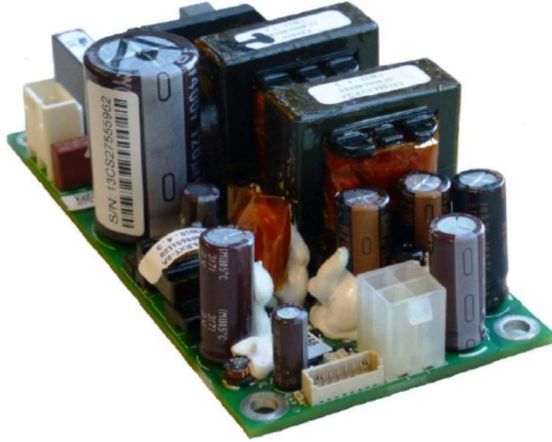


CLP0205 Open Frame Power Supply

90 - 265Vac input; 5Vdc output; 200W Output Power; 12Vout @ 0.25A stdby



Applications

- Industrial equipment
- LED Signage
- Telecommunications equipment

Description

In a small 2 x 4 inch footprint, the 5Vdc single-output CLP0205 open frame power supply delivers greater than TBA percent typical power efficiency and full load output at 50°C and 1m/s airflow. Protection features include output overcurrent (OCP), overvoltage (OVP), and overtemperature (OTP).

Features

- Compact size 50.8mm x 101.6mm x 36.1mm (2in x 4in x 1.4in) with density of 18W/in³
- Universal AC Input Range (90 – 265VAC)
- Output voltage of 5V (adjustable 4.8V to 5.5V)
- Standby output of 12V @ 0.25A
- Maximum output current of 40A@ 5Vout (200W)
- High efficiency (>TBA% at Full Load, 230VAC in)
- Full load capability at 50°C and 1m/s airflow with derating at higher temperatures or lower airflows
- Capable of tbd W out in sealed enclosure applications with enclosure ambient at 50°C
- Output overcurrent protection (non-latching)
- Overtemperature protection
- Output overvoltage protection
- Minimum of 11ms of holdup time at 200W out
- Active power factor corrected input
- Conducted EMI - meets CISPR22 (EN55022) and FCC Class B requirements
- Meets IEC61000-4-5, Level 4 (2kV/4kV) and ANSI C62.41 (6kV)
- Compliant to RoHS (recast) EU Directive 2002/95/EC
- UL and cUL approved to UL/CSA60950-1, EU (EN60950-1), CE Mark (for LVD) and CB Report to be available
- ISO** 9001 and ISO 14001 certified manufacturing facilities

* UL is a registered trademark of Underwriters Laboratories, Inc.

† CSA is a registered trademark of Canadian Standards Association.

** ISO is a registered trademark of the International Organization of Standards

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Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

Parameter	Device	Min	Max	Unit
Input Voltage - Continuous	All	90	265	Vac
For up to 10 seconds	All	90	275	Vac
Operating Ambient Temperature (see Thermal Considerations section)	All	-40	70	°C
Storage Temperature	All	-40	85	°C
Humidity (non-condensing)	All	5	95	%
Altitude	All		5000	m
Isolation Voltage – Input to output	All		3000	Vac
Input to safety ground	All		1500	Vac
Outputs to safety ground	All		50	Vac

Electrical Specifications

Parameter	Device	Min	Typ	Max	Unit
Operating Input Voltage	All	90	115/230	265	Vac
Input Source Frequency	All	47	50/60	63	Hz
Input Current ($V_{IN} = 90\text{Vac}$)	All			TBD	A_{RMS}
Input Power Factor (230Vac, Full Load)	All	0.95			
Inrush Transient Current ($V_{IN} = 265\text{Vac}$, $T_{amb} = 25^{\circ}\text{C}$)	All			60	A Peak
Leakage Current to earth ground ($V_{IN} = 265\text{Vac}$)	All			3.5	mA
Output Voltage Setpoint	All		5		Vdc
Output Voltage Tolerance (due to set point, temperature variations, load and line regulation)	All	-2		2	%
Output Voltage Adjustment Range	All	4.8		5.5	Vdc
Output Remote Sense Range	All			250	mVdc
Output Load Regulation	All			1	%Vout
Output Line Regulation	All			0.25	%Vout
Output Ripple and Noise – measured with 0.1 μF ceramic capacitor in parallel with 10 μF electrolytic capacitor Peak-to-peak (20MHz Bandwidth)	All			tbd	mV p-p
Dynamic Load Response – 50% to 100% load transient, 1A/ μs slew rate	All			5%	%
Output voltage deviation	All			500	μs
Settling Time	All				
Output Current	All	0		40	Adc
Output Current Limit Inception	All	105		140	% $I_{O,max}$
Maximum Output Capacitance	All			tbd	μF
Standby Output Voltage	All		12.0		Vdc
Standby Output Current	All			0.25	Adc
Efficiency: $V_{IN} = 230\text{Vac}$, 20% load	All	tbd			%
50% load	All	tbd			%
100% load	All	tbd			%
$V_{IN} = 115\text{Vac}$, 20% load	All	tbd			%
50% load	All	tbd			%
100% load	All	tbd			%
Holdup Time ¹ – $V_{IN} = 115\text{Vac}$, 200W load	All	11			ms

¹ Holdup time may be lower at cold temperatures

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V _{IN} = 230Vac, 200W load	All	11			ms
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General Specifications

Parameter	Device	Symbol	Typ.	Unit
Calculated Reliability based on Telcordia SR-332 Issue 2: Method 1 Case 3 (V _{IN} =230Vac, I _o = 35A, T _A = 40°C, airflow 200LFM, 90% confidence)	All	MTBF	>750,000	Hours
Weight	All		400 14.1	g oz.

Feature Specifications

Parameter	Device	Min	Typ	Max	Unit
On/Off Signal Interface – signal referenced to GND					
Logic Low (Power Supply ON)					
Input Low Current	All			7	mA
Input Low Voltage	All			1	V
Logic High (Power Supply OFF)					
Input High Current	All			600	µA
Input Voltage	All			5.5	V
Delay from ON/OFF being enabled to start of output voltage rise	All			50	ms
Output Voltage Rise Time (from 10 to 90% of final value)	All		20		ms
Delay from Input being applied to all outputs being in regulation	All			800	ms
Output Overvoltage Protection	All	5.75		6.6	Vdc
Input Undervoltage lockout ²					
Turn-on Threshold (100% load)	All	TBD	TBD	90	Vac
Turn-off Threshold (100% load)	All	TBD	TBD	88	Vac
DC OK – open collector, High when output available					
Sink Current	All			4	mA
Maximum Collector Voltage	All			12	V

² Undervoltage lockout threshold may vary with output load current level – decreasing as load goes lower

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Environmental Specifications

Parameter	Device	Specification/Test
Radiated Emissions ³	All	CISPR22 Class B with 3dB margin
Conducted Emissions	All	CISPR22 Class B with 6dB margin
ESD	All	IEC61000-4-2, Level 3
Radiated Susceptibility ⁴	All	IEC61000-4-3, Level 3
Electrical Fast Transient Common Mode	All	IEC61000-4-4, Level 3
Surge Immunity	All	IEC61000-4-5, Level 4 & ANSI C62.41 (6kV)
Conducted RF Immunity	All	IEC61000-4-6, Level 3
Input Voltage Dips	All	Output stays within regulation for either ½ cycle interruption or 25% dip from nominal line for 1 second
Input Harmonics	All	IEC61000-3-2
Shock and Vibration	All	Per IPC-9592B, Class II

Safety Specifications

Parameter	Device	Specification
Dielectric Withstand Voltage (between input and output)	All	Minimum of 4,250Vdc for 1 minute
Insulation Resistance (between input and output)	All	Minimum of 5 MΩ
Safety Standards	All	Class 1, IEC60950, EN60950, with the following deviations: Nemko, UL 60950 (Recognized Component), cUL (Canadian Approval by UL)

³ Shall meet when tested in a suitable enclosure

⁴ Shall meet when tested in a suitable enclosure

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Safety Considerations

The CLP0205 power supply is intended for inclusion in other equipment and the installer must ensure that it is in compliance with all the requirements of the end application. This product is only for inclusion by professional installers within other equipment and must not be operated as a stand-alone product. The power supply should meet Class 1, IEC60950, EN60950, with the following deviations: Nemko. UL 60950 (Recognized Component) C-UL (Canadian Approval by UL).

Feature Descriptions

Standby Power Supply

A standby output of 12V in the CLP0205 power supply, shall come on when AC input in the operating range is applied.

Remote On/Off

The CLP0205 power supply shall feature a TTL-compatible On/Off control input. The main power supply turns ON when the On/Off input goes low, and turns OFF when the input goes high. Note that if the On/Off pin is left unconnected, the power supply main output shall remain off.

Output Voltage Adjustment

The output voltage shall be capable of being adjusted between 4.8V and 5.5V using a potentiometer on the power supply.

Remote Sense

The power supply shall have both positive and negative remote sense connections that can be connected to the positive and negative rails of the main output near the load. The power supply shall operate without the remote sense connections being made.

Overcurrent Protection

To provide protection in a fault condition (output overload), the power supply is equipped with internal current-limiting circuitry and can endure current limiting continuously. At the point of current-limit inception, the unit enters hiccup mode. The power supply operates normally once the output current is brought back into its specified range.

Overvoltage Protection

Overvoltage protection is a feature of the power supply that protects both the load and the power supply from an output overvoltage condition. When an overvoltage occurs, the power supply shuts down and latches off until the overvoltage condition is removed. It is necessary to recycle the input to restart the power supply when this protection is activated.

Overtemperature Protection

The power supply also features overtemperature protection in order to provide additional protection in a fault condition. The power supply is equipped with a thermal shutdown circuit which detects excessive internal temperatures and shuts the unit down. Once the power supply goes into overtemperature shutdown, it will cool before attempting to restart. The

overtemperature protection circuit will typically operate when the unit is operated at 200W output with an ambient temperature of TBD°C and 1m/s (200LFM) airflow.

Input Undervoltage Lockout

At input voltages below the input undervoltage lockout limit, power supply operation shall be disabled. The power supply will begin to operate at an input voltage above the undervoltage lockout turn-on threshold

DC OK

The power supply shall provide a DC OK signal that indicates when the main output is in regulation. This is an open-collector signal that goes high when the output is within regulation.

Power Good LED

A green LED on board the power supply shall illuminate when the main output voltage is at or above 90% of Vout.

Thermal Considerations

The power supply can be operated in a variety of thermal environments; however sufficient cooling should be provided to ensure reliable operation.

Considerations include ambient temperature, airflow, power supply dissipation and the need for increased reliability. A reduction in the operating temperature of the power supply will result in increased reliability. The power supply should be capable of delivering full output power of 200W at an ambient temperature of at least 50 °C and 1m/s (200LFM) of airflow. The output power will be derated at higher output temperatures and lower airflow, but should at least deliver 100W at 70°C and 1m/s (200LFM) of airflow.

In addition, in conduction-cooled applications with a suitable enclosure, the power supply should be capable of delivering tbd W when the enclosure ambient temperature is 50°C, with operation at 90VAC in.

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Ordering Information

Please contact your GE Sales Representative for pricing, availability and optional features.

Table 1. Device Codes

Device Code	Input Voltage Range	Output Voltage	Output Current	On/Off Control	Standby Supply	Temperature Range	Comcodes
CLP0205FPXXXZ01A	90 – 265Vac	5.0Vdc	40A	Negative Logic	12V @ 0.25A	-40 to 70°C	CLP0205FPXXXZ01A
CLP0205FPXXXZ02A With conformal coating	90 – 265Vac	5.0Vdc	40A	Negative Logic	12V @ 0.25A	-40 to 70°C	CLP0205FPXXXZ02A



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