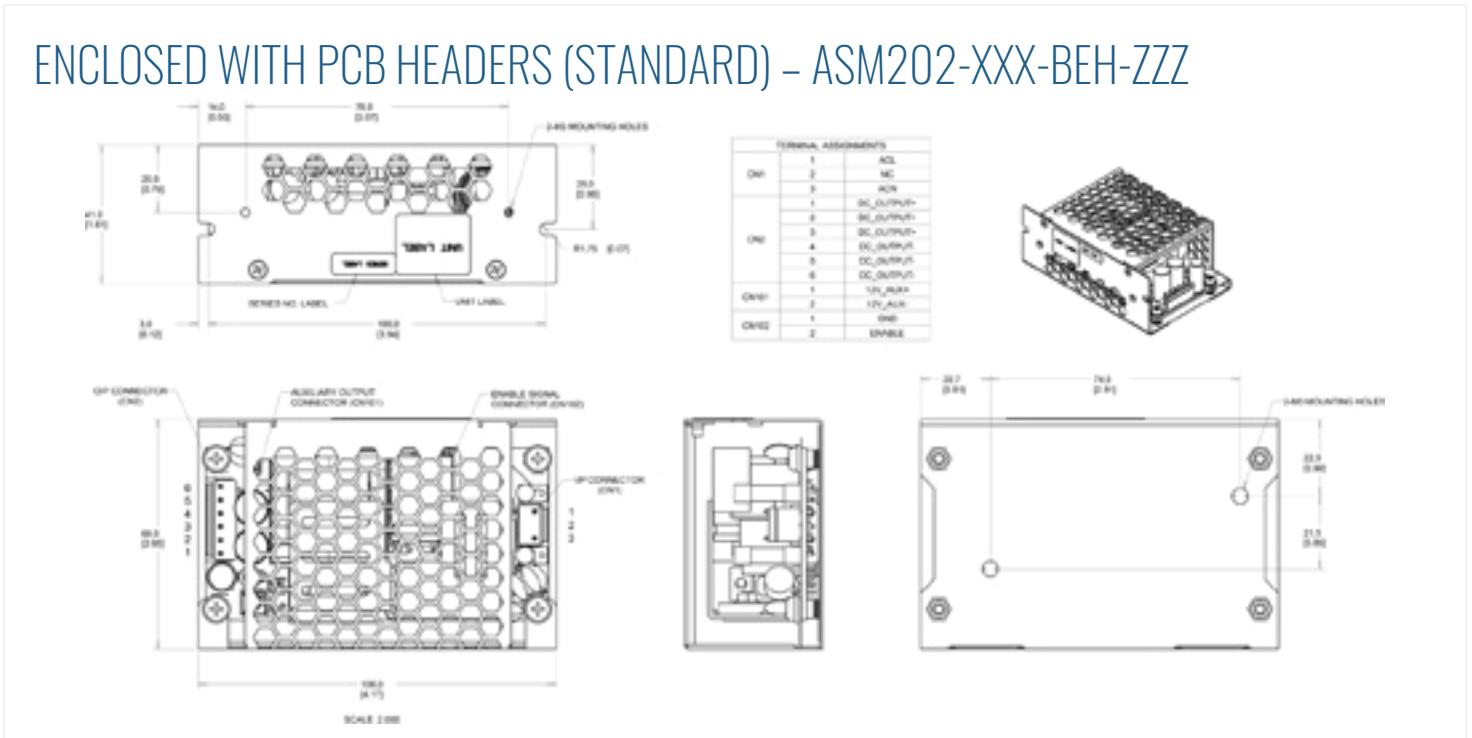
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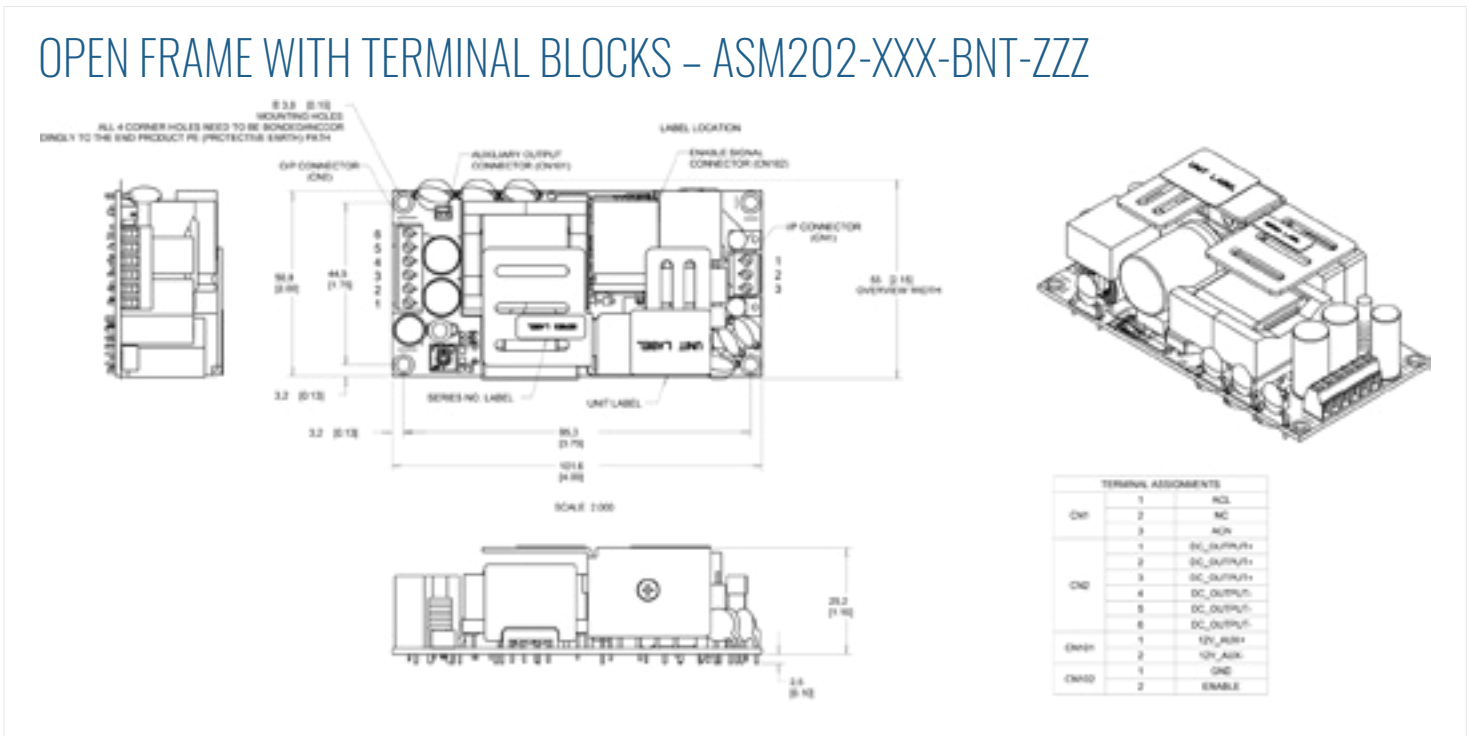
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240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

ENCLOSED WITH PCB HEADERS (STANDARD) – ASM202-XXX-BEH-ZZZ



OPEN FRAME WITH TERMINAL BLOCKS – ASM202-XXX-BNT-ZZZ



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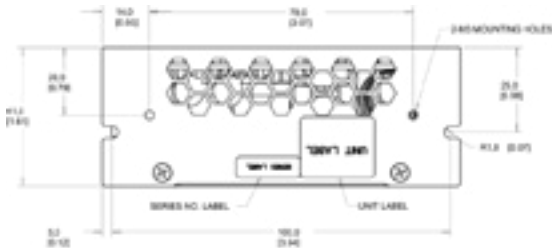
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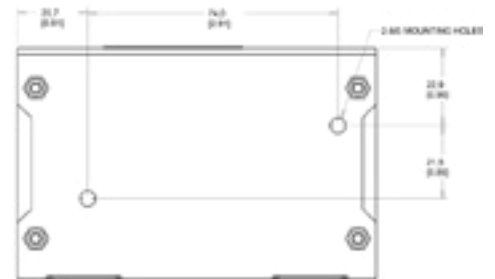
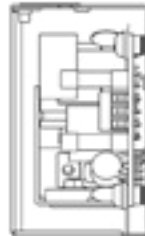
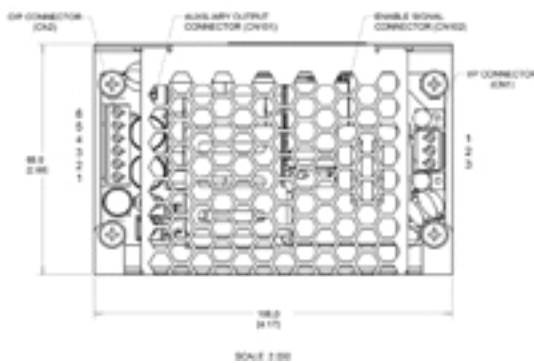
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240W HIGH POWER DENSITY MEDICAL & INDUSTRIAL GRADE POWER SUPPLIES

ENCLOSED WITH TERMINAL BLOCKS – ASM202-XXX-BET-ZZZ



TERMINAL ASSIGNMENTS		
DN1	1	AC
	2	NC
	3	GN
DN2	1	DC OUTPUT+
	2	DC OUTPUT-
	3	DC OUTPUT+
	4	DC OUTPUT-
	5	DC OUTPUT-
DN3	1	12V_AUX
	2	GN
DN3	1	GN
	2	ENABLE



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HEADERS AND MATING CONNECTORS

AC Input Connector (P1): CviLux CI5203P1V00 or CST CSI-5381-0210 or equivalent

Pin No.	Assignment	Mating Housing and equivalents	Terminal Contacts and equivalents
1	AC/L	CviLux CI5203S000M or JST VHR-3N	CviLux CI52T031BE0 (AWG# 18~22) or JST SVH-21T-P1.1 (AWG# 18~22)
2	No Pin		
3	AC/N		

12V Model DC Output Connector (P2): CviLux CI5206P1V00 or CST CSI-5201-0610 or equivalent

Pin No.	Assignment	Mating Housing and equivalents	Terminal Contacts and equivalents
1	DC Output +	CviLux CI5206S000M or JST VHR-6N	CviLux CI52T031BE0 (AWG# 18~22) or JST SVH-21T-P1.1 (AWG# 18~22)
2	DC Output +		
3	DC Output +		
4	DC Output -		
5	DC Output -		
6	DC Output -		

15V-54V Models DC Output Connector (P2): CviLux CI5204P1V00 or CST CSI-5281-0410 or equivalent

Pin No.	Assignment	Mating Housing and equivalents	Terminal Contacts and equivalents
1	No Pin	CviLux CI5204S000M or JST VHR-4N	CviLux CI52T031BE0 (AWG# 18~22) or JST SVH-21T-P1.1 (AWG# 18~22)
2	DC Output +		
3	DC Output +		
4	DC Output -		
5	DC Output -		
6	No Pin		

T-Terminal Blocks: Do not need a mating connector.

D-Soldering PCB Headers: Do not need a mating connector.

Aux Fan Connector (P3): CviLux CI1502P1VK0-NH or equivalent

Pin No.	Assignment	Mating Housing and equivalents	Terminal Contacts and equivalents
1	+V12	CviLux CI1502S0000 or JST ZHR-2	CviLux CI15IU11PEU (AWG# 26~32) or JST SZH-002T-P0.5 (AWG# 26~28) JST SZH-003T-P0.5 (AWG# 28~32)
2	DC COM		

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