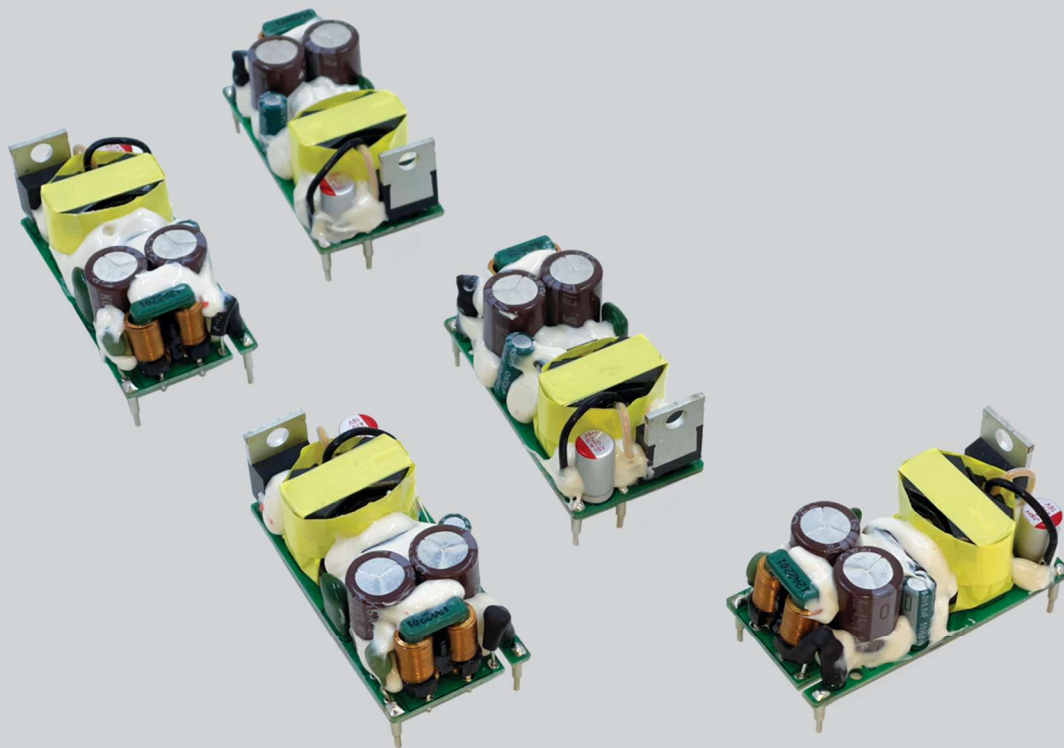


TECHNICAL SPECIFICATION

# GSK020A Series

Open-Frame AC-DC Board Mount Power Supply  
for Consumer & Industrial Products



## OVERVIEW

The GSK020A family of miniature open-frame board mount AC/DC power supplies deliver 20W of output power with a ultra-wide universal input range of 85 to 305 Vac. The series includes four models featuring a precise regulated single-output voltage selection of 5, 12, 24 or 48Vdc. The board-mount devices are also available in encapsulated versions for rugged industrial applications.

With efficiency up to 85% and extremely low no-load power consumption less than 0.1W, GSK models meet global low power consumption and safety standards. Featuring Class II isolation design (no FG pin), the devices incorporate built-in EMI filtering that ensures compliance with EN/EN55032 Class B while superior EMC characteristics protect end-use electronics from electromagnetic interference.

They are ideal for powering industrial tools, measurement instruments, industrial automation equipment, handheld household devices, gaming consoles and other portable gear.

## FEATURES

- Compact Size; Low Profile
  - 1.93”(L) X 0.94”(W) X 0.91”(H)
  - 49mm(L) X 24mm(W) X 23.2mm(H)
- Ultra-wide AC input range (85-305Vac)
- 20W Single DC output at 5V, 12V, 24V or 48V
- No-load power consumption <0.1W
- BS EN/EN55032 EMI Class B with no modifications
- Wide operating temperature range -30°C-70°C
- Convection cooled
- Plastic case and other voltage options available
- Over temperature, over voltage, overload protection
- Cost effective, reliable design



CONFORMS TO  
UL STD.  
62368-1  
CERTIFIED TO  
CSA STD.  
C22. 2 NO. 62368-1

\*Certification on 24V only, other models pending.





## SCOPE

This document describes the specifications of GSK020A open-frame AC/DC power supplies.

## MODEL SELECTION

Description	GSK020A5	GSK020A12	GSK020A24	GSK020A48
<b>DC Output</b>	5V	12V	24V	48V
<b>Current Range</b>	0 - 4A	0 - 1.68A	0 - 0.84A	0 - 0.42A
<b>Rated Power</b>	20W	20W	20W	20W

## INPUT SPECIFICATIONS

Description	GSK020A5	GSK020A12	GSK020A24	GSK020A48
<b>Input Voltage Range</b>	85-305Vac/ 115/230Vac typical • 120-430VDC (Safety voltage 100-240Vac/277Vac)			
<b>Frequency</b>	47-63Hz/50/60Hz typical			
<b>Input Current, Typical</b>	1.0/100VAC at max load			
<b>Inrush Current, Typical</b>	50/80A typical 115/230VAC cold start			
<b>Power Factor</b>	Meets EN61000-3-2, Class A			
<b>Earth Leakage Current</b>	< 0.25mA/277VAC			
<b>No Load Input Power</b>	<0.1W 115/230VAC in Open Load			
<b>Efficiency, Typical</b>	85-87% typical at nominal input			
<b>Switching Frequency</b>	65Khz			





## PROTECTION

Description	GSK020A5	GSK020A12	GSK020A24	GSK024A48
<b>Fusing</b>	T2.5A/350 VAC fuse in line			
<b>Over Current (OCP)</b>	110%-130% rated output power Protection type: Hiccup mode, recovers automatically after fault condition removed			
<b>Over Voltage (OVP)</b>	120% min, 150% max Protection type: Hiccup mode, recovers automatically after fault condition removed			
<b>Short Circuit (SCP)</b>	Protection type: Hiccup mode, recovers automatically after fault condition removed			
<b>Over Temperature (OTP)</b>	Protection type: Hiccup mode, recovers automatically after fault condition removed			

## DC OUTPUT SPECIFICATIONS

Description	GSK020A5	GSK020A12	GSK020A24	GSK020A48
<b>Rated Power</b>	20W	20.16W	20.16W	20.16W
<b>Output Voltage, Vdc</b> Typical	5V	12V	24V	48V
<b>Output Current, Amps</b>	4.0A	1.68A	0.84A	0.42A
<b>Ripple and Noise<sup>1</sup>, Max</b>	80 mVpp	120 mVpp	240 mVpp	480 mVpp
<b>Transient Response</b>	±5% Vout at 115/230VACin 50-100% load			
<b>Output Overshoot</b>	±5% Vout			
<b>Voltage Tolerance<sup>2</sup></b>	5%			
<b>Line Regulation</b>	±0.5%	±0.3%	±0.3%	±0.3%
<b>Load Regulation</b>	±1%	±0.5%	±0.5%	±0.5%
<b>Rise Time</b>	30ms typical, 60 mS maximum 115/230VACin full load			
<b>Delay Time</b>	2 Seconds typical, 115/230VACin full load			
<b>Capacitive External Load</b>	8000 µF	5000 µF	2000 µF	500 µF
<b>Hold Up Time, Typical</b>	40ms min at 230VAC at full load • 10ms min at 115VAC at full load			

1. Ripple & noise are measured at 20MHz of bandwidth using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capacitor at 115/230VAC input at full load.

2. Tolerance: includes set up tolerance, line regulation and load regulation.





## ENVIRONMENT

Description	
<b>Working Temperature<sup>3</sup></b>	-30 - +70°C (derates at 2.5°C from 50°C)
<b>Operating Humidity</b>	0-90% RH non-condensing
<b>Storage Temperature</b>	0 - 85°C
<b>Temp. Coefficient</b>	±0.03%/°C (0 - 50°C)
<b>Vibration</b>	10 - 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes
<b>Solder Temperature</b>	Wave soldering: 265°C, 5s (max.); Manual soldering: 390 °C, 3s (max.)
<b>Operating Altitude</b>	6600 feet / 2000 meters

3. The ambient temperature derating is 3.5°C/1000m with convection applications and 5°C/1000m with applications having fan airflow for operating altitude higher than 6500ft (2000m)

## SAFETY & EMC

Description			
<b>Safety Standards</b>	IEC62368-1 cETLus (24V approved, other voltages meet requirements and will be filed)		
<b>FCC Compliance</b>	FCC part 15B		
<b>CE LVD Compliance</b>	IEC61558-2-16		
<b>CE EMC Directive</b>	EN 55032, EN 55035, EN 61000-3-2		
<b>Withstand Voltage</b>	Input to Output: 3KVAC		
<b>Isolation Resistance</b>	Input to Output: 100M Ohms / 500VDC / 25°C/ 70% RH		
<b>EMC Emission</b>	<b>Parameter</b>	<b>Standard</b>	<b>Test Level/Note</b>
	Conducted	BS EN/EN55032(CISPR32), CNS13438	Class B
	Radiated	BS EN/EN55032(CISPR32), CNS13438	Class B
	Harmonic Current (Note 5)	BS EN/EN61000-3-2	Class A
	Voltage Flicker	BS EN/EN61000-3-3	
<b>EMC Immunity</b>	<b>BS EN/EN55035, BS EN/EN61000-6-2</b>		
	<b>Parameter</b>	<b>Standard</b>	<b>Test Level/Note</b>
	ESD	BS EN/EN61000-4-2	±8KV air; ±4KV contact, Criteria B
	Radiated Susceptibility	BS EN/EN61000-4-3	3 V/m, Criteria A
	EFT/Burst	BS EN/EN61000-4-4	Criteria B



<b>EMC Immunity, cont.</b>	Surge	BS EN/EN61000-4-5	DM ±1KV, CM ±2KV, Criteria B
	Conducted	BS EN/EN61000-4-6	3V, Criteria A
	Voltage Dips and interruptions	BS EN/EN61000-4-11	Criteria B and C

**Notes:** EMC Performance criteria are defined as following:

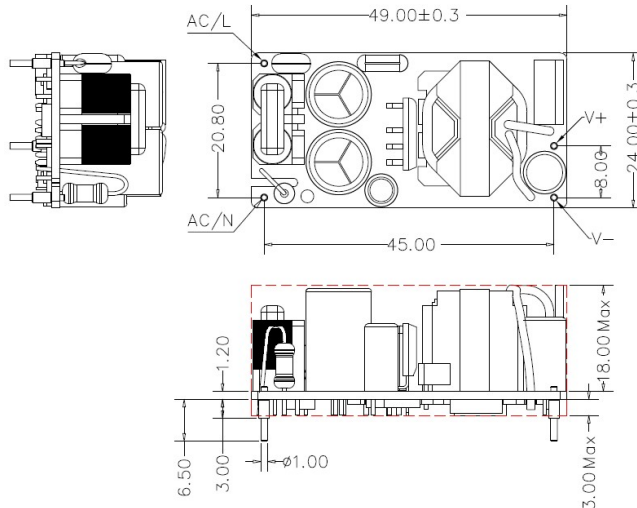
- A. Normal performance during and after the test
- B. Temporary degradation, self-recoverable
- C. Temporary degradation, operator intervention required to recover the operation
- D. Permanent damage

## SAFETY & RELIABILITY

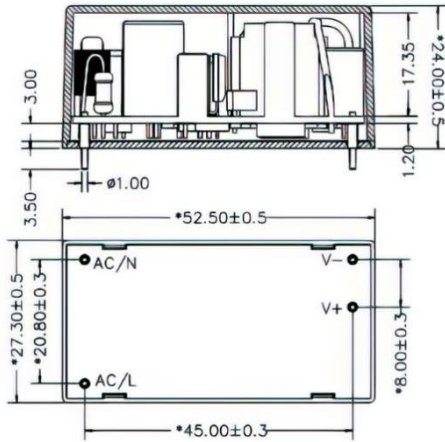
Description	
<b>Hi-pot</b>	<10 mA, Pri-Sec: 3000Vrms, 10 mA 1 min
<b>Leakage Current</b>	<0.25mA, 264VAC / 60Hz
<b>Insulation Resistance</b>	>100Mohm, Input to output at 500 VDC.
<b>MTBFc</b>	500K hours at 25°C, normal input, 80% load
<b>RoHS</b>	Directive 2011/65/EU including the amendment 2015/863/EU
<b>REACH</b>	Regulation (EC) No.1907/2006

## MECHANICAL PACKAGE

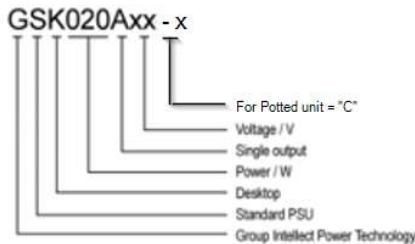
Description	
<b>Dimensions - L x W x H</b>	1.93" x 0.94" x 0.91" / 49mm x 24mm x 23.2mm <b>Note:</b> Height measured from seating plane
<b>Weight oz / g</b>	1.06 / 30, typical
<b>Vibration</b>	0.75 mm, 10Hz-55Hz, 20 minutes



## ENCAPSULATED OPTION



## PART NUMBERING



## NOTES

1. Dimensions shown in mm.
2. Pins are 1.0 mm diameter.
3. Safety isolation Mylar insulator is available for purchase (part number 700.003.001.012100)
4. Unit will withstand soldering into a mother board of up to 260°C +/-5°C for 0.5 seconds
5. PSU should have adequate airflow to avoid triggering OTP
6. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
7. Ripple & noise are measured at 20MHz of bandwidth using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capacitor.
8. Tolerance: includes set up tolerance, line regulation and load regulation.
9. The power supply is considered as an independent unit, but the final equipment still needs to re-confirm that the whole system complies with the EMC directives and safety regulations.

**All specifications are typical at nominal input, full load, at 25°C ambient unless otherwise noted. Specifications are subject to change without notice. Please consult our Applications Engineering office at 858-275-6423 for additional technical data and support or email us at [info@brightworks-usa.com](mailto:info@brightworks-usa.com).**

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