

## Features

- 2" x 4" x 1.3" Package
- For 1U Applications
- 150W w/air, 100W convection cooled
- Universal Input 90-264 VAC
- Power Fail/Output Good Signal
- Approved to CSA/EN/IEC/UL60950, 2nd Edition
- 3 Year Warranty
- RoHS Compliant

## Description

The CINT1150 family is the latest offering in high density single output open-frame AC/DC power supplies. Approved to EN/IEC/UL60950-1, 2nd edition, the CINT1150 family is ideal for lighting, industrial printers, gaming equipment, and many other applications where power density and cost are critical. The CINT1150 operates at universal input range of 90 to 264Vac and wide temperature range -10 °C to +70 °C, delivering full rated output power up to +50 °C. In addition, these models feature Power Fail and DC OK signals.

## Model Selection

Model Number	Volts	Output Current w/200LFM air	Convection*	Ripple & Noise**	Total Regulation	OVP Threshold***
CINT1150A1206K01	12V	12.5A	8.33A	0.5%RMS, 1.2% pk-pk	±5%	14.0 ± 1.1V
CINT1150A2406K01	24V	6.25A	4.17A	0.5%RMS, 1.0% pk-pk	±5%	28.0 ± 2.5V
CINT1150A4806K01	48V	3.13A	2.08A	0.5%RMS, 1.0% pk-pk	±5%	55.0 ± 4.0V
CINT1150A5606K01	56V	2.68A	1.79A	0.5%RMS, 1.0% pk-pk	±5%	<59.9V

Notes: \* Maximum output power is 95 Watts for input voltage of 90-105VAC at 50°C convection. For input voltage of 105Vac or more, the total power is 100 Watts at 50 °C convection.

\*\* Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 10µF low ESR capacitors.

## General Specifications

<b>AC Input</b>	100-240Vac, ±10%, 47-63Hz, 1Ø 120-370Vdc	<b>Turn On Time</b>	Less than 2 sec. @115Vac (inversely proportional to input voltage and thermistor temperature)
<b>Input Current</b>	115Vac: 2A, 230Vac: 1A	<b>Hold-up Time</b>	>12mS at full load, 120Vac
<b>Inrush Current</b>	264Vac, cold start: will not exceed 50A	<b>Signals</b>	AC Power Fail, DC OK
<b>Input Fuses</b>	F1, F2: 4A, 250Vac fuses provided on all models	<b>Overload Protection</b>	Hiccup Mode

## General Specifications (continued)

<b>Earth Leakage Current</b>	<750µA@264Vac, 60Hz, NC	<b>Short Circuit Protection</b>	Provided - no damage will occur if the output is shorted. Hiccup Mode
<b>Efficiency</b>	88% typical at 115Vac	<b>Overvoltage Protection</b>	OVP firing reduces output voltage to <50% of nominal in <50mS. See chart for trip range.
<b>Output Power</b>	150W continuous with 200 lfm airflow, 100W convection cooled – See chart for specific voltage model ratings.	<b>Switching Frequency</b>	PFC: Variable 30-400kHz. Main Converter: Variable 35-180kHz, 65-70kHz at full load.
<b>Transient Response</b>	50% load step. $\Delta i/\Delta t: <0.2A/\mu S$ Max Volt Deviation = 3%	<b>Isolation</b>	Input-Output: 4000Vac Input-Ground: 1800Vac Output-Ground: 500Vac
<b>Ripple and Noise</b>	See chart	<b>Operating Temperature</b>	-10 °C to +70 °C -40C Start Up
<b>Output Voltage</b>	See chart	<b>Temperature Derating</b>	Derate output power linearly above 50 °C to 50% at 70 °C
<b>Voltage Adjustability</b>	+/-5% from nominal	<b>Storage Temperature</b>	-40 °C to +85 °C
<b>Minimum Load</b>	Not required	<b>Altitude</b>	Operating: -500 to 10,000 ft Non-operating: -500 to 40,000 ft.
<b>Total Regulation</b>	+/- 5%. See chart	<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Vibration</b>	Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis Non-Operating: 0.026g <sup>2</sup> /Hz, 5.0grms overall, 3 axes, 1 hr/axis	<b>Shock</b>	Operating: Half-sine, 20gpk, 10ms, 3 axes, 6 shocks total Non-Operating: Half-sine, 40 gpk, 10 ms, 3 axes, 6 shocks total
<b>Dimensions</b>	W: 2.0" x L: 4.0" x H: 1.3"	<b>Safety Standards</b>	EN/CSA/UL/IEC60950-1, 2nd Edition
<b>Weight</b>	183g	<b>MTBF</b>	640,000 hours at 100W convection, 1,500,000 hours at 150W with 200LFM air

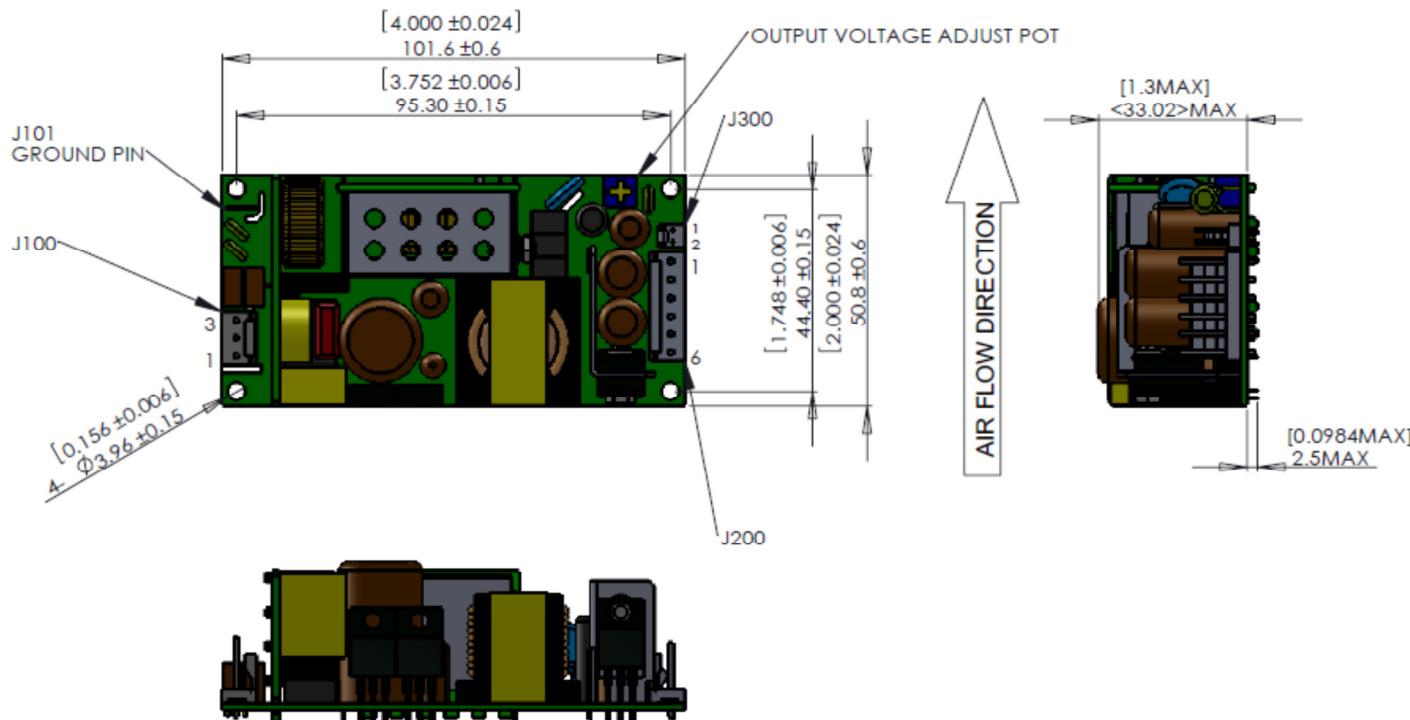
## Auxiliary Signals

<b>AC Power Fail:</b>	During normal operations, stays HIGH.	<b>Power Fail:</b>	Goes LOW with 5 mS warning before loss of output power due to AC failure
		<b>DC OK:</b>	Open collector logic signal goes and stays HIGH 100mS to 500mS after main output reaches regulation.

## EMI/EMC Compliance

<b>Conducted Emissions</b>	EN55011/22 Class B, FCC Part 15, Subpart B, Class B
<b>Radiated Emissions</b>	EN55011/22 Class A, FCC Part 15, Subpart B, Class A w/6db margin
<b>Static Discharge Immunity</b>	EN61000-4-2, Criteria A, 6kV Contact Discharge, 8kV air discharge
<b>Radiated RF Immunity</b>	EN61000-4-3, 3V/m. Criteria A
<b>EFT/Burst Immunity</b>	EN61000-4-4, 2kV/5kHz, Criteria A
<b>Line Surge Immunity</b>	EN61000-4-5, 1kV differential, 2kV common-mode, Criteria A
<b>Conducted RF Immunity</b>	EN61000-4-6, 3Vrms, Criteria A
<b>Power Frequency Magnetic Field Immunity</b>	EN61000-4-8, 3A/m, Criteria A
<b>Voltage Dip Immunity</b>	EN61000-4-11, 0% Vin, 0.5cycle; 40% Vin, 5 cycles; 70% Vin, 25 cycles; Criteria A
<b>Line Harmonic Emissions</b>	EN61000-3-2, Class A, B, C, & D
<b>Flicker Test</b>	EN61000-3-3, Complies (dmax<6%)

## Mechanical Drawing

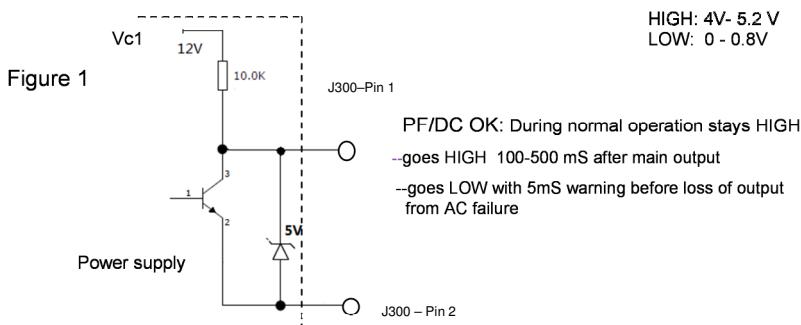


## Connector Information

Input Connector J100	Ground J101	DC Output Connector J200		Signal Connector J300
PIN 1) AC LINE PIN 2) EMPTY PIN 3) AC NEUTRAL	0.187" FASTON TAB	PIN 1) +Vout PIN 4) -Vout PIN 2) +Vout PIN 5) -Vout PIN 3) +Vout PIN 6) -Vout		PIN 1) PF/DC OK PIN 2) Common
Mating Connector: Molex 09-50-3031 Pins= 08-52-0072	Mating Connector: Molex 01-90020009	Mating Connector: AMP 640250-6 Pins = 640252-1		Mating Connector: Molex 1375820-2 Pins = 1375819

## Power Fail/DC OK Signals – J300

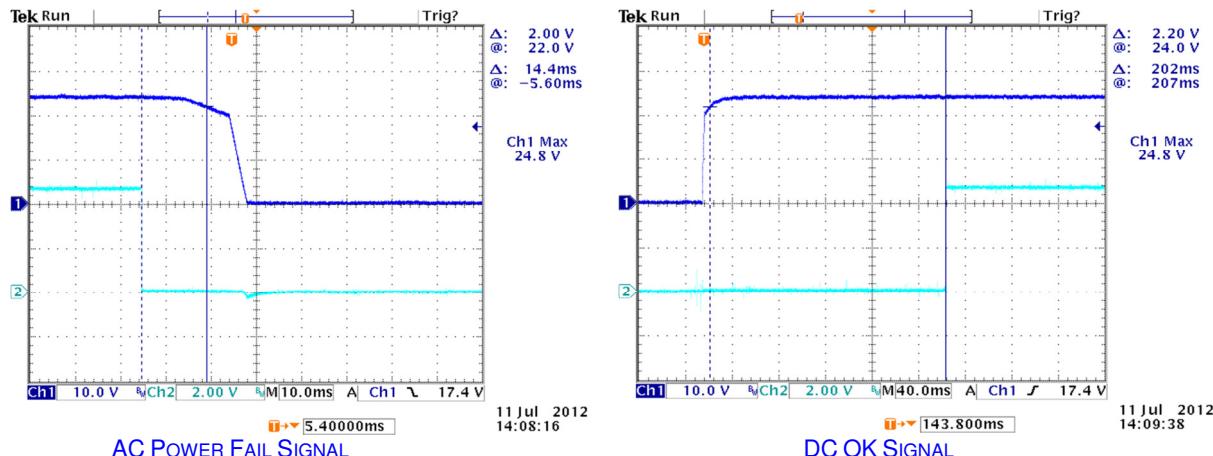
### AC Power Failure/DC OK



AC Power failure and DC OK signals use the same pin, so the signals can be used as follows:

**DC OK:** Pin2 = HIGH & Pin1 = HIGH

**AC Power Failure:** Pin2 = LOW & Pin1 = LOW



## Isolation Specifications

Parameter	Conditions/Description	Min	Nom	Max	Units
Insulation Safety Rating	Input/Ground Input/Output Output/Ground		Basic Reinforced n/a		
Electric Strength Test Voltage	Input/Ground Input/Output Output/Ground	1800 4000 500	-	-	Vac Vac Vac

## Input Specifications

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage		90	115/230	264	Vac
Turn-On Input Voltage	Ramping up		82.7		Vac
Turn-Off Input Voltage	Ramping down		67.0		Vac
Input Frequency		47	50/60	63	Hz
Inrush Current Limitation	264Vac, cold start	-	-	50	A
Power Factor	$V_{i\text{ nom}}, I_{o\text{ nom}}$	0.9	-	-	
Efficiency	$V_{i\text{ nom}}, I_{o\text{ nom}}$ CINT1150A1206K01 CINT1150A2406K01 CINT1150A4806K01 CINT1150A5606K01	-	88%	-	%

## Protection

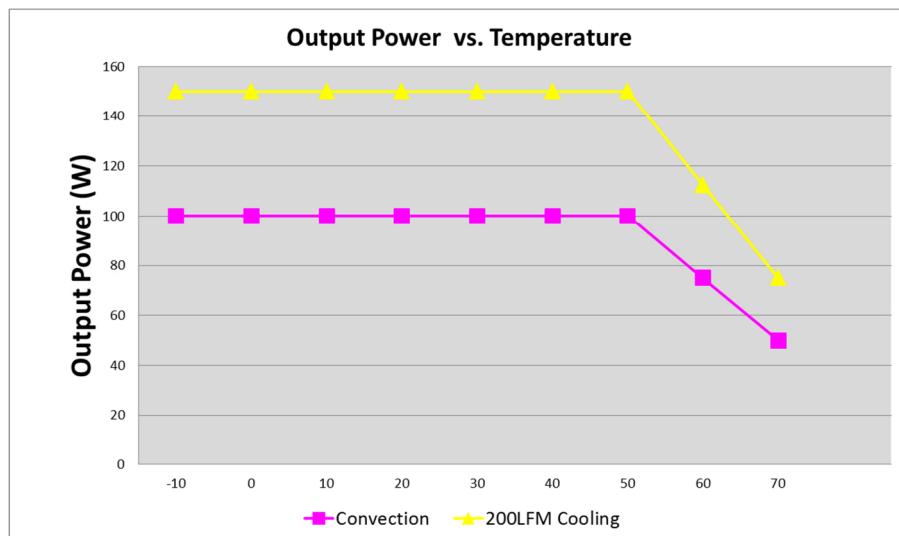
All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Fuse	Not user accessible				
Input Transient Protection	2KV(CM) and 1KV(DM) surge			2	KV (CM)
Output	No-load				Hiccup Mode
	Short Circuit				Hiccup Mode
	Overload				Hiccup Mode
Overvoltage Protection	Latch style				See Models chart for trip ranges
Over temperature Protection	Automatic power shutdown at TC =155°C				

## Characteristic Curves

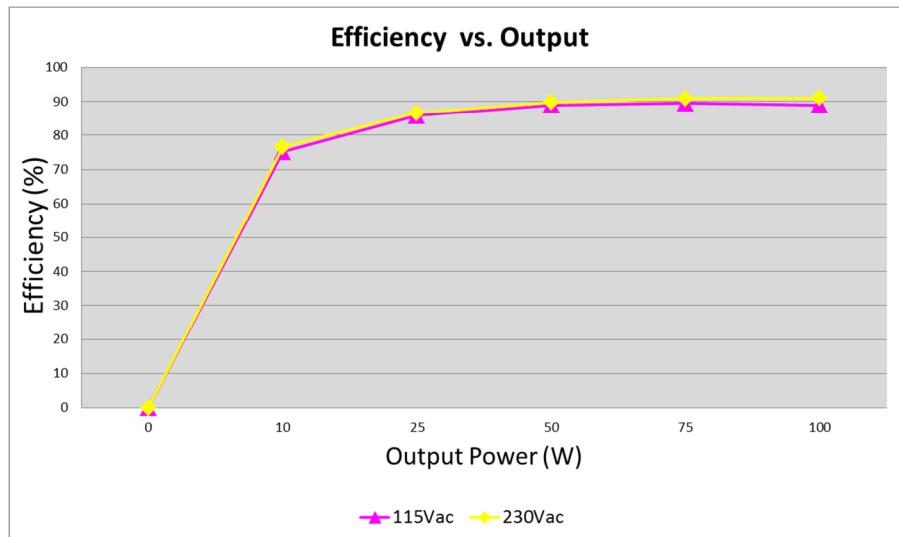
### Output vs. Temperature

100W convection cooled and 150W continuous with 200 LFM airflow, Derating output power to 50% at 70°C.



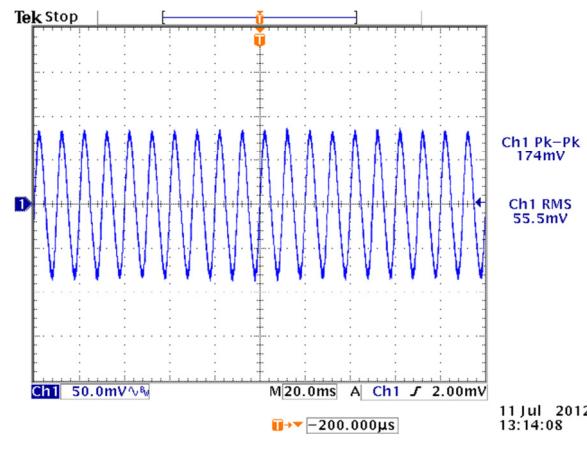
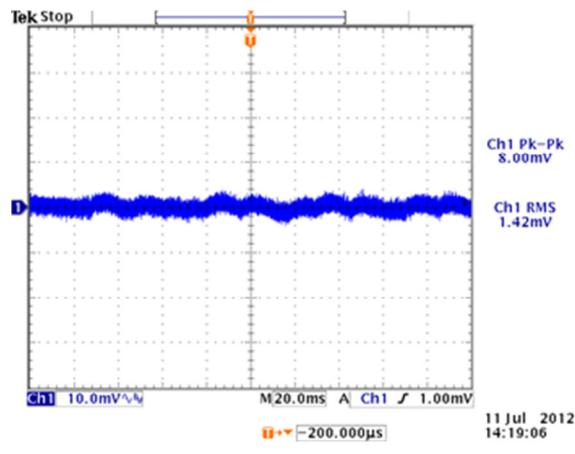
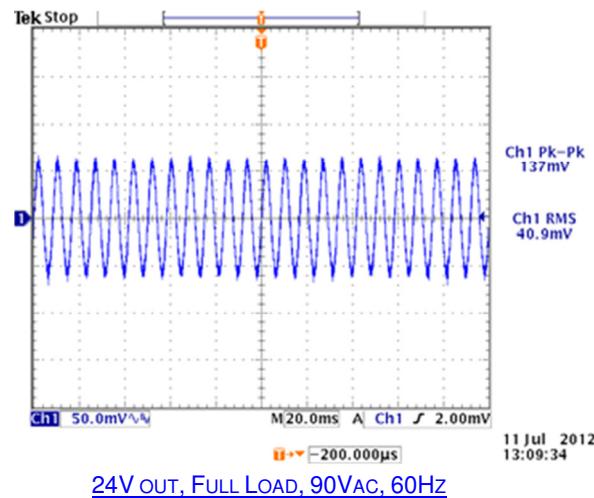
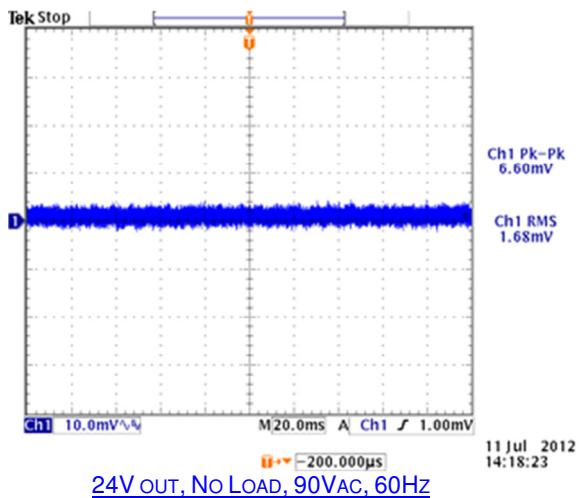
### Efficiency vs. Loading

The high efficiency is achieved by using LLC technology, PFC topology minimizing switching losses. Synchronous SCHOTTKY or ultra-fast diode is used as rectifier in CINT1150 family because of high output voltage level.



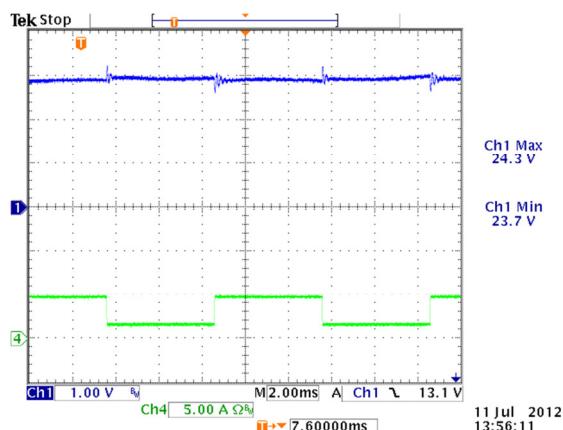
### Ripple & Noise

To verify that the output ripple and noise does not exceed the level specified in the product specification. Measured using a scope probe socket with 0.1uF ceramic and a 10uF electrolytic capacitor connected in parallel across it, 20MHz BW.

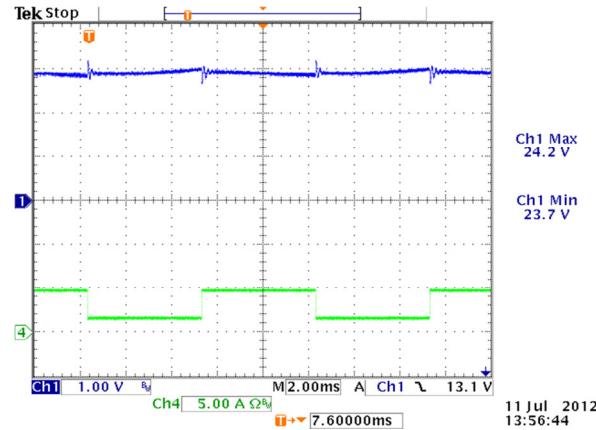


### Output Transient Response

50% load step within the regulation limits of minimum and maximum load,  $dl/dt < 0.2A/\mu\text{Sec}$ . Recovery time not specified as there is no laps in regulation with a 50% Load Step. Maximum voltage deviation is 3%, This test is performed on the MAIN OUTPUT ONLY.



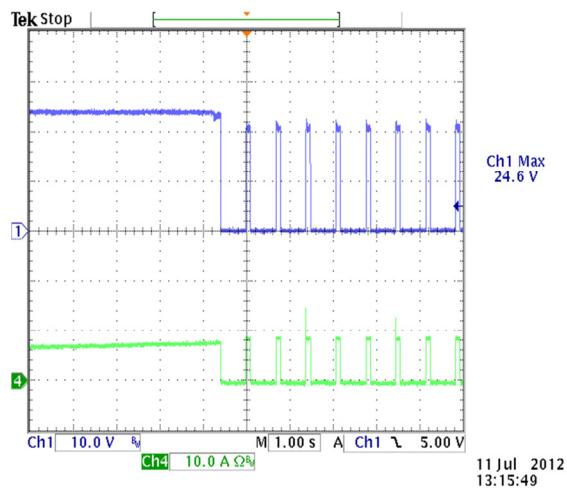
[24V OUT, 120VAC, 25% TO 75% LOAD STEP](#)



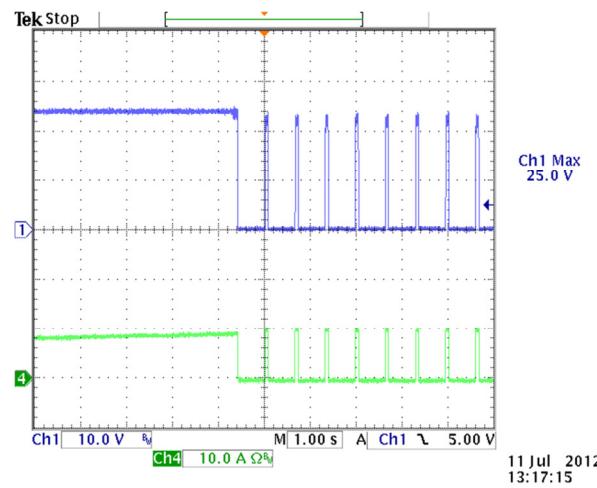
[24V OUT, 240VAC, 25% TO 75% LOAD STEP](#)

### Output Overload Characteristic

Supply shall protect itself against Overload conditions. The Power Supply shall recover from Overload Conditions without operator intervention.



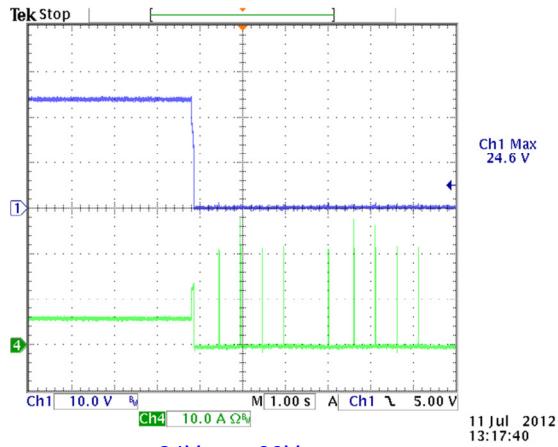
[24V OUT, 90VAC](#)



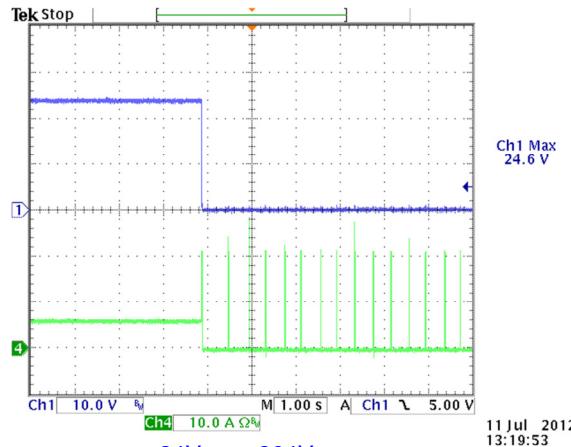
[24V OUT, 264VAC](#)

### Short Circuit Protection

Supply shall protect itself against Short Circuit conditions. No damage will occur if the output is shorted..



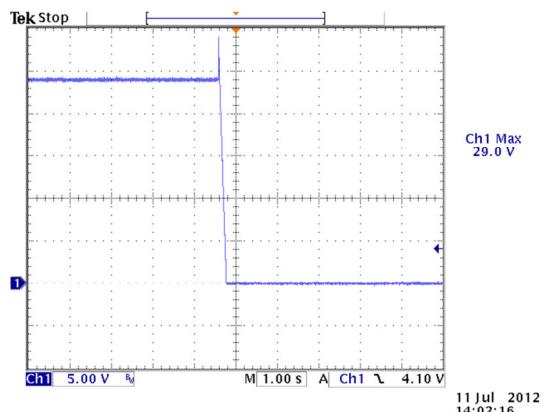
[24V OUT, 90VAC](#)



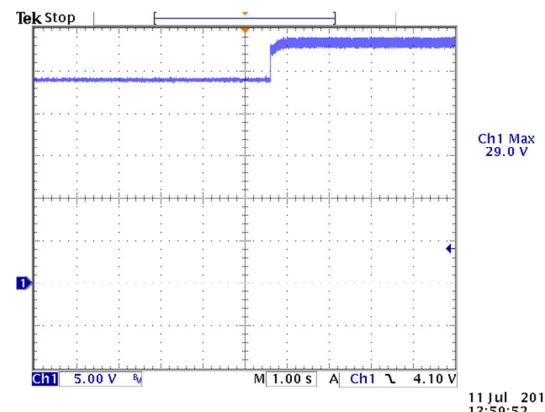
[24V OUT, 264VAC](#)

## Overvoltage Protection

OVP firing reduces output voltage to <50% of nominal in <50ms. See models chart for trip ranges.

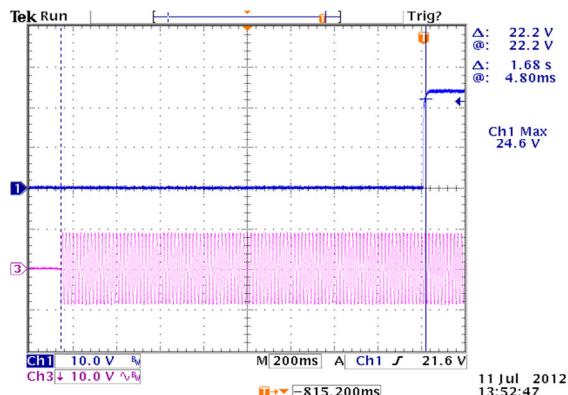


[24V OUT, NO LOAD](#)

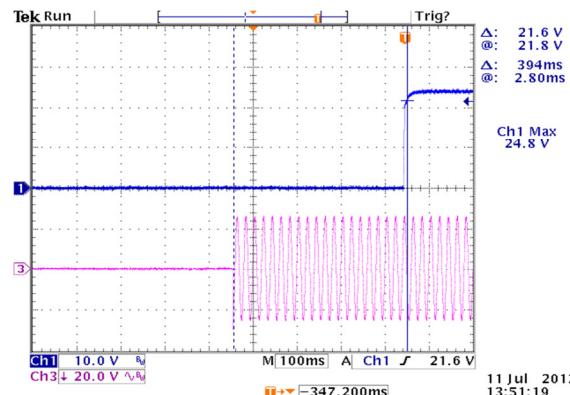


[24V OUT, FULL LOAD](#)

## Turn On Time

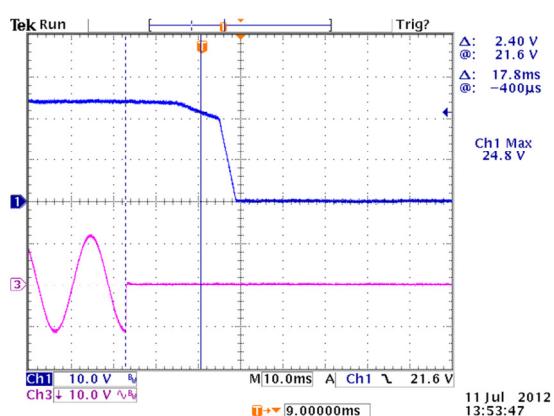


[90VAC, FULL LOAD](#)



[264VAC, FULL LOAD](#)

## Hold Up Time



[120VAC, FULL LOAD](#)

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