MU425S

425W Single Output
Medical Power Supply



Features

- 3.3” x 6.2” x 1.62” Package
- Up to 425W of Air-Cooled Power, 300W Convection
- Universal Input 90-264Vac Input Range
- 5V at 2A Standby Output
- 12V Fan Output
- Inhibit, Power Fail, DC OK Signals, Remote Sense
- Approved to CSA/EN/IEC/UL60601-1, 3rd Edition
  2 MOPP Isolation
- Meets EN61000-4-2, EN61000-4-3 and EN61000-4-6
  Requirements for Home Healthcare Applications
- Efficiency 88% typical
- 3-Year Warranty
- RoHS Compliant

Description

The MU425 family is designed to power the latest professional healthcare devices. All models meet 2 MOPP input-to-output isolation. Models are available with main output voltages of 12V, 18V, 24V and 48V.

Model Selection

Model Number	Volts	Output Current w/200LFM air[1]	Output Current Convection[2]	Ripple & Noise[3] (mV pk-pk)	Total Regulation	Efficiency[4] (Main Output)	OVP Threshold
MU425S12E	12V 5Vsb 12V Fan[6]	32.2A 2.0A 1.0A	22.0A 2.0A 0.5A	120mV 100mV 360mV	±3% ±5% ±10%[5]	88%	14.0 ± 1.1V 5.5V – 8.0V N/A
MU425S18E	18V 5Vsb 12V Fan[6]	21.45A 2.0A 1.0A	14.6A 2.0A 0.5A	180mV 100mV 360mV	±3% ±5% ±10%[5]	88%	21.0 ± 2.0V 5.5V – 8.0V N/A
MU425S24E	24V 5Vsb 12V Fan[6]	16.8A 2.0A 1.0A	11.9A 2.0A 0.5A	240mV 100mV 360mV	±3% ±5% ±10%[5]	90%	28.0 ± 2.5V 5.5V – 8.0V N/A
MU425S48E	48V 5Vsb 12V Fan[6]	8.4A 2.0A 1.0A	5.9A 2.0A 0.5A	480mV 100mV 360mV	±3% ±5% ±10%[5]	90%	58.0 ± 2.0V 5.5V – 8.0V N/A

Notes:
1. Total power with 200 lfm of forced air cooling is 425W (408W for 18V, 385W for 12V) including 12V/1A for Fan output and 5V/2A standby.
2. Total convection power is 300W (280W for 12V model). Total power includes 5Vsb and Fan outputs.
3. Measured at 25°C ambient with noise probe directly at end of 6” twisted pair terminated with 0.1µF ceramic and 10µF low ESR capacitors. Values will be higher at ambient temperatures below 0°C.
4. Efficiency values listed are typical and are measured at 115Vac input, full load output current, at an ambient temperature of 25°C.
5. Fan output regulation is with 1A min load on main output.
6. Fan Output: If the load on the output is other than a fan, a short circuit condition on the output can only be remedied by removing both the cause of the short circuit and the load. This will allow the output to resume normal operation.

General Specifications

AC Input	100-240Vac, ±10%, 47-63Hz, 1∅ 120–300Vdc (external fuse required for DC input)	**Turn On Time (Main Output)**	Main output: <1 sec. max @115Vac, rise time 30mS max. 5Vsb turn-on time is 500mS max., rise time 50mS max. Output Voltage rise is monotonic.
Input Current	115Vac: 5.2A, 230Vac: 2.5A	**Hold-up Time**	Main Output: >20ms for 300W @ 120Vac/60 Hz, >16ms for 367W (90% of 408W) @ 120v/60Hz. 5Vsb Output: >500mS
Inrush Current	264Vac, cold start: will not exceed 40Arms within ½ cycle. $I^2T = 25A^2$/Sec maximum	**Overtemperature Protection**	Sensing transformer temperature, 135°C (55°C ambient temperature at full load), auto recovery.
Input Fuses	F1, F2: 6.3A, 250Vac	**Overload Protection**	130 to 170% of rating, Hiccup Mode, auto-recovery.
Efficiency	See chart above.	**Switching Frequency**	75kHz, typical

General Specifications (continued)

Leakage Current	Earth: <750µA@264Vac, 60Hz, NC <1.5mA@264Vac, SFC Touch: <100uA @264Vac, NC <500uA @264Vac, SFC	**Short Circuit Protection**	Main Output & 5Vsb: Cycling type, auto recovery. Fan Output: Recovery only after removal of short and load. See note 5 above.
Power Factor	>0.99 @ 115Vac, Full Load >0.95 @ 230Vac, Full Load	**Overvoltage Protection**	OVP latch, see chart for trip ranges. 5V standby output (latch), see chart for trip range.
Output Power	425W continuous (24V model), with 200 lfm airflow. 408W for 18V, 385W for 12V models. 300W convection cooled (280W for 12V model)	**Isolation**	Input-Output: 2 MOPP Input-Ground: 1 MOPP Output-Ground: 1500Vdc
Transient Response	50% load step, $\Delta i/\Delta t$: <0.2A/µS. Max Voltage Deviation = 5%. Recover to within 1% of nominal within 500µS	**Operating Temperature**	-10 to 70°C. Starts up- 40°C. The unit will meet all published specifications after a warm-up period
Ripple and Noise	0.5%rms, 1% pk-pk, see chart on page 1.	**Temperature Derating**	Derate output power linearly above 50°C to 50% at 70°C
Common Mode Noise	Line Frequency: <2.5Vrms @115Vac, <5Vrms@ 230Vac, 50/60Hz. For high frequency noise and/or test set-up information, consult SL Power.	**Storage Temperature**	-40°C to +85°C
Output Voltage	See chart on page 1. Initial setpoint within 0.5% of nominal. Adjustable +/-5% from nominal.	**Altitude**	Operating: up to 5000m (derating may be required above 3000m, consult factory) Non-operating: -500 to 40,000 ft.
Minimum Load	Not required for main output or 5Vsb. 12V Fan output requires minimum load of 0.5A on main output in order to be within its regulation band	**Relative Humidity**	5% to 95%, non-condensing
Total Regulation	See chart on page 1.	**Shock**	Operating: Half-sine, 20gpk, 10ms, 3 axes, 6 shocks total. Non-Operating: Half-sine, 40 gpk, 10 ms, 3 axes, 6 shocks total
Vibration	Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis. Non-Operating: 0.026g2/Hz, 5.0grms overall, 3 axes, 1 hr/axis	**Safety Standards**	EN/CSA/UL/IEC 60601-1, 3rd Edition
Dimensions	W: 3.3" x L: 6.2" x H: 1.62" W: 84mm x L: 157.5mm x H: 41mm	**MTBF**	356,330 hours, per Telcordia 332, Issue 6, 25°C, full rated load (w/airflow) at 110Vac input.
Weight	670g	**E-Cap Life**	7 years, based on typical operation of 12 hours/day, 261 days/year at 40°C ambient temp.

Auxiliary Signals

Power Good/ Power Fail:	Signal is HIGH within 500mS after the main output is within regulation band upon AC turn on. Goes LOW within 4mS min. before the main DC output drops to <90% of nominal when AC turns off.	**DC OK:**	Goes HIGH when main DC output is above 90% of nominal voltage and goes LOW when the output is below 90% of rated main output DC voltage
5V Standby Output:	5V @ 2A, +/-5% regulation over all changes in main output load current.	**Fan Output:**	12V@1A (air cooled) or 0.5A (convection), +/-10% regulation for load change of 0.5A to FL on the main output.
Remote Sense:	Compensates for up to 0.16V voltage drop. Max. deviation of 5% (main output) any 50% step above 5% load	**Inhibit:**	Logic HIGH or open = ON Logic LOW or short to ground = OFF

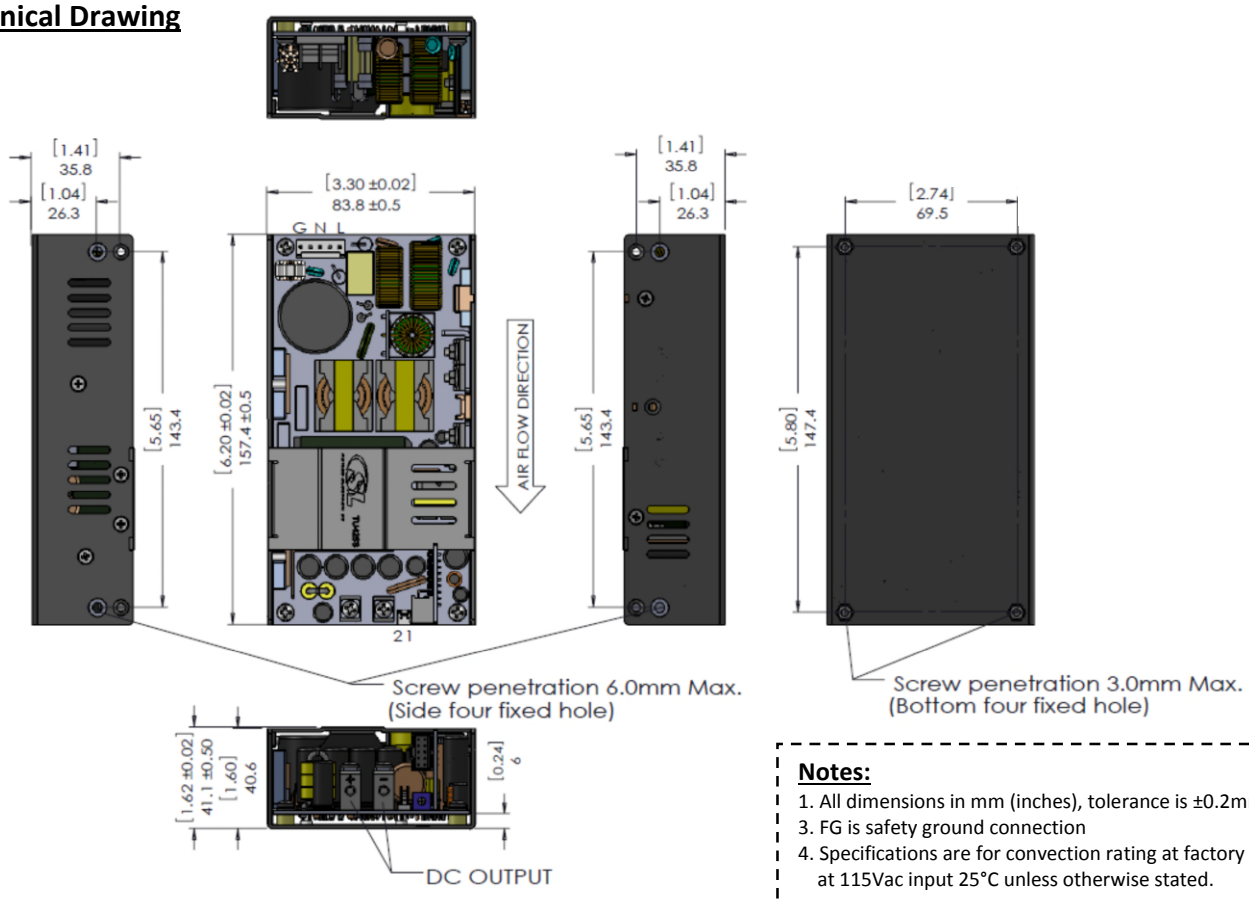
Connector Information

Input Connector J101		Main DC Output J302, J303	Fan Output J301	Signal Connector J401		
PIN 1) FG	PIN 4) NC	Term 1 – J302: (+V)	PIN 1) 12V Fan (+)	PIN 1) Remote Sense (+)	PIN 5) Remote Inhibit	PIN 8) +5Vsb Output
PIN 2) NC	PIN 5) AC Line	Term 2 – J303: (–V)	PIN 2) 12V Fan (–)	PIN 2) Common	PIN 6) Power Good	PIN 9) DC OK
PIN 3) AC Neutral				PIN 3) Remote Sense (–)	PIN 7) +5Vsb Output	PIN 10) Common
				PIN 4) NC		
Mating Connector: Tyco/AMP 640250-5 Pins: 770476-1		Mating Connector: Molex 19141-0058 19141-0063 19141-0083	Mating Connector: Tyco AMP 1375820-2 Pins: 1375819	Mating Connector: Molex 90142-0010 Pins: 90119-2110		

EMI/EMC Compliance

Conducted Emissions	EN55011/CISPR22 Class B, FCC Part 15.107, Class B, 6db margin, typical.
Radiated Emissions	EN55022/CISPR22 Class A, FCC Part 15.109, Class A, 3db margin, typical.
Static Discharge Immunity	EN55024/IEC61000-4-2, Level 4, 8kV Contact Discharge, 15kV air discharge, Criteria A
Radiated RF Immunity	EN55022/IEC61000-4-3, Level 2, 10V/m, 80-2,700 MHz Criteria A
EFT/Burst Immunity	EN55024/IEC61000-4-4, Level 3, 2kV (PS Output), 1kV (signal outputs), Criteria A 100Khz
Line Surge Immunity	EN55024/IEC61000-4-5, Level 3, 1kV diff., 2kV common-mode, Criteria A
Conducted RF Immunity	EN55022/IEC61000-4-6, Level 3, 3Vrms,0.15-80Mhz and 6V@ISM frequency Criteria A
Power Frequency Magnetic Field Immunity	EN55024/IEC61000-4-8, Level 3, 30A/m, Criteria A
Voltage Dip Immunity	EN55024/IEC61000-4-11, Dips: 100%, 10mS, 8 phase angles ; 100%, 20ms; 30%, 500mS; Interruptions: 100%, 5000mS; Performance Criteria A, A (300W), A &B.
Line Harmonic Emissions	EN55024/IEC61000-3-2, Class A & D at full load
Flicker Test	EN55024/IEC61000-3-3, Section 5; 50Hz

Mechanical Drawing



Notes:

1. All dimensions in mm (inches), tolerance is ±0.2mm.
3. FG is safety ground connection
4. Specifications are for convection rating at factory settings at 115Vac input 25°C unless otherwise stated.

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