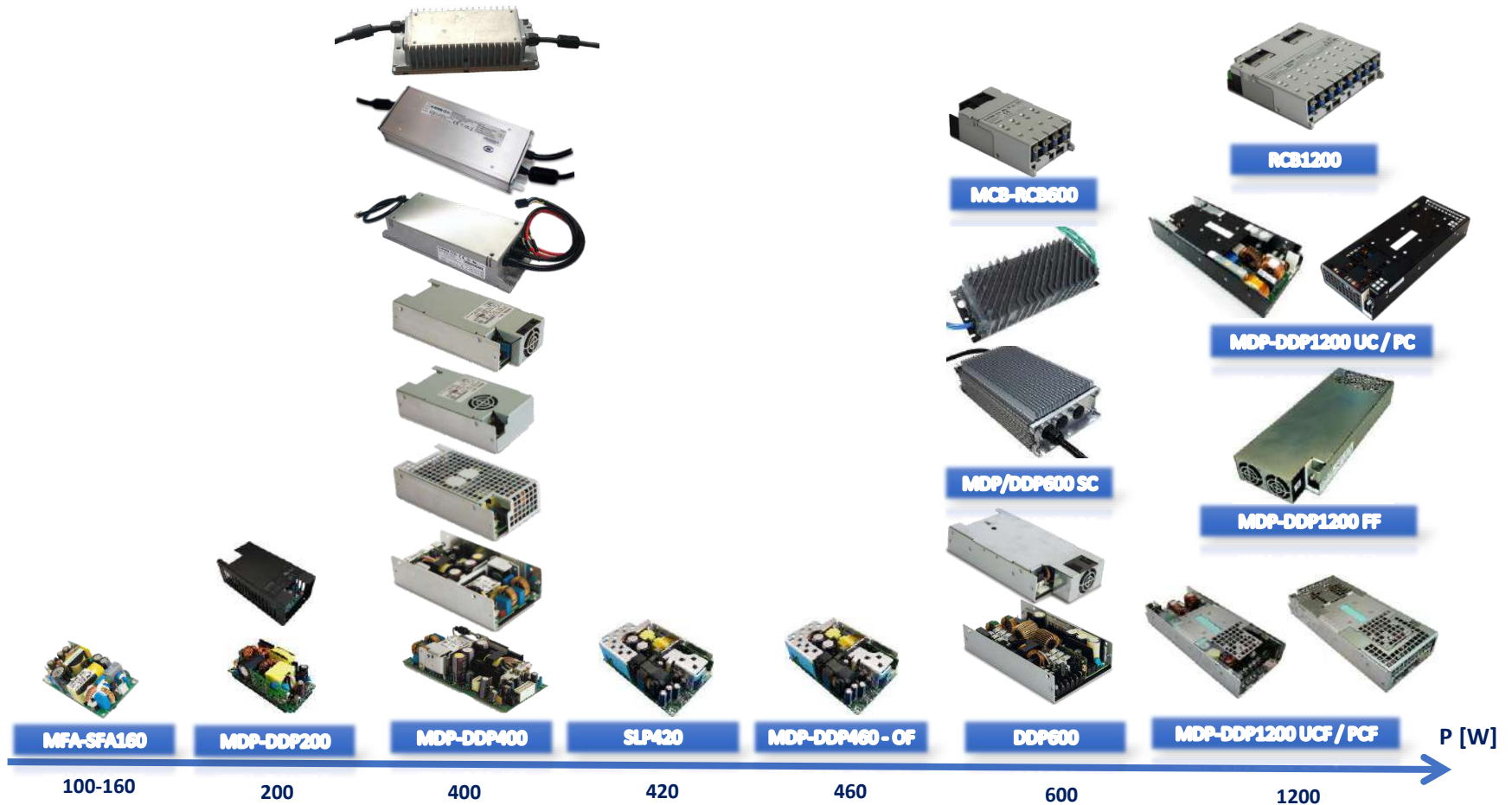


Enedo 

RESHAPING ELECTRICITY





12, 24, and 48 V_{DC} Standard Output Voltages
Class I and Class II Installation



- ✓ Universal input voltage range (90 – 264 VAC)
- ✓ **200 W rated power at forced air cooling or natural convection with cage**
- ✓ **180 / 200 W rated power at natural convection cooling**
- ✓ **High efficiency up to 93,5% at typical working conditions**
- ✓ 12, 24, and 48 V_{DC} standard output voltages
- ✓ **Low no-load power consumption (<0.30 W)**
- ✓ Active PFC, EN61000-3-2 compliant to Class A and D
- ✓ Low earth leakage current
- ✓ Over temperature, OV, OC and SC protections.
- ✓ Fan 12 V_{DC}, 1 A outputs.
- ✓ Compact form factor: 2 x 4 x 1.48” open frame, 2.4 x 4.6 x 1.57” protective cage variant
- ✓ Medical safety approval to IEC 60601-1 3rd edition, 2x MoPP rated, BF compatible
- ✓ **IEC 60601-1-2 4th edition EMC compliant.**
- ✓ **IEC Class I and Class II installation**
- ✓ RoHS 3 compliant (EU 2015/863)
- ✓ Medical version compatible with 3000 m altitude operation



OF – Open Frame



UC – U-Chassis



PC – Protective Cover



VC – Ventilating Cover



FF – Front Fan

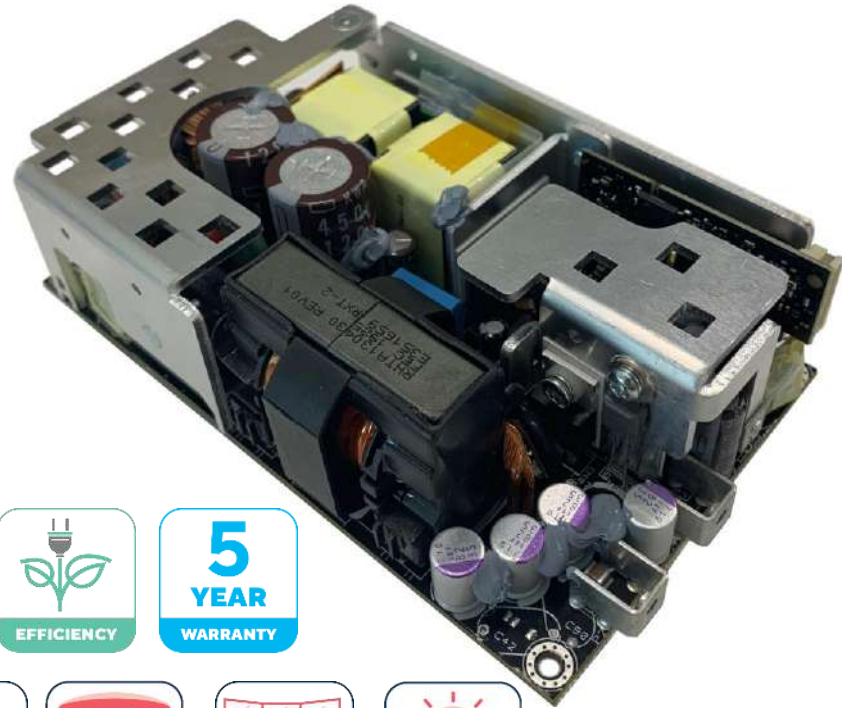


SC – Sealed Potted Conduction / Convection Cooling



- Universal input voltage range (85 – 264 VAC)
- **Active PFC, EN 61000-3-2 Class D, C (>25% load) compliant**
- Steady 400 W output power (440 W peak)
- **High efficiency (94% typical)**
- **Low stand by power consumption (<0.5 W)**
- 12, 24, 28, 36, 48 VDC standard output voltages
- +5V stand by, 2 A and 12 V auxiliary, 1 A outputs
- Low earth/touch leakage currents (<300/100 μ A)
- **Fan speed control function (Fan Off at <50 W)**
- Over temperature, input under voltage, output over voltage, over current and short circuit protection
- Remote On/Off and power good signal
- **6 available 1U packages to best fit and make easier thermal management on system**
- **Sealed potted variant IP67 rated**
- IEC/EN/UL 60950-1 and EN/ANSI/AAMI 60601-1 compliance
- **1.5 kV I-to-PE, 4 kV I-to-O, 1.5 kV (2xMoPP, BF compatible)**
- EN55032, FCC Class B, conducted radiated emissions.
- **EN55024, EN 60601-1-2 4th edition immunity**
- 4000 m operation (medical grade versions included)
- RoHS 3 compliant (Directive EU 2015/863)

- **Universal input voltage range (90 – 305 V_{AC})**
- Input surge current limiting (< 20 A)
- **330 W at natural convection 460 W forced air cooling ratings**
- Open frame, 3 x 5" industrial standard foot print
- **High efficiency up to 94.5%**
- 12, 24, 36, 48 and 56 V_{DC} standard output voltages
- **Low stand-by consumption (<0.35 W)**
- **Active PFC, EN61000-3-2 compliant (Class C, >20% load)**
- Low earth / touch leakage current (<250 / 100 μA)
- Over temperature, OV, OC and SC protections.
- Stand by +5 V, 1 A output
- Remote On / Off signal, Power good and remote sense signals
- IT / Industrial IEC 62368-1 2nd edition compliant
- Medical safety approval to IEC 60601-1 3rd edition, 2x MoPP rated and BF appliances compatible.
- IEC 60601-1-2 4th edition EMC compliant
- **LED lighting safety approval to UL8750**
- **Design compatible with House Hold Appliance IEC 60335-1/61558-1 safety standard**
- Medical version compatible with 5000 m altitude operation





CE (D) cUL[®]US



- ✓ 24, 28, 36 and 48 V_{DC} Standard
- ✓ 52 V_{DC} L-Chassis Low leakage



- ✓ **Universal input voltage range (85 – 305 VAC)**
- ✓ Low input inrush current (limited at 30 A worst operating conditions)
- ✓ **800 W peak power (up to 10 s)**
- ✓ High efficiency up to 94% at typical working conditions
- ✓ 24, 28, 36 and 48 V_{DC} standard output voltages
- ✓ **Low stand-by consumption (<0.35 W)**
- ✓ **Active PFC, EN61000-3-2 compliant (Class C, >25% load).**
- ✓ Low earth / touch leakage current
- ✓ Fan speed control circuit
- ✓ Over temperature, OV, OC and SC protections.
- ✓ Stand by +5 V, 1.5 A and auxiliary / fan 12 VDC, 1 A outputs.
- ✓ Built-in current share signal for parallel operation
- ✓ Remote On / Off signal
- ✓ Power good and remote sense signals
- ✓ U-chassis and enclosed packages fit 1U applications
- ✓ Medical safety approval to IEC 60601-1 3rd edition, including Risk Management Assessment, 2x MoPP rated and BF appliances compatible.
- ✓ IEC 60601-1-2 4th edition EMC compliant.
- ✓ **LED lighting safety approval to UL8750**
- ✓ RoHS 3 compliant (EU 2015/863)
- ✓ Medical version compatible with 4000 m altitude operation



AUDIO-VIDEO-IT



STAGE LIGHTING



WALL-DISPLAY



MEDICAL

Suitable for use in Harsh Environment:

- UV Resistant I/O Cabling
- IP66, 67, 68 Ingress Protection Ratings

800 W peak Power for 10 seconds

- ✓ 24 and 48 V_{DC} Available Output Voltages
- ✓ 28, 36, 52 V_{DC} Available Upon Business Case Assessment

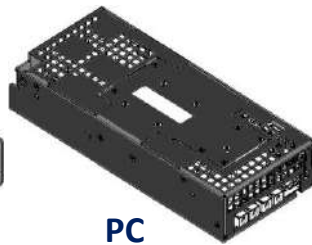
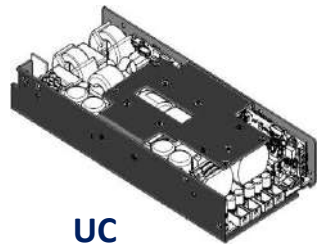


- **Sealed enclosure, IP66/67/68 Ingress Protection grade compliance**
- High efficiency (94% from 50% to max load)
- **Low stand-by power consumption (< 0.3 W)**
- **Universal input voltage range (85 – 305 V_{AC})**
- Input inrush current limiting (<30 A)
- **800 W peak power (up to 10 s)**
- **Active PFC, EN61000-3-2 compliant (Class C, >25% load)**
- Low earth / touch leakage current
- Over temperature, OV, OC and SC protections.
- Stand by +5 V, 1.5 A output.
- Remote On / Off signal
- **Medical safety approval to IEC 60601-1 3rd edition, 2xMoPP protection grade BF appliances compatible.**
- IEC 60601-1-2 4th edition EMC compliant.
- 5000 m operation altitude
- LED lighting safety approval to UL8750
- RoHS 3 compliant (Directive EU 2015/863)

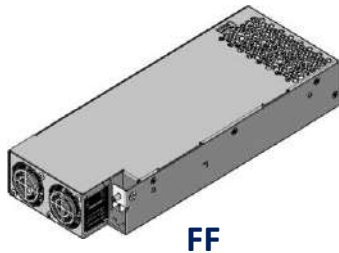
- ✓ 24, 48 V_{DC} Available Output Voltages
- ✓ Support PMBus communication protocol



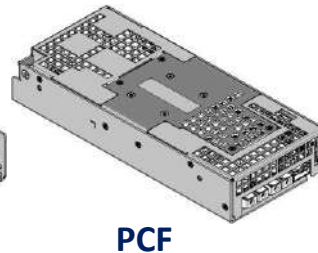
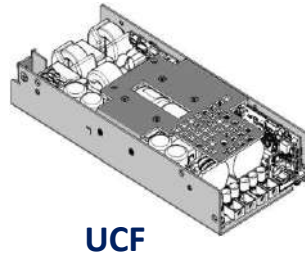
U-Chassis / Enclosed Natural Convection Cooling



Enclosed Built in Fan



U-Chassis/Enclosed Forced Air Cooling



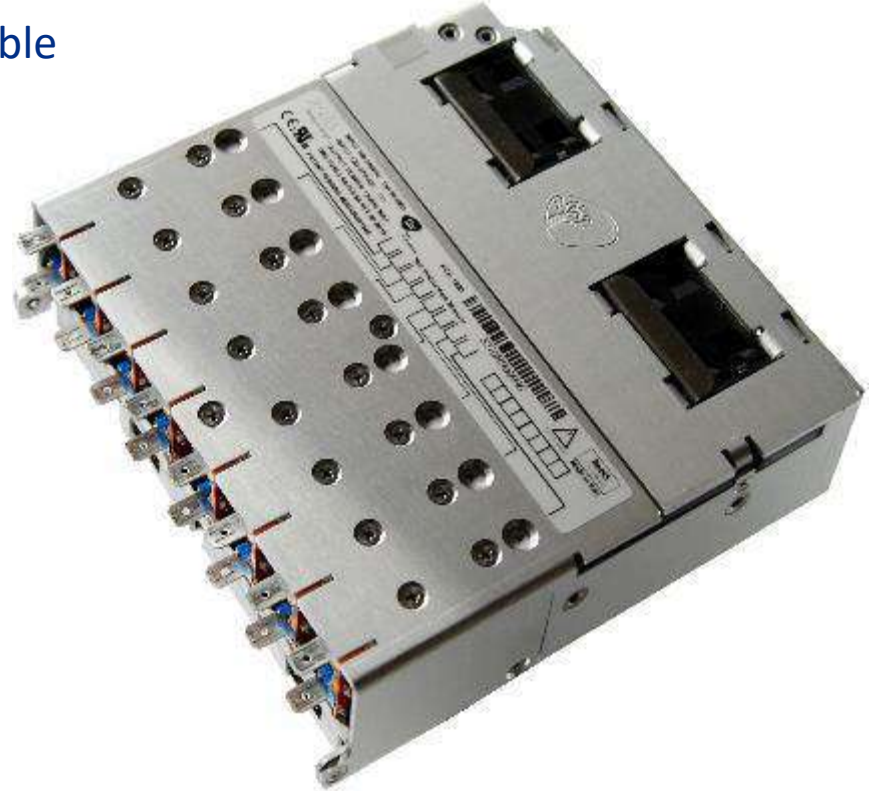
- **Universal input voltage range (85 – 305 V_{AC})**
- 1200 W rated power (FF, PCF, UCF variants)
- Input inrush current limiting (<30 A at 230 V_{AC})
- **750 W rated power at free air cooling (UC, PC)**
- **High efficiency up to 94%**
- Single 24 and 48 V_{DC} output voltage available
- **Active PFC, EN61000-3-2 compliant (Class C, >25% load).**
- Low earth / touch leakage current (<300 µA, <100 µA)
- Over temperature, OV, OC and SC protections
- Fan speed control function (-FF variant)
- +12 V, 0.5 A; +5 V, 1 A Stand by outputs.
- **Built-in current sharing and OR-ing for parallel and N+1 redundancy operation**
- Remote On / Off signal, Power Good and remote sense signals
- All packages fits 1U applications
- **ITE safety approval to IEC 62368-1 and LED Lighting approval to UL8750**
- Medical IEC 60601-1 3rd ed., 2x MoPP rated and BF compatible (IEC 60601-1-2 4th edition EMC compliant)
- RoHS 3 compliant (Directive EU 2015/863)
- 5000 m altitude operation (ITE), 4000 m (ME)
- Built in DSP for optimal signal and power management
- **PMBus digital power-management protocol for set up and monitoring**



DDP/MDP1200 Series Development Status at Wk.3-2020

Model	Design Development Status	ITE Approval	LED Lighting Approval	Medical E Approval	Readiness to sampling	Released for Production	Readiness to Market	Stock availability
DDP1200-US24-FF	Completed	Certified	certified	NA	Yes	Yes	Yes	Yes
MDP1200-US24-FF	Completed	NA	NA	Certified	Yes	Yes	Yes	Yes
DDP1200-US24-UCF	Completed	Certified	certified	NA	Yes	Yes	Yes	Yes
MDP1200-US24-UCF	Completed	NA	NA	Certified	Yes	Yes	Yes	Yes
DDP1200-US24-PCF	Completed	Certified	certified	NA	Yes	Yes	Yes	Yes
MDP1200-US24-PCF	Completed	NA	NA	Certified	Yes	Yes	Yes	Yes
DDP1200-US24-UC	DVT phase	Certified	Certified	NA	Upon Business Evaluation	NO	NO	NO
MDP1200-US24-UC	DVT phase	NA	NA	Certified	Upon Business Evaluation	NO	NO	NO
DDP1200-US24-PC	On hold	Certified	Certified	NA	Upon Business Evaluation	NO	NO	NO
MDP1200-US24-PC	On hold	NA	NA	Certified	Upon Business Evaluation	NO	NO	NO
DDP1200-US48-FF	Completed	Certified	Certified	NA	Upon Business Evaluation	Yes	Yes	Yes
MDP1200-US48-FF	Completed	NA	NA	Certified	Upon Business Evaluation	Yes	Yes	Yes
DDP1200-US48-UCF	On hold	-	-	NA	Upon Business Evaluation	NO	NO	NO
MDP1200-US48-UCF	On hold	NA	NA	-	Upon Business Evaluation	NO	NO	NO
DDP1200-US48-PCF	On hold	-	-	NA	Upon Business Evaluation	NO	NO	NO
MDP1200-US48-PCF	On hold	NA	NA	-	Upon Business Evaluation	NO	NO	NO
DDP1200-US24-UC	Progressing	-	-	NA	Upon Business Evaluation	NO	NO	NO
MDP1200-US24-UC	Progressing	NA	NA	-	Upon Business Evaluation	NO	NO	NO
DDP1200-US24-PC	Progressing	-	-	NA	Upon Business Evaluation	NO	NO	NO
MDP1200-US24-PC	Progressing	NA	NA	-	Upon Business Evaluation	NO	NO	NO

Modular and Configurable
AC-to-DC SMPS



Input / Output Ratings
 INPUT 100-240VAC 50-60Hz
 INPUT 120-370VDC
 OUTPUT POWER 600W MAX
 6.5A (Fuse 8A) REV XX

Product Engineering Level
 REV XX

RCB600

Order Coding: ZZZVSWWYYXXXXXX

- ZZZ: Engineering Code (340)
- V: Model Grade: M-Medical, R-Industrial
- S: Manufacturing Plant: E-Italy, T-Tunisia
- WWYY: Manufacturing Week Year (i.e. 1413)
- XXXXXX: Progressive Serial Number

Grades:
R Industrial Grade
M Medical Grade

Output Ratings:

- A: 5V, 1.5 - 7.5V, 125W, 25A, 9.5V OV, 27.5A OC
- B: 12V, 4.5 - 15V, 150W, 15A, 17V OV, 16.5A OC
- C: 24V, 9 - 30V, 150W, 7.5A, 32V OV, 8.25A OC
- D: 48V, 18 - 58V, 150W, 3.75A, 66V OV, 4.12A OC
- W: 2x 12V, 3.3 - 15V, 2x 75W, 2x 5A, 20V OV, 5.25A OC
- Z: 2x 24V, 15 - 40V, 2x 75W, 2x 3.13A, 45V OV, 3.3A OC
- O: Unused slot. Slot cover bracket fitted at factory or configuration center

Input / Output Ratings
 INPUT 100-240VAC 13A 50-60Hz
 INPUT 120-370VDC
 OUTPUT POWER 1200W MAX
 TWO FUSES RATED 8A REV XX WWYY

Product Engineering Level
 REV XX

RCB1200

Order Coding: ZZZVSWWYYXXXXXX

- ZZZ: Engineering Code (327)
- V: Model Grade: M-Medical, R-Industrial
- S: Manufacturing Plant: R-Roal
- WWYY: Manufacturing Week Year (i.e. 1413)
- XXXXXX: Progressive Serial Number

Grades:
R Industrial Grade
M Medical Grade

Output Ratings:

- A: 5V, 1.5 - 7.5V, 125W, 25A, 9.5V OV, 27.5A OC
- B: 12V, 4.5 - 15V, 150W, 15A, 17V OV, 16.5A OC
- C: 24V, 9 - 30V, 150W, 7.5A, 32V OV, 8.25A OC
- D: 48V, 18 - 58V, 150W, 3.75A, 66V OV, 4.12A OC
- W: 2x 12V, 3.3 - 15V, 2x 75W, 2x 5A, 20V OV, 5.25A OC
- Z: 2x 24V, 15 - 40V, 2x 75W, 2x 3.13A, 45V OV, 3.3A OC
- O: Unused slot. Slot cover bracket fitted at factory or configuration center

COMPACT

3 x 5,6 x 1,6 in form factor, 600 g

600 W rated power



21,6 W/in³, 1 w / 1 g

FLEXIBLE

5, 12, 24, 48, 2x12, 2x24 V Modules

Wide output voltage adjustability

Series and parallel operations

Field configurable



1,5 to 232 VDC, 0 to 100 A

CONTROLLABLE - MONITORABLE

Output voltage manual and remote control

Cooling built-in fan speed automatic control

Output current monitor/control/sharing

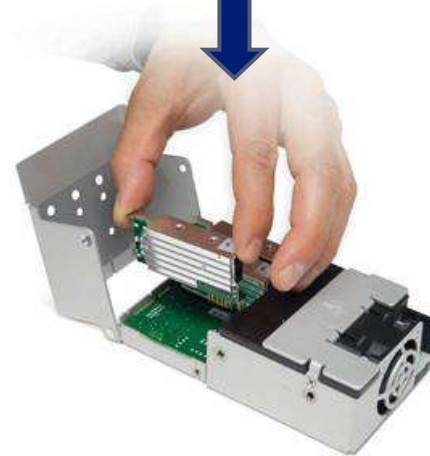
Outputs Power-Good and power unit AC-Good signals

Outputs individual and common inhibit

Extended output voltage through Serial Tracker



FIELD CONFIGURABLE



- ✓ Universal input voltage range (85 – 264 V_{AC})
- ✓ Low earth leakage current
- ✓ Low input inrush current (limited at 20 A worst operating conditions)
- ✓ **Steady 600W output power available in a 3x5x1.6" form factor (23W/in³)**
- ✓ **Four (4) slots configurable for up to eight (8) or (16) outputs**
- ✓ **Extended output voltage control range through Serial Tracker**
- ✓ Output modules series and parallel operation
- ✓ Accurate wired current share among paralleled modules
- ✓ **Remote output voltage programming / control**
- ✓ **Remote output current programming / control**
- ✓ Output current monitoring signal
- ✓ (+) and (-) sense terminal for each output module
- ✓ Output modules +5V, 10mA bias supply
- ✓ **Remote single slot or simultaneous inhibit signals**
- ✓ Power chassis +5V, 200mA bias supply
- ✓ AC good signal
- ✓ Power good signal for each slot
- ✓ Over temperature, OV, OC and SC protections for quiet operation
- ✓ Fan speed control function
- ✓ EN55011, EN55032, FCC Class B, conducted radiated emissions
- ✓ Medical safety approval to IEC 60601-1 3rd edition, 1xMoPP Input to PE and 2x MoPP primary to secondary
- ✓ Medical version 4000 m altitude operation
- ✓ IEC 60601-1-2 4th edition EMC compliant
- ✓ High Power Factor and Reduced Harmonic Content (THD <20%, 61000-3-2)



6X Power Limited Sources (NEC Class 2)



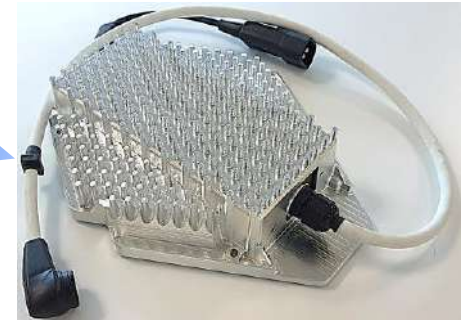
IEC Class II



249 – 528 V_{AC}



**12 V_{DC} Output
90 – 305 V_{AC} Input**



**12 V_{DC} Output
90 – 305 V_{AC} Input**



52 V_{DC}
90 – 305 V_{AC}
Hi Dynamic
Low Leakage



External PS

12 V_{DC} Output
90 – 305 V_{AC} Input



IP66, 67, 68
480 W up to 60 °C T_{AMB}



Thank you for your attention and contribution