

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

Model:GTM96605-G2-T2

July 24, 2021

Adaptive USB PD Power Supply/ Quick Charge Charger for Medical Grade and ITE/ICT applications for USB PD 2.0 and USB PD 3.0 Applications T2

Information

Model Number	GTM96605-G2-T2
Description	Communication formats supported: USB Power Delivery (PD) 2.0/3.0, Quick Charge™ 2.0/3.0, Quick Charge™ 4.0/4.0+ with up to 7 voltages and VDM options available. Fully globally certified for Medical 60601-1, ICT 62368

Model Picture



Agency Documents	http://www.globtek.info/certs/GTM96605-GEN2/
CE EC-Declaration	https://www.globtek.com/pdf/ec_declaration/a000c00000PGI8DEAX
RoHS/RoHS2 Declaration	https://www.globtek.com/pdf/rohs_cert/a000c00000PGI8DEAX
REACH Declaration	https://www.globtek.com/pdf/iso_certificates/REACH.pdf
Conflict Minerals Declaration	https://www.globtek.com/pdf/conflict-minerals.pdf

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MODEL PARAMETERS

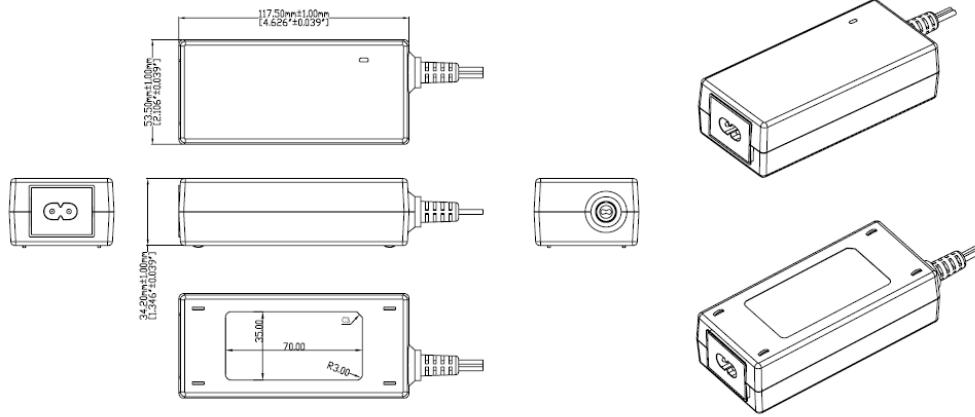
Type	Desktop/External
Technology	USB Adaptive Power Supply AC Adaptor
Category	USB Power Delivery (PD) Source, ICT/ITE/Medical
Input Voltage	100-240V~, 50-60Hz
I/P Amps (A)	1.5A
Wattage (W)	60.0
Vout Range (V)	3.6-20
Efficiency Level	USA DOE Level VI / Eco-design Directive 2009/125/EC, (EU) 2019/1782
Ingress Protection	
Size (mm)	

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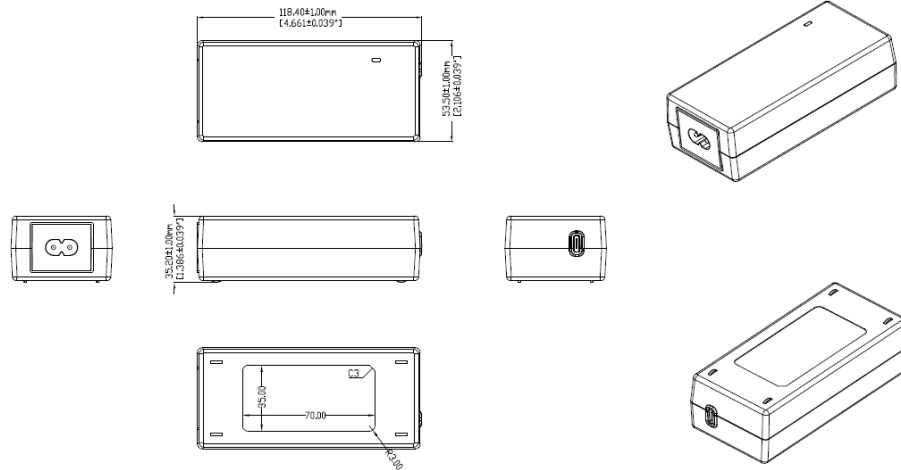
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ENCLOSURE



Drawing above is model with output cord



Drawing above is model with integrated USBC connector (suffix -RA)

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RATING TABLE

Model Number	Voltage	Amps(A)	Watts(W)	RFQ
GTM96605-G2A1-T2	V			RFQ
GTM96605-G2A1-T2-RA	V			RFQ
GTM96605-G2A1-T2(PPS)	V			RFQ
GTM96605-G2A1-T2-RA(PPS)	V			RFQ

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SPECIFICATIONS

USB Power Delivery Capabilities

Protocols supported:	USB Power Delivery (PD) 2.0/3.0 + PPS
Default Output State:	5V/2.0A
Advertised Power Data Objects (PDOs):	Standard option: 5V, 5.8V, 9V, 12V, 15V, 15.1V [†] , 20V PPS option: 5V, 9V, 15V, 20V, PPS (3.6-11V), PPS (3.6-16V), PPS (3.6-20V)
	Refer to the 'Rating Table' for output current capability for each USB PD PDO.
Output Current:	Models with -RA suffix have a female USB Type-C connector for use with a detachable USB Type-C cable. If no E-marked cable is detected, the maximum current is limited to 3A. Models without a suffix have a captive 5A rated cable and can always deliver the full current per the 'Rating Table'.
Note 1:	Custom fixed PDOs available upon request. PDO1 must be 5V. PDO2 through PDO7 may be set to any custom voltage from 3.6V to 20V, with a step size of 100mV.
Note 2:	In critical applications, the use of a non-authorized USB PD power supply may pose a substantial risk. Power supply authorization may be implemented using USB PD Vendor Defined Messages (VDMs) to prevent system operation with non-authorized power sources. ^{††} Please see our article Product Security and Risk Mitigation for USB Power Delivery (PD) Based Systems for additional information.

Qualcomm Quick Charge™ Capabilities

Protocols supported:	Quick Charge™ 2.0/3.0																		
Default Output State:	5V/2.0A																		
HVDCP Class B Profiles:	<table border="1"> <thead> <tr> <th>D+</th> <th>D-</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>0.6V</td> <td>GND</td> <td>5.0V/4.6A</td> </tr> <tr> <td>3.3V</td> <td>0.6V</td> <td>9.0V/4.4A</td> </tr> <tr> <td>0.6V</td> <td>0.6V</td> <td>12V/4.0A</td> </tr> <tr> <td>3.3V</td> <td>3.3V</td> <td>20V/3.0A</td> </tr> <tr> <td>0.6V</td> <td>3.3V</td> <td>Continuous mode. Adjust from 3.6V to 20V in 200mV steps.</td> </tr> </tbody> </table>	D+	D-	Output	0.6V	GND	5.0V/4.6A	3.3V	0.6V	9.0V/4.4A	0.6V	0.6V	12V/4.0A	3.3V	3.3V	20V/3.0A	0.6V	3.3V	Continuous mode. Adjust from 3.6V to 20V in 200mV steps.
D+	D-	Output																	
0.6V	GND	5.0V/4.6A																	
3.3V	0.6V	9.0V/4.4A																	
0.6V	0.6V	12V/4.0A																	
3.3V	3.3V	20V/3.0A																	
0.6V	3.3V	Continuous mode. Adjust from 3.6V to 20V in 200mV steps.																	
Output Current:	Models with -RA suffix are limited to 3A, as Quick Charge does not support USB PD E-marked cables. Models without a suffix can deliver full rated Quick Charge current.																		

Input

Specified: 90-264VAC, Nameplate: 100-240VAC

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Input Voltage:	100% rated load current for 90-264VAC 85% rated load current for 85-264VAC 100% rated load current for 110-370VDC
Input Frequency:	Specified: 47-63Hz, Nameplate: 50-60Hz
No Load Input Power:	< 75mW @ 230VAC (EU CoC Tier 2 compliant)
Inrush Current:	< 30A @ 115VAC, < 60A @ 230VAC (cold start)
Efficiency:	DoE Efficiency Level VI and CoC Tier 2 compliant (tested according to DoE 10 CFR Part 430, Subpart B, Appendix Z)

Output

Turn-on Delay:	< 1 second (full load, 115VAC)
Output Regulation	± 4% max. (measured at the end of output cord)
Line Regulation:	± 0.5% typ. (measured at the end of output cord)
Ripple:	100mV max. (using a 47µF low-ESR electrolytic cap + 0.1µF ceramic cap, measured @ 20MHz BW, at the output connector)
Transient Response:	5% max. deviation, 1ms max. recovery time (with 40 to 70% load step),
Hold-up Time:	8ms typ. (full load, nominal line voltage)
Power Indicator:	Green LED

Protections

Input Protection:	MOV transient suppressor, input line fusing
Over-Voltage Protection:	Level 1: 110-130%, Auto-recovery, adaptive to selected PDO/QC profile Level 2: 25V (max), Latched off, cycle AC to reset
Over-Current Protection:	110-135%, Auto-recovery, adaptive to selected PDO/QC profile
Short-Circuit Protection:	Auto-recovery
Over-Temperature Protection:	Auto-recovery

Environmental

MTBF:	1,500,000 hours @ 25°C ambient, full load (Telcordia SR-332, Issue 3)
Operating Temperature:	-10°C to 40°C (full load) -10°C to 50°C (80% load)
Storage Temperature:	-30°C to 80°C
Humidity:	0% to 95% relative humidity, non-condensing
Altitude	5000m
Cooling:	Convection
RoHS:	Complies with EU 2011/65/EU and China SJ/T 11363-2006

Safety

Dielectric Withstand Voltage:	4000VAC or 5656VDC from input to output
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Touch Current:	3-conductor models: 20µA max. 2-conductor models: 65µA max.
Earth Leakage Current	300µA max. NC/SFC (N/A for 2-conductor input models)
Means of Protection:	2 x MOPP
Output Isolation Options:	-T2/R2 suffix: Class II 2-conductor (C8/C18 inlet or interchangeable blades) -T3/R3 suffix: Class II, with functional earth (FE) (C6/C14 inlet or interchangeable blades) Class I, earth wire connected directly to output negative (C6/C14 inlet or interchangeable blades)
Note 3:	Review output isolation options with our article: PSU Isolation and Identify

EMC

Applicable Standards:	Medical: EN 60601-1-2 (4e) Emissions: EN55032, EN61000-6-3, EN61000-6-4 Immunity: EN55024, EN61000-6-1 (4e), EN61000-6-2 (4e)
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, 18KV air discharge, Criterion A
Radiated RF Immunity:	EN61000-4-3, 10V/m @ 80-1000MHz, 3V/m @ 1-2.7GHz, 80% 1KHz AM, Criterion A
EFT/Burst Immunity:	EN61000-4-4, 2KV/100KHz., Criterion A; 4KV/100KHz, Criterion B
Line Surge Immunity:	EN61000-4-5, 2KV differential, 2KV common-mode, Criterion A; 4KV common-mode, Criterion B
Conducted RF Immunity:	EN61000-4-6, 3VRMS, 80% 1KHz AM, Criterion A
Power Frequency Magnetic Field Immunity:	EN61000-4-8, 30A/m, Criterion A
Voltage Dip Immunity:	EN61000-4-11, Criterion B

Enclosure

Housing:	High impact plastic, 94V0 polycarbonate, non-vented Desktop T2/T3: C6, C8, C14, or C18 IEC inlet Hybrid (desktop or wall plug-in): Class I or Class II input
Markings:	No suffix: Captive 1.5m shielded USB Type-C cable -RA suffix: Female USB Type-C connector integrated into housing Adhesive backed label or laser engraving

Security

The standard model includes two non-standard PD profiles: 5.8V and 15.1V. System designers may use these non-standard profiles to reduce the likelihood of system operation with non-GlobTek power supplies. Note: 12.0V is also not standard, but is often included in other power supplies.

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USB Power Delivery:

The power supply will respond to a USB PD "Discover Identity" VDM with 0x4754 in the "ProductID" field. USB PD host systems may check this value before initiating/allowing power negotiation.

Note 4:

These measures do not guarantee a secure implementation, and are only suggested as a method of risk mitigation.

Note 5:

Please see our article [Product Security and Risk Mitigation for USB Power Delivery \(PD\) Based Systems](#) for additional information.

Special Options

Non-standard - Contact GlobTek

1. Custom housing and output cord colors
2. Custom fixed output cord length, for applicable models (1m, 2m, 3m lengths,etc.)
3. Custom markings and marking methods
4. Custom USB PD PDOs: Output voltages selectable between 5V and 20V, in 100mV increments
5. USB Micro-B connector for Quick Charge™-only applications
6. Quick Charge™ 4.0/4.0+ support

† 15.1V PDO is standard on units with date codes after Sept-10-2019.

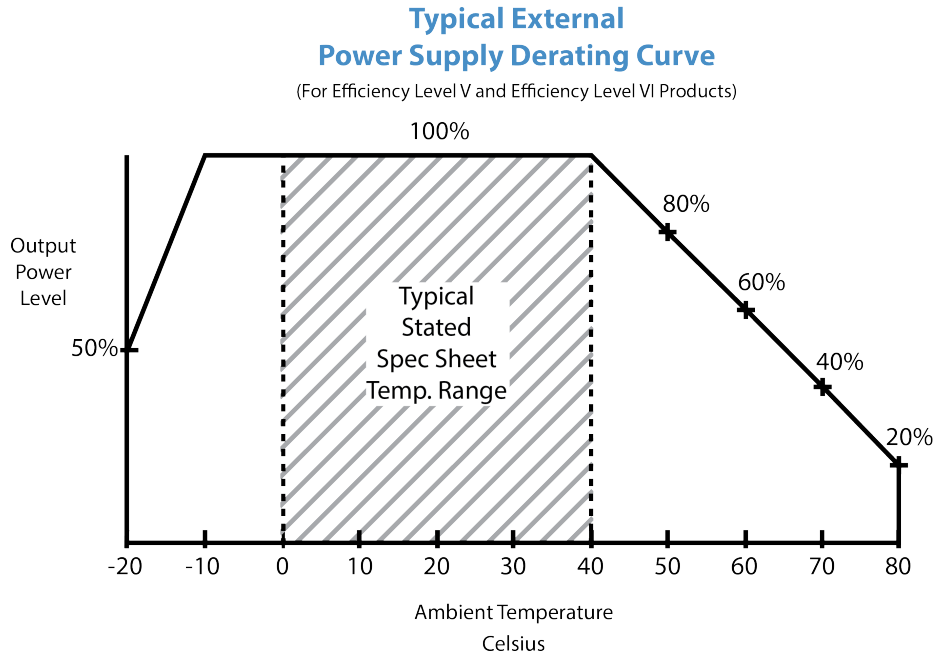
†† VDM functionality is standard on units with date codes after Sept-10-2019.

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DERATING CURVE



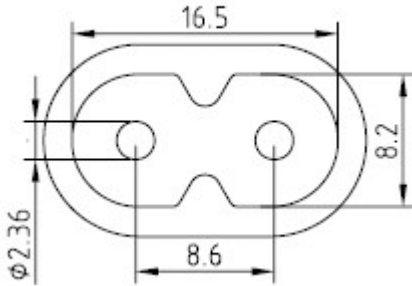
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INPUT CONFIGURATION

Description IEC 60320/C8 AC Inlet connector, Class II, Non-Earth Ground (aka "Figure-8")



Mates with IEC 60320/C7 Plug

Below are standard cordsets which are "not included" (unless stated above); these may be purchased separately or packaged with the power supply. Please contact your Sales Engineer if the style required is not shown below. Many more available in different lengths, colors or cable material.

[Standard International IEC 320/C7 Cordsets](#)

Part Number	Type	Standard	Connector	Length (mm)	Length (feet)
2094112M703(R)	Argentina (Type I)	IRAM 2063	IEC 320/C7	2000	7
5014112M703A(R)	Australian (Type I)	AS 3112	IEC 320/C7	2000	7
207B4111M8703(R)	Brazil (Type N)	NBR14136	IEC 320/C7	1800	6
4533501M8703(R)	China (Type A)	GB 2099.1	IEC 320/C7	1830	6
2074112M703A(R)	European (Type C)	CEE 7/16	IEC 320/C7	2000	7
2084111M8703B(R)	India (Type D)	IS 1293	IEC 320/C7	1800	6
451J3401M8703(R)	Japan (Type A)	JIS 8303	IEC 320/C7	1830	6
2044112M703A(R)	Korea (Type C)	KS C8305	IEC 320/C7	2000	7
4511116F703A(R)	North America (Type A)	NEMA 1-15P	IEC 320/C7	1830	6
	South Africa (Type				

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2084111M8703(R)	M)	BS 546	IEC320/C7	1830	6
4033401M8703A(R)	Taiwan (Type A)	CNS690	IEC 320/C7	1830	6
6104112M703A(R)	UK, Hong Kong, Singapore, Gulf States (Type G)	BS1363	IEC 320/C7	2000	7
451G1116F703A(R)	Gulf States (Kuwait, Bahrain, Oman, Qatar, Saudi Arabia, Yemen and the United Arab Emirates (UAE)(Type A)	Nema 1-15P	IEC320/C7	1830	6

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OUTPUT CONFIGURATION

Common output connector options:


 L Type (Coaxial
5.5x2.5mm plug)

 C Type (Coaxial
5.5x2.1mm plug)

 K Type (Coaxial
3.5x1.3mm plug)

 LL Type (5.5x2.5mm
Locking 760k type)

 CL Type (5.5x2.1mm
Locking S761k type)

 ML2 Type (Molex
housing 43025-0200)

 YL3 Type
(KPPX-3P)


YL4 Type (KPPX-4P)


 EJ1/2/3/4/5 (EIAJ
RC-5320A type
connectors)

 MSB Type (Micro
USB)

 USBC Type (USB
Type C)

 Inquire for custom
design

 For a comprehensive list of options, [click here](#)







Contact GlobTek for your specific requirements or custom solutions.

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Approvals

Logo	Description
No Logo Applicable	CB report IEC60601-1 2005 A1+C1+C2 2016-2-4 and or EN 60601-1:2006 3.1rd Edition 2xMOPP
No Logo	CB Report IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 (GTM96605-G2-XX)
No Logo Applicable	CB for IEC 62368-1:2014 (Second Edition) (pending)
 5000	CCC Altitude up to 5000 m GB17625.1-2012, GB4943.1-2011, GB/T9254-2008
	CE Certification
	Audio/Video, Information And Communication Technology Equipment - Part 1: Safety Requirements [UL 62368-1:2014 Ed.2]Audio/Video, Information And Communication Technology Equipment - Part 1: Safety Requirements [CSA C22.2#62368-1:2014 Ed.2] (pending)
	Information Technology Equipment Safety Part 1: General Requirements (UL 60950-1 Issued: 2007/03/27, Ed: 2 Rev: 2014/10/14) Information Technology Equipment Safety Part 1: General Requirements (CSA C22.2 No. 60950-1 Issued: 2007/03/27 Ed: 2 (R2012) Amd.
	AAMI ES60601-1 Issued: 2012/08/20 Medical Electrical Equipment - Part 1: CAN/CSA-C22.2 No.60601-1:14, Third Edition Issued: 2014/03/01 - Medical Electrical Equipment - Part 1: IEC 60601-1-11 Issued: 2015/01/20 Ed. 2 Medical Elec. Equip.- Part 1-11:
	CHINA SJ/T 11364-2014, China RoHS Chart: http://en.globtek.com/globtek-rohs.php

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Conforms to AAMI STD. ES60601-1 Certified to CAN/CSA STD.C22.2 NO.60601-1	Conforms to AAMI STD. ES60601-1,IEC 60601-1-11 Certified to CAN/CSA STD.C22.2 NO.60601-1
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
	
	Declaration ДС № EAЭC N RU Д-US.KA01.B.10453_19 Custom Union of Russia, Belarus and Kazakhstan http://www.globtek.com/redirect/?loc=gost-certificate-eac-declaration
	Indoor Use Only - Mark is on the label or Molded in the case
 GlobTek, Inc.	JAPAN TUV R-PSE, Cert. No. JD50473430 , to J62368-1(H30) , J55032(H29),J3000(H25)[DC15? 30V]. Please reference the following website for guidelines on PSE regulations: http://en.globtek.com/importing-ite-and-medical-power-supplies-ac-adaptors-to-japan/
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)
LPS	Limited Power Source 60950
	Morocco SDoC declaration http://www.globtek.info/certs/Morocco%20SDoC%20Declaration/
	Australian EMC
	Australia and New Zealand Regulatory Compliance, Mark (http://rcm.standards.org.au/rcmfaq/rcmfaq.htm
RoHS	Specifications of directive 2011/65/EU Annex VI (ROHS-2) with amendment 2015/863-EU (ROHS-3) http://www.ce-mark.com/Rohs%20final.pdf
 Intertek	S-Mark Certificate EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011+A2:2013 http://www.intertek.com/marks/s/

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	UKCA Certification
 10276	Ukraine UKRSepro (Document: www.globtek.com/html/iso_certificates/GT_Ukraine.pdf)
	Japan: Voluntary Control Council for Interference (VCCI)
	WEEE: Complies with EU 2012/19/EU (http://ec.europa.eu/environment/waste/weee/index_en.htm) Mark is on the label or Molded in the case