

Delivering leading edge, innovative power solutions for more than 30 years....

Model:tes\_)of

May 16, 2024

tes\_)of

## Information

Model Number	tes_)of
Description	tes_)of, Household, 60601-1-4th Ed. , Open Frame/Internal, Modular Medical Power Supply, , Input Rating: 90-264Vac (47 – 63Hz), , Output Rating: 225 Watts, Power rating with convection cooling (W) , 12-54V in 0.1V increments, Approvals: China RoHS; EAC; Level VI; RoHS; VCCI; WEEE; Conforms to 62368-1; Ukraine;
Model Picture	
Agency Documents	
CE EC-Declaration	<a href="https://www.globtek.com/pdf/ec_declaration/a0Oa000000Fj0BPEAZ">https://www.globtek.com/pdf/ec_declaration/a0Oa000000Fj0BPEAZ</a>
RoHS/RoHS2 Declaration	<a href="https://www.globtek.com/pdf/rohs_cert/a0Oa000000Fj0BPEAZ">https://www.globtek.com/pdf/rohs_cert/a0Oa000000Fj0BPEAZ</a>
REACH Declaration	<a href="https://www.globtek.com/pdf/iso_certificates/REACH.pdf">https://www.globtek.com/pdf/iso_certificates/REACH.pdf</a>
Conflict Minerals Declaration	<a href="https://www.globtek.com/pdf/conflict-minerals.pdf">https://www.globtek.com/pdf/conflict-minerals.pdf</a>

Delivering leading edge, innovative power solutions for more than **30** years....

Model:tes\_)of

May 16, 2024

**MODEL PARAMETERS**

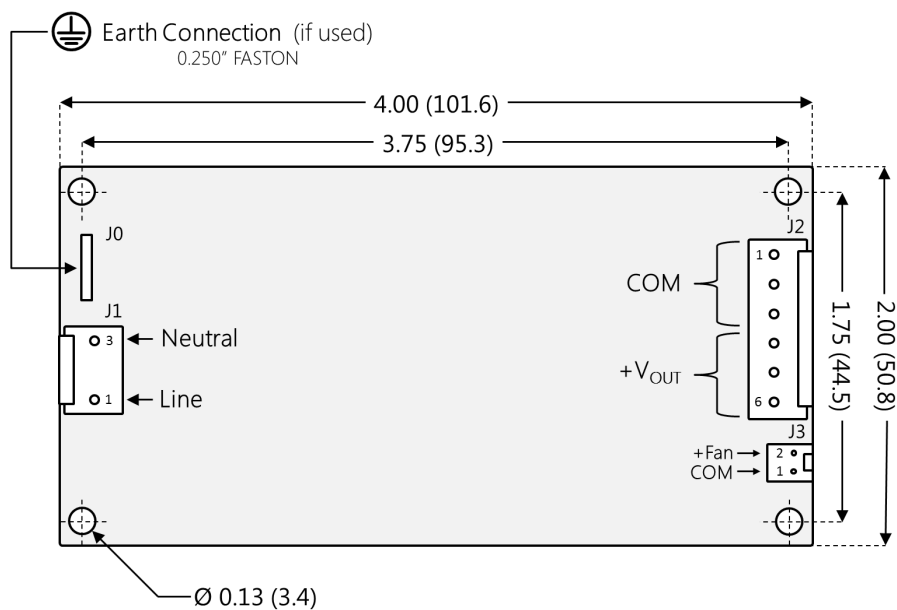
Type	Open Frame/Internal
Technology	Modular Medical Power Supply
Category	Household
Input Voltage	90-264Vac (47 – 63Hz)
I/P Amps (A)	3
Wattage (W)	225.0
Vout Range (V)	12-54
Efficiency Level	VI
Ingress Protection	na
Size (mm)	101.6 (L) x 50.8 (W) x 31.0 (H)

Delivering leading edge, innovative power solutions for more than 30 years....

Model:tes\_)of

May 16, 2024

## ENCLOSURE



Customer may need to provide EMI shielding if not in metal chassis

Delivering leading edge, innovative power solutions for more than **30** years....

Model:tes\_)of

May 16, 2024

## RATING TABLE

Model Number	Voltage	Amps(A)	Watts(W)	RFQ
--------------	---------	---------	----------	-----

Model:tes\_of

May 16, 2024

## SPECIFICATIONS

### Features

- High power density 2" x 4" format (3" x 5" and 4.22" x 7" formats also available)
- 2" x 4" version available in L-frame and cage configurations
- Low conducted & radiated EMI: Class B without external filters, ferrites, or metal planes (all input configurations, into resistive load)
- Class I, Class II, or Class II with Functional Earth input configurations
- ITE/ICT and medical (2 x MOPP) certified
- Auxiliary +12V output

### Input

Input Voltage:	Specified: 85-264VAC, Nameplate: 100-240VAC
Input Frequency:	Specified: 47-63Hz, Nameplate: 50-60Hz
Input Current:	2.75A typ. @ 85VAC, 1.0A typ. @ 230VAC (full load)
No Load Input Power:	<150mW
Inrush Current:	<75A @ 230VAC (cold start @ 25°C)
Efficiency:	90 - 95% typ. (full load)
Power Factor:	>0.95 @ 115VAC, >0.90 @ 230VAC, 225W output >0.90 @ 115VAC, >0.85 @ 230VAC, 100W output

### Output

Output Power:	225W (10CFM forced air) 140W (natural convection) Ratings are inclusive of aux output power
Turn-on Delay:	< 1 second @ 85VAC
Output Voltage Tolerance:	± 2.0% (worst case, set point + load/line regulation)
Load Regulation:	± 0.5% (measured at connector)
Line Regulation:	± 0.2% (measured at connector)
Ripple:	1% pk-pk (using a 47µF low-ESR cap + 0.1µF ceramic capacitor, measured @ 20MHz BW)
Transient Response:	<5% deviation (with 25% load step), recovery to within 1% in 1ms
Startup Overshoot:	<5% (full load)
Hold-up Time:	10ms min. (full load)
	12V ± 2V (10V min. / 14V max.), for $0A \leq I_{Aux} \leq 1.2A$
Aux Output Voltage Regulation:	Aux regulation guaranteed when main output power ≥ 15% of 225W rating (~34W).  For main output power < 15%, aux output voltage may drop to < 50% of nominal rating, depending on load. For main output = 12V, aux output voltage is same as main output.
	1.2A (10CFM forced air)

Delivering leading edge, innovative power solutions for more than 30 years....

Model:tes\_)of

May 16, 2024

Aux Output Current:	0.8A (natural convection)
Output Indicator:	Green LED
<b>Protections</b>	
Input Protection:	MOV transient suppressor, dual fuses (line + neutral)
Over-Voltage Protection:	110-130%, latched-off, cycle AC to reset
Over-Current Protection:	110-140%, auto-recovery
Short Circuit Protection:	Non-latched with auto-recovery
Over-Temperature Protection:	NTC temperature sensor embedded in transformer, trip between 115 - 120°, latched-off, cyc
<b>Environmental</b>	
MTBF:	1,500,000 hours @ 25°C ambient, full load (Telcordia SR-332, Issue 3)
Operating Temperature:	-20°C to 50°C (full output power), -25°C to 80°C (derated)
Storage Temperature:	-30°C to 85°C
Humidity:	0% to 95% relative humidity, non-condensing
Altitude:	5000m max.
Vibration:	Conforms to EN60068-2-6, ISO80601-2, EN1789
<b>Safety</b>	
Dielectric Withstand Voltage:	4000VAC or 5656VDC from input to output 3000VAC or 4242VDC from input to earth
Touch Current:	3-conductor input - NC: <25µA, SFC: <200µA 2-conductor input - NC: <65µA, SFC: <140µA
Earth Leakage Current	3-conductor input: <200µA 2-conductor input: N/A
Means of Protection:	2 x MOPP
Primary-Secondary Bridging Capacitance:	Two IEC60384-14 certified Y1 capacitors in series
<b>EMC</b>	
Applicable Standards:	Medical: EN60601-1-2, 4th edition Emissions: EN55032, EN 55011, EN61000-6-3, EN61000-6-4, CISPR11/CISPR22 Immunity: EN55024, EN61000-6-1, EN61000-6-2
Conducted Emissions:	Class B, FCC Part 15, Class B (with resistive load)
Radiated Emissions:	Class B, FCC Part 15, Class B (with resistive load)
Harmonic Current Voltage Distortion:	EN61000-3-2, Class A
Voltage Fluctuations/Flicker:	EN61000-3-3
Electrostatic Discharge (ESD) Immunity:	EN61000-4-2, 10KV contact discharge, 20KV air discharge (applied to input or output termin
Radiated RF Immunity:	EN61000-4-3, 20V/m 80-2700MHz, 80% 1KHz AM, 80% 5Hz AM
EFT/Burst Immunity:	EN61000-4-4, 4KV/100kHz.

Delivering leading edge, innovative power solutions for more than 30 years....

Model:tes\_of

May 16, 2024

Line Surge Immunity:	EN61000-4-5, 2KV differential, 4KV common-mode
Conducted RF Immunity:	EN61000-4-6, 3VRMS, (6VRMS in ISM/amateur bands), 80% 1KHz AM
Power Frequency Magnetic Field Immunity:	EN61000-4-8, 30A/m
Voltage Dip Immunity:	EN61000-4-11

## Mechanical Formats

GTM962250P:	Open-frame
	No suffix: 2" x 4" style, 101.6*50.8*30.0mm, 170g
	-C suffix: 3" x 5" style, 127.0*64.8*30.0mm, 180g
	-D suffix: 4.22" x 7" style, 177.8*107.2*30.0mm, 190g
GTM962251P:	L-frame: 103.5*62.3*40.0mm, 230g
GTM962252P:	Cage: 103.5*62.3*40.0mm, 250g
Note 1:	The open-frame format meets the above EMC specifications as a standalone unit. However, help address other system level electrical/mechanical requirements.

## Input/Output Connectors

Earth Terminal (J0):	Connector on PCB: Kang Yang PCH250 (0.250" x 0.031" Faston)
	Recommended mate: TE Connectivity/AMP 2-520184-2
	Note: Leave earth terminal disconnected for Class II input
Input Connector (J1):	Connector on PCB: JST B2P3-VH
	Pin 1: Line, Pin 2: Not used, Pin 3: Neutral
	Recommended mate: JST VAR-2 (housing), JST SVA-41T-P1.1 (terminals)
Main Output Connector (J2):	Connector on PCB: JST B6P-VH
	Pin 1: COM, Pin 2: COM, Pin 3: COM, Pin 4: +VOUT, Pin 5: +VOUT, Pin 6: +VOUT
	Recommended mate: JST VHR-6N (housing), JST SVH-21T-P1.1 (terminals)
Aux Output Connector (J3):	Connector on PCB: Molex 22-04-1021
	Pin 1: COM, Pin 2: +FAN
	Recommended mate: Molex 22-01-1022 (housing), Molex 2759 (terminals)

## Special Options

- Custom labels/markings
- Short term output surge capability
- Reduced touch current
- Reduced output ripple
- Compliance to IPC-600, IPC-610, IPC-6012 Class 2 or 3
- IEC61000-3-2 Class-C line harmonics for LED lighting applications
- Non-latching (auto-recover) over-temperature protection
- Potentiometer to adjust/trim output voltage
- Custom aux output voltages (5V to 12V), available for main output voltages from 12-24V

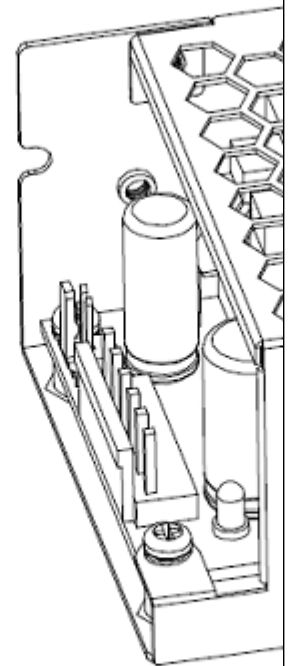
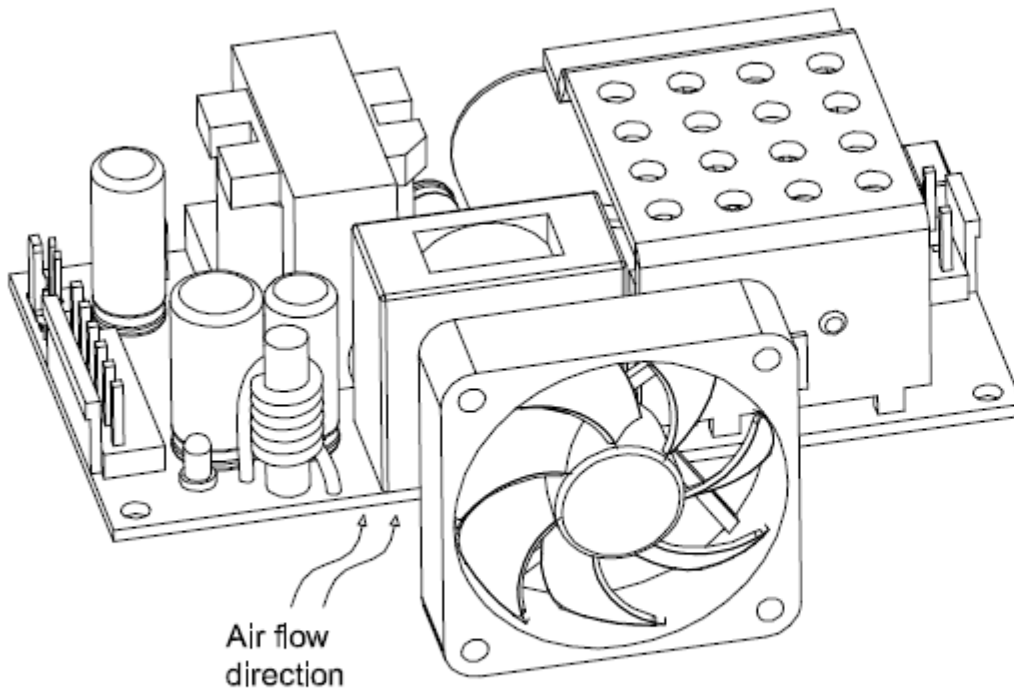
## Fan Airflow

Delivering leading edge, innovative power solutions for more than 30 years....

Model:tes\_of

May 16, 2024

- For full 225W output power, the fan should provide at least 10CFM in the direction noted below.

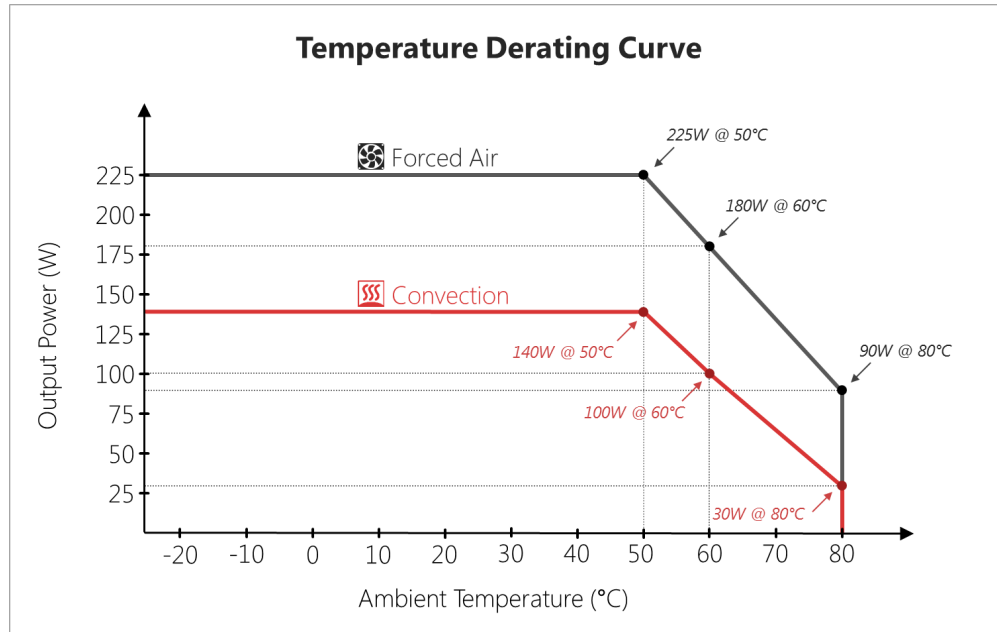




Model:tes\_)of

May 16, 2024

## DERATING CURVE



Delivering leading edge, innovative power solutions for more than **30** years....

Model:tes\_)of

May 16, 2024

## INPUT CONFIGURATION

Description



Optional Input Wiring Kits are available:









PN/Ordering No	Length	End A	End B
<a href="#">C810070M6VAR2(R)</a>	60	IEC 60320 C8	JST VAR-2
<a href="#">C1410070M6VAR2(R)</a>	60	IEC 60320 C13	JST VAR-2
<a href="#">VAR2210070M7VAR2(R)</a>	73	JST VAR-2	JST VAR-2

Custom lengths, construction, cable types, ferrites, filters, and termination available upon request.

Model:tes\_of

May 16, 2024

## Approvals

Logo	Description
	Attention Mark / Refer to operating manual for operating and service instructions
	CHINA SJ/T 11364-2014, China RoHS Chart: <a href="http://www.globtek.com/pdf/F-GT-DJD-8.4.1-006%20China%20RoHS%20Declaration%205-20-22.pdf">http://www.globtek.com/pdf/F-GT-DJD-8.4.1-006%20China%20RoHS%20Declaration%205-20-22.pdf</a>
Conforms to UL STD. 62368-1 Certified to CSA STD C22.2 NO.62368-1	Conforms to UL STD. 62368-1 Certified to CSA STD C22.2 NO.62368-1
	Certification # TC RU AR46.B.75423 Custom Union of Russia, Belarus and Kazakhstan
	Indoor Use Only - Mark is on the label or Molded in the case
EFFICIENCY LEVEL 	Efficiency: complies to section 301 of Energy Independence and Security Act (EISA) complies with Energy Star tier 2 (North America), ECP tier 2 (China), MEPS tier 2 (Australia), Code of Conduct (Europe)
RoHS	Specifications of directive 2011/65/EU Annex VI (ROHS-2) with amendment 2015/863-EU (ROHS-3) <a href="http://www.ce-mark.com/Rohs%20final.pdf">http://www.ce-mark.com/Rohs%20final.pdf</a>
 10276	Ukraine UKR Sepro (Document: <a href="http://www.globtek.com/html/iso_certificates/GT_Ukraine.pdf">www.globtek.com/html/iso_certificates/GT_Ukraine.pdf</a> )
	Japan: Voluntary Control Council for Interference (VCCI)
	WEEE: Complies with EU 2012/19/EU ( <a href="http://ec.europa.eu/environment/waste/weee/index_en.htm">http://ec.europa.eu/environment/waste/weee/index_en.htm</a> ) Mark is on the label or Molded in the case