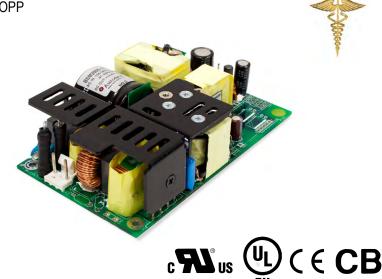


200W High Power Density Medical Grade Open Frame Power Supplies BSM200 series

- Medical Safety Approval 60601-1 3rd Edition 2 MOPP
- Class I and Class II medical applications
- 200 Watts in miniature 3"x 5"x 1.4" footprint
- High Efficiency, up to 94% @ 230Vac
- Universal 90-264 Vac Input, 50/60 Hz
- Convection Cooled
- 100% Full Load Burn-in
- 3 Year Warranty



ORDERING INFORMATION

| Class I | Class II | Efficiency Output typ. | | | | |
|------------------|------------------|------------------------|----------------|-----------|----------------------------------------------------------------------------------|--|
| Model | Model | Voltage | Output Current | 230/115VA | AC | |
| ASM200S-12-(XX)* | BSM200S-12-(XX)* | 12 VDC | 16.7 Amps | 94/92% | | |
| ASM200S-15-(XX)* | BSM200S-15-(XX)* | 15 VDC | 13.4 Amps | 94/92% | | |
| ASM200S-19-(XX)* | BSM200S-19-(XX)* | 19.6 VDC | 10.2 Amps | 94/92% | | |
| ASM200S-24-(XX)* | BSM200S-24-(XX)* | 24 VDC | 8.4 Amps | 94/92% | | |
| ASM200S-28-(XX)* | BSM200S-28-(XX)* | 28 VDC | 7.15 Amps | 94/92% | *Donatas Augiliam autout antique Coa | |
| ASM200S-36-(XX)* | BSM200S-36-(XX)* | 36 VDC | 5.6 Amps | 94/92% | *Denotes Auxiliary output options. See OPTIONAL OUTPUTS section on Page 2 and | |
| ASM200S-48-(XX)* | BSM200S-48-(XX)* | 48 VDC | 4.2 Amps | 94/92% | PART NUMBERING INFORMATION Chart on | |
| ASM200S-54-(XX)* | BSM200S-54-(XX)* | 54 VDC | 3.7 Amps | 94/92% | Page 4 | |

PRODUCT DESCRIPTION

The Astrodyne ASM200 and BSM200 Series are high density, medium power miniature open frame power supplies designed for medical applications. These products are rated for natural convection cooling.

The ASM200 (Class 1 input) and BSM200 (Class 2 input) have 2 MOPP (means of patient protection) input to output isolation and BF leakage current compliance at the DC output, and have been certified by Underwriters Laboratories for compliance with the latest edition of the international medical safety standard, IEC 60601-1 3rd Edition, using the CB reporting scheme. They are also certified to be compliant with the collateral standard 60601-1-2 for EMC and bear the UL Recognized component marks for North America and the EU, as well as the CE mark.



200W High Power Density Medical Grade Open Frame Power Supplies **BSM200** series

| INPUT SPECIFICATIONS | | ISOLATION SPECIFICATIONS | | | |
|--------------------------------------------------|-----------------------------------------|------------------------------|---------------------------------------------|--|--|
| | | | | | |
| Input Voltage Range | 90-264 VAC | Input to Output | 4000VAC, 2 MOPP | | |
| Range of Nominal Input Voltages | 100-240 VAC | Input to Earth | 1500VAC, 1 MOPP | | |
| Input Frequency | 47-63 Hz (50/60 Hz Nom.) | Output to Earth | 500VAC | | |
| Input Current | 2.2A Max at 115VAC | | | | |
| | 1.1A Max at 230VAC | OVERALL SPECIFICATIONS | | | |
| Inrush Current | 30A Max at 115VAC, 60 Hz | | | | |
| | 60A Max at 230VAC, 50 Hz | Efficiency | 92%/94% typ. 120/230VAC | | |
| Patient Leakage Current | 100uA Max at 264VAC, 60Hz | No Load Power | 2W max, 90-264V | | |
| Locate des | BF rating | Start-up Delay | 2S maximum 50ms maximum | | |
| Input Fusing | 8A fuse in both L and N Lines | Start-up Rise Time | | | |
| | •••• | Hold-up Time | 32ms typ. Full Load | | |
| MAIN OUTPUT SPECIFICATI | ONS | Power Density | 9.5 W/in³ | | |
| | | Switching Frequency | 200 KHz typ. | | |
| Voltage and Current | See Ordering Information Pg 1 | MTBF to MIL-STD-217GB 40°C | 220K Hrs | | |
| Output Power | 200W Continuous | - | | | |
| | See temp. derating curve | OUTPUT PROTECTIONS | | | |
| Minimum Load | No minimum load required | - | | | |
| Load Regulation | ± 1% Max, 0 to Full Load | Over Current Inception | 115% Typ Rated Current | | |
| Line Regulation | ± 0.1% Max, 90 to 264 VAC | Short Circuit | Hiccup Mode, Automatic | | |
| Temp. Drift | 0.025 %/°C | - | recovery | | |
| Transient Response | Less than ± 5% | Over Over Voltage Protection | 130% Vo max. | | |
| Excursion | 50 to 100% Load Step | | Latching, Recycle Input | | |
| T | 1A/us Slew Rate | | to Reset | | |
| Transient Response | 2ms Max | Over Temperature Protection | Automatic recovery | | |
| Recovery Time | 50 to 100% Load Step 1A/us Slew Rate | MECHANICAL SPECIFICATIONS | | | |
| Ripple and Noise | 1% pk-pk Max. 20MHz BW | MECHANICAL SPECII ICATIO | 110 | | |
| | Measured with 47uF Alum and | Size | 3.0" x 5.0" x 1.40" | | |
| | 0.1uF Ceramic at output | | | | |
| | | Weight | 0.88lbs. (400g) | | |
| OPTIONAL OUTPUTS (See Part Numbering Chart Pg 4) | | Input Connector | TE 641937-1 | | |
| | | Input Mating Connector | Housing TE 770476-2 Terminal TE 770476-2 | | |
| 5V Aux. Output | 1Amp | _ | (18-24 AWG) | | |
| 12V Fan Output | 0.5 Amp | - Output Connector | TE 640445-6 | | |
| | | Output Mating Connector | Housing TE 770476-2 | | |
| | | Output Mating Confident | Tiousing IL 110410-2 | | |
| | | | Terminal TE 770476-2 | | |



200W High Power Density Medical Grade Open Frame Power Supplies BSM200 series

| ENVIRONMENTAL SPECIF | CATIONS | EMC CERTIFICATIONS | |
|---------------------------|------------------------------------|---------------------|-----------------------------------|
| Oper. Temperature Range | -20 to +40°C at Full Load | Conducted Emissions | EN60601-1-2 Class B |
| Storage Temperature Range | -40 to +85°C | | EN55011 Class B |
| Humidity | 0 to 95%, non-condensing | Radiated Emissions | EN60601-1-2 Class B |
| Altitude | 0 to 10,000 ft., 0 to 3048 m | | EN55011 Class B |
| Shock | 30G pk. Half sine, 6 axis | ESD Susceptibility | EN61000-4-2 Criteria A Level 3 |
| Vibration | 2 G RMS, 5 Hz to 500 Hz | Air Discharge | |
| | 3 axis, 30 min | ESD Susceptibility | EN61000-4-2 Criteria A |
| | | Contact Discharge | Level 2 |
| SAFETY CERTIFICATIONS | | Radiated | EN61000-4-3 Criteria A |
| | | Susceptibility | Level 2 |
| UL/cUL | ANCI/AAMI ECCOCO1 1 2-d | EFT/Burst | EN61000-4-4 Criteria A |
| UL/CUL | ANSI/AAMI ES60601-1 3rd Edition | | Level 3 |
| | | Surge | EN61000-4-5 Criteria A |
| UL EU | IEC 60601-1 3rd Edition | - | Level 2 |
| | CB Reporting Scheme | Conducted | EN61000-4-6 Criteria A |
| | | Susceptibility | Level 2 |

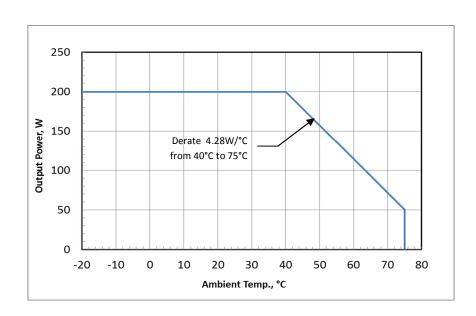
All specifications are typical at nominal input, full load, and 25°C unless specified otherwise

EMC Certification Notes:

- 1) Emissions compliance at both 115V and 230V
- 2) For full EMC compliance, 4 mounting holes should be attached to an electrically conductive surface.

OUTPUT POWER DERATING vs. AMBIENT TEMPERATURE

Output Power vs. Ambient Temperature, 90-264 VAC, Natural Convection





200W High Power Density Medical Grade Open Frame Power Supplies **BSM200** series

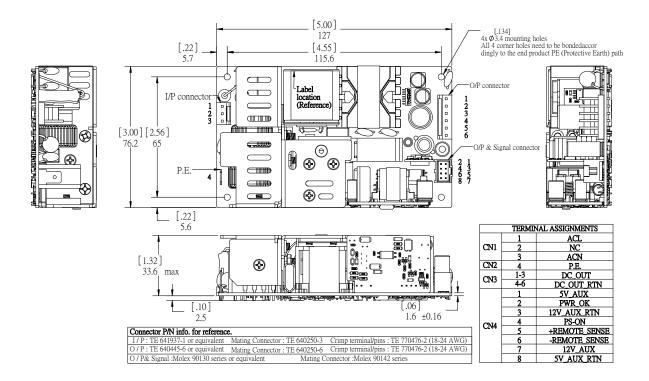
PART NUMBERING INFORMATION

| Input Class/Product Family (A or B) A: ASM Class I Input B: BSM Class II Input | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| SM200S | | | | | | |
| DC Output (2 Characters) i.e 12: 12V 19: 19.6V | | | | | | |
| 24: 24V 54: 54V (See Model Chart pg 1) | | | | | | |
| Aux. Output Configuration (0 or 2 characters) Blank: +5V Aux. and +12V Fan outputs both provided A1: +12V Fan output provided, +5V Aux. not provided 00: Neither Auxiliary output provided | | | | | | |

Note:

- 1. PS-ON, PWR-OK and Remote Sense (RS) are not provided on 00 configuration.
- 2. PS-ON: This signal must connect to DC_OUT_RTN to turn on the main and FAN output; The 5V_AUX output is on when AC is applied.
- 3. PWR_OK: Open collector logic goes to high 160ms (typ.) after main output is in regulation.

200W High Power Density Medical Grade Open Frame Power Supplies ${\sf BSM200}$ series



Notes:

- 1. Drawing is 3rd angle projection
- 2. All dimensions in mm [in.]
- 3. Length and width tolerance is ± 0.2 [0.008]
- 4. Maximum height 36.1 [1.42]
- 5. For full EMC compliance, bond 4 mounting holes to an electrically conductive surface.