TDK·Lambda

LZSa10003

EVALUATION DATA

INDEX

TEST EQUIPMENT USED:

Digital Multi Meter (DMM) – Model –HP 34401A , Serial # -3146A22113 ,
POWER Source – Model –KIKUSUI DCR4000L, Serial # -13010090 ,
Electronic Load – Model –KIKUSUI PLC1003W, Serial # -14030789 ,
Digital Power Meter-Yokogawa, Serial# 28AW7013
Oscilloscope – Model –Tektronix TDS524A, Serial # -B010488 ,
OVP Source - HP6655A DC Power Supply Asset#3639A-01304
Electronic Load - HP6050A DC Load Asset#US37142000
Electronic Load - HP6050A DC Load Asset#US7141950
Oscilloscope - HP54503A Digitizing Scope Asset#US34510441
DMM - HP34401A Asset#US36012637
AC Source - California Instruments Model 6000L Asset#3803
Power Meter - Yokogawa WT1030 Asset#1345

Terminology used:

Vout = Output Voltage
Iout = Output Current
Vin = Input Voltage
Iin = Input Current
Ta = Ambient Temperature
OVP = Over-voltage protection
OCP = Over-current protection

EVALUATION DATA

1.- Load/Line Regulation

Vout = 24Vdc , 100% load = 42 amps , Ta =25C

Vout measured across output bussbars using local sense connections.

Local Sense

Iout\Vin	85VAC	115VAC	230VAC	265VAC	Line Regulation	
0% Load	24.0095	24.0099	24.0099	24.0101	0.6mV	0.0025%
25% Load	24.0042	24.0042	24.0042	24.0041	0.1mV	0.0004%
50% Load	24.0007	24.0007	24.0006	24.0006	0.1mV	0.0004%
75% Load	23.9978	23.9978	23.9977	23.9977	0.1mV	0.0004%
100% Load	23.9949	23.9948	23.9944	23.9944	0.5mV	0.00208
Load Regulation	14.6mV	15.1mV	15.5mV	15.7mV		
	0.0608%	0.0629%	0.0645%	0.0654%		

Vout measured on load using remote sense connections.

Remote Sense

Iout\Vin	85VAC	115VAC	230VAC	265VAC	Line Regulation	
0% Load	24.0057	24.0057	24.0053	24.0050	0.7mV	0.0029%
25% Load	24.0046	24.0047	24.0044	24.0039	0.7mV	0.0029%
50% Load	24.0045	24.0044	24.0043	24.0038	0.7mV	0.0029%
75% Load	24.0037	24.0037	24.0036	24.0031	0.6mV	0.0025%
100% Load	24.0025	24.0025	24.0020	24.0020	0.5mV	0.00208%
Load Regulation	3.2mV	3.2mV	3.3mV	3.0mV		
	0.0133%	0.0133%	0.01375%	0.0125%		

2.- Temperature Drift

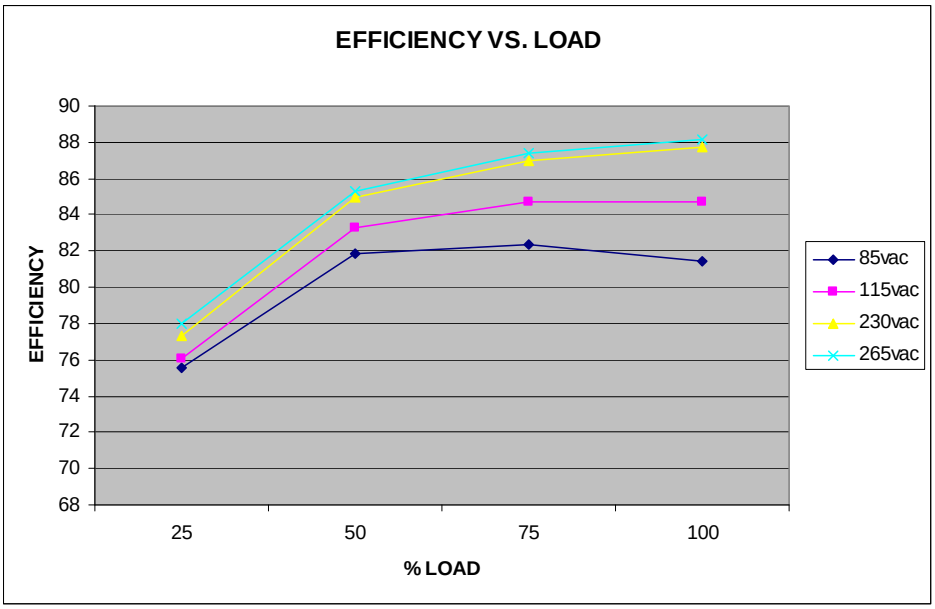
Vin = 115Vac , Vout = 24Vdc , Iout = 42 amps

				Temperature	Stability	
Ta	-30C	25C	60C	Vout Delta	V/C	%/C
Vout	24.0005	23.9355	23.9178	0.0827V	0.0009188	0.0038287

3.- Efficiency vs Output Current

Vout = 24vdc , 100% Load = 42Amps. , Ta = 25C

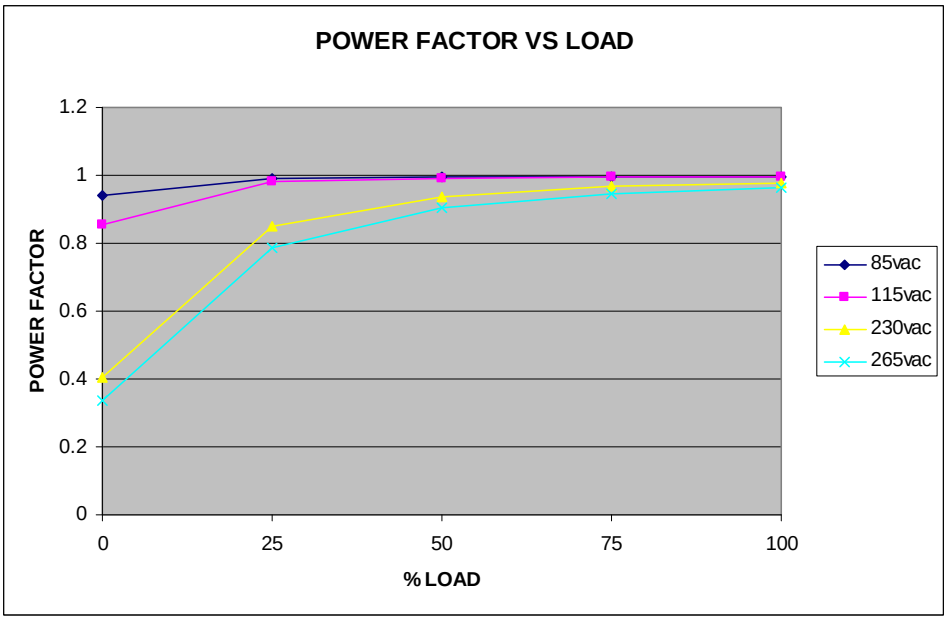
Iout(%)/Vin	85VAC	115VAC	230VAC	265VAC
25	75.517	76.087	77.3	78.01857
50	81.8314	83.292	84.9915	85.279
75	82.397	84.7058	86.9965	87.3988
100	81.395	84.713	87.7284	88.1118



4.- Power Factor vs Output Current

Vout = 24vdc , 100% Load = 42Amps. , Ta = 25C

Iout(%)/Vin	85VAC	115VAC	230VAC	265VAC
0	0.9422	0.8529	0.4062	0.3353
25	0.9921	0.9836	0.8479	0.7854
50	0.995	0.9925	0.9384	0.9025
75	0.995	0.995	0.9663	0.9463
100	0.9942	0.9959	0.978	0.9654



5.- Standby Input Current under inhibit condition & Input Current vs Output Current

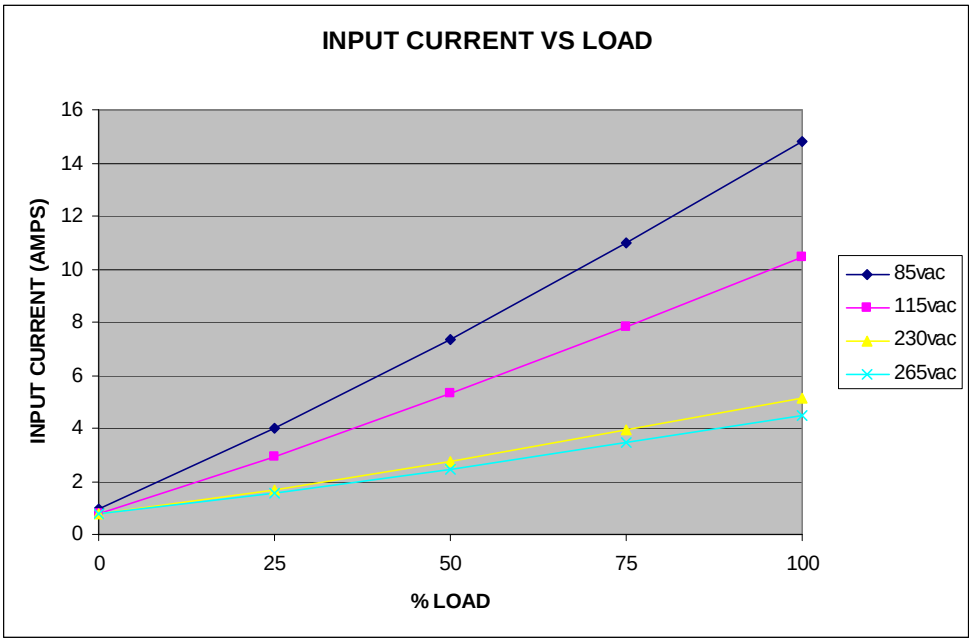
5.1 Standby Input Current under inhibit condition.

Vin(AC)	Iinput(AC)
85	0.398
110	0.418
132	0.436
170	0.470
220	0.552
265	0.625

5.2 Input Current vs output Current

Vout = 24vdc , 100% Load = 42Amps. , Ta = 25C

Iout(%)/Vin	85VAC	115VAC	230VAC	265VAC
0	0.935	0.757	0.748	0.774
25	3.98	2.939	1.674	1.554
50	7.338	5.329	2.756	2.474
75	10.957	7.848	3.92	3.459
100	14.834	10.465	5.127	4.486

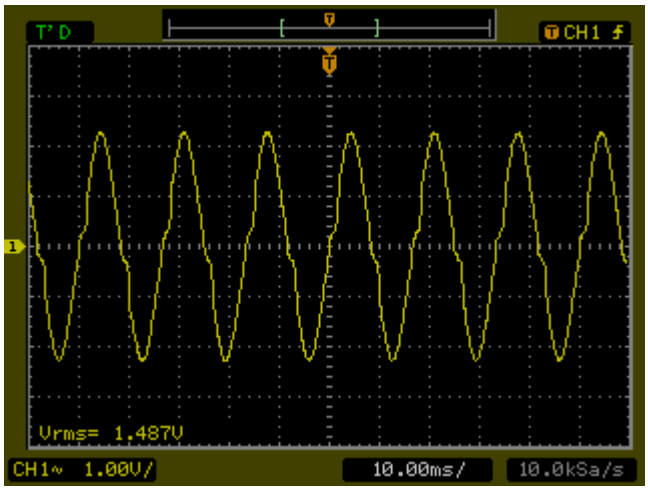


6.- Input Current Waveforms at Full Output Power

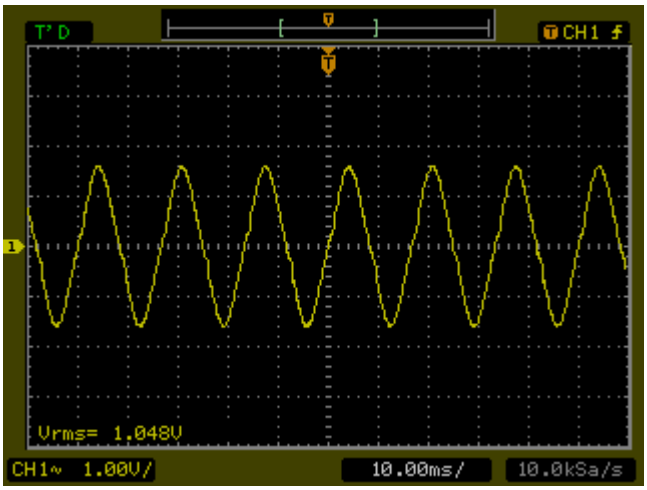
Vout = 24vdc , Iout = 42Amps. , Ta = 25C

CH1 Iinput 100mV/1Amp

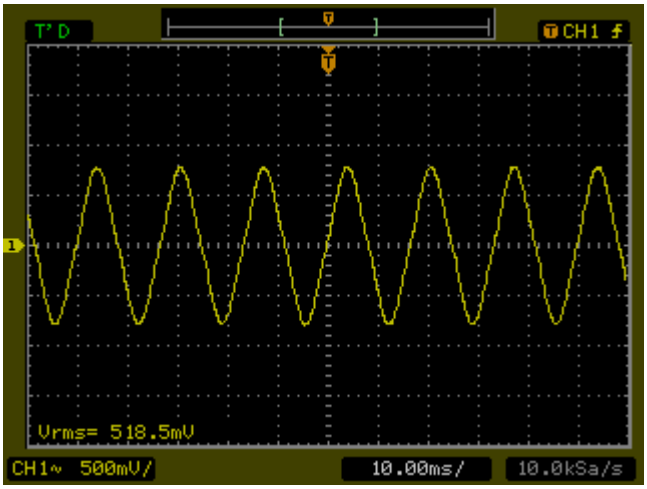
Frequency = 60Hz



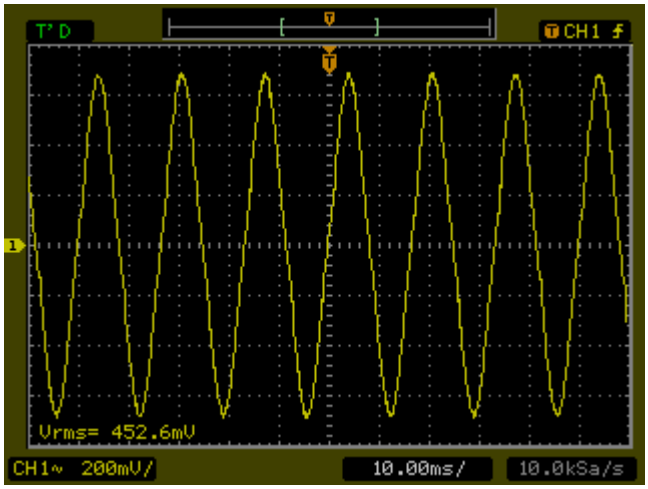
Vin = 85VAC , Iin = 14.87 Amps



Vin = 115 VAC , Iin = 10.48 Amps



Vin = 230VAC , Iin = 5.185 Amps



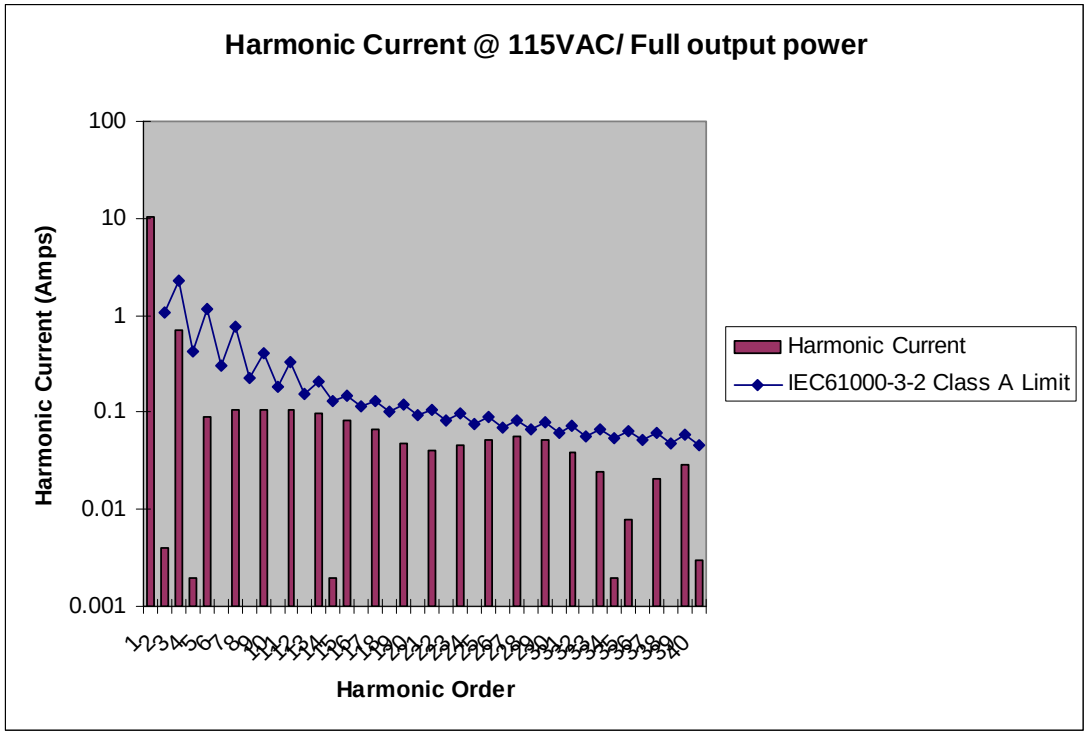
Vin = 265 VAC , Iin = 4.526 Amps

7.- Input Current harmonics and THD

Vout = 24vdc , Iout = 42Amps. , Ta = 25C
Frequency = 60Hz

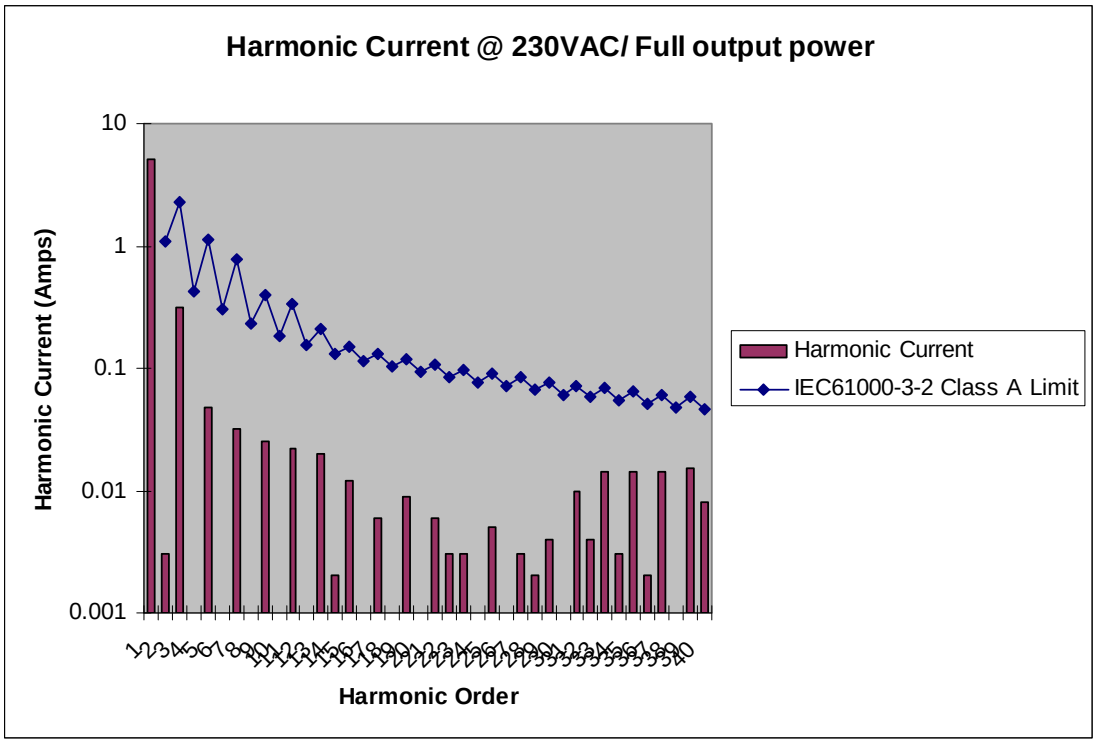
Harmonic Order	Current (A)
1	10.454
2	0.004
3	0.703
4	0.002
5	0.088
6	0.001
7	0.105
8	0
9	0.108
10	0
11	0.105
12	0.001
13	0.097
14	0.002
15	0.084
16	0.001
17	0.066
18	0.001
19	0.048
20	0.001
21	0.04
22	0.001
23	0.045
24	0.001
25	0.053
26	0.001
27	0.056
28	0.001
29	0.051
30	0.001
31	0.039
32	0.001
33	0.024
34	0.002
35	0.008
36	0.001
37	0.021
38	0.001
39	0.029
40	0.003

Vin = 115Vac
Iin = 10.482Amps
THD = 7.28 %



Harmonic Order	Current (A)
1	5.124
2	0.003
3	0.318
4	0.001
5	0.048
6	0
7	0.032
8	0.001
9	0.025
10	0
11	0.022
12	0
13	0.02
14	0.002
15	0.012
16	0
17	0.006
18	0.001
19	0.009
20	0.001
21	0.006
22	0.003
23	0.003
24	0.001
25	0.005
26	0.001
27	0.003
28	0.002
29	0.004
30	0.001
31	0.01
32	0.004
33	0.014
34	0.003
35	0.014
36	0.002
37	0.014
38	0.001
39	0.015
40	0.008

Vin = 230Vac
Iin = 5.135 Amps
THD = 6.43 %

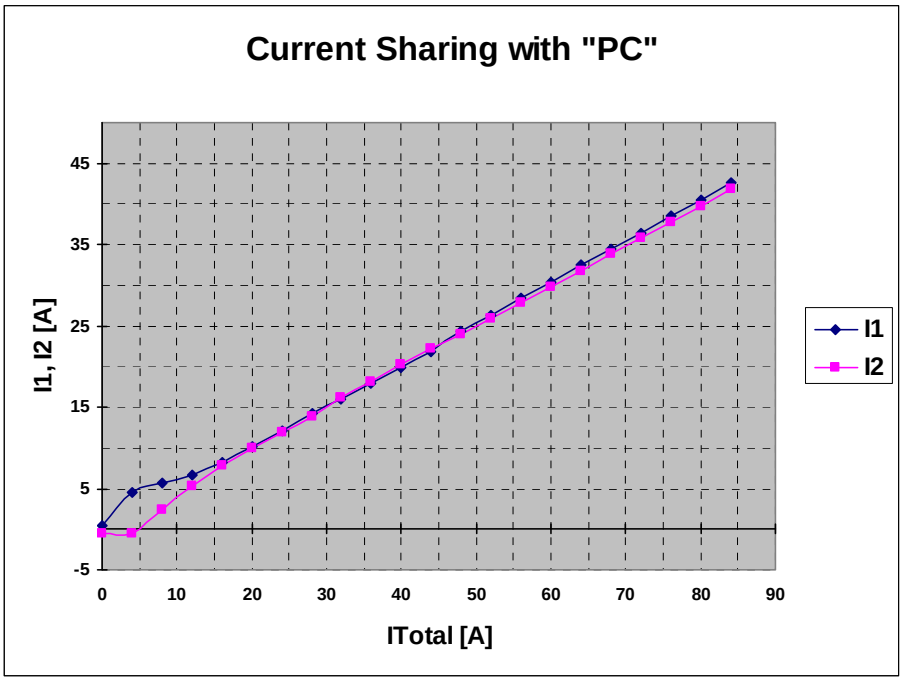


8.- Current Share Test

Vin = 110VAC , Unit 1 Vout = 24.1Vdc, Unit 2 Vout = 24.0 Vdc with local sense. Ta = 25C

Current Sharing Data with Current Share pin used:

Itotal	I1	I2
0	0.498	-0.503
4	4.507	-0.504
8	5.632	2.383
12	6.713	5.317
16	8.209	7.836
20	10.131	9.924
24	12.135	11.933
28	14.158	13.922
32	15.911	16.185
36	17.898	18.214
40	19.892	20.233
44	21.892	22.263
48	24.291	23.877
52	26.321	25.860
56	28.359	27.839
60	30.388	29.832
64	32.429	31.815
68	34.457	33.812
72	36.490	35.805
76	38.515	37.805
80	40.554	39.796
84	42.595	41.786



***This plot shows the sharing between two units with the PC connection in place (Excellent tracking between 2 units all the way down to 16A (<20% full system load).

9.- Enable Switch Test and OVP Reaction time Test

9.1 Output enable switch test

Remote On/Off Control – TTL voltage level compatible signal connected between pins 6 and 7 of the DB-15 connector. Pins 6 and 7 are isolated from all other power supply terminals. A Logic 0, short circuit or open circuit disables the power supply output. Logic 1 enables the output. Output will reach specified limits within 50 msec of application of Logic 1. Remote On/Off Control function is enabled by “Output Enable” switch placed in the “Remote” position.

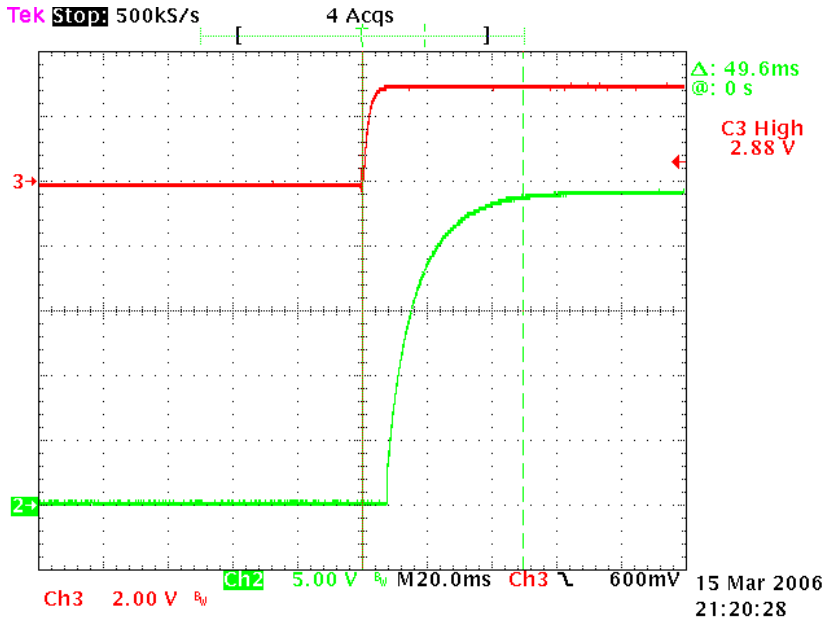
Channel 2 of the above listed scope is connected to the output set for 24V DC. Channel 3 is connected to the ENABLE optocoupler operated by a TTL signal.

Remote On Control (AC present).

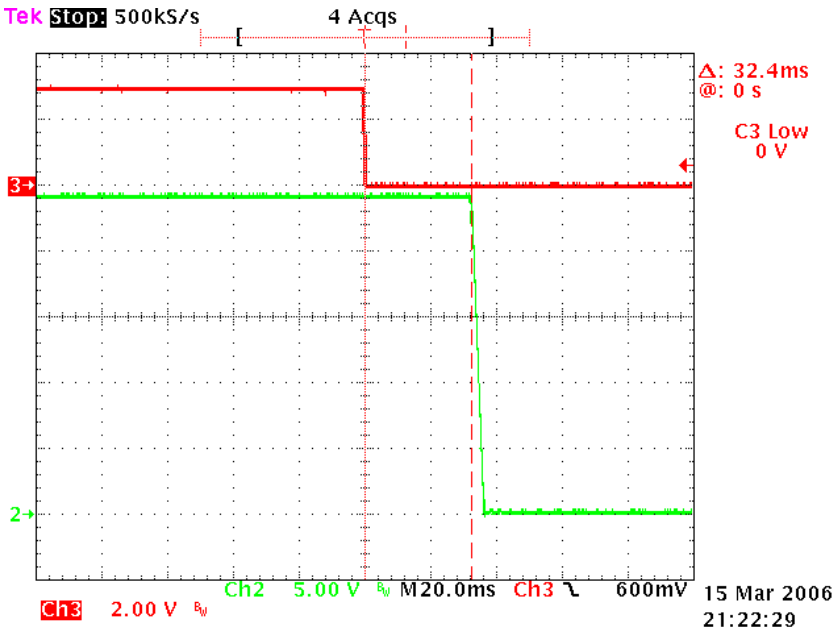
Channel 2: 24V Output

Channel 3: TTL Enable signal

LOGIC 1 OUTPUT ENABLE TEST



LOGIC 0 OUTPUT DISABLE TEST



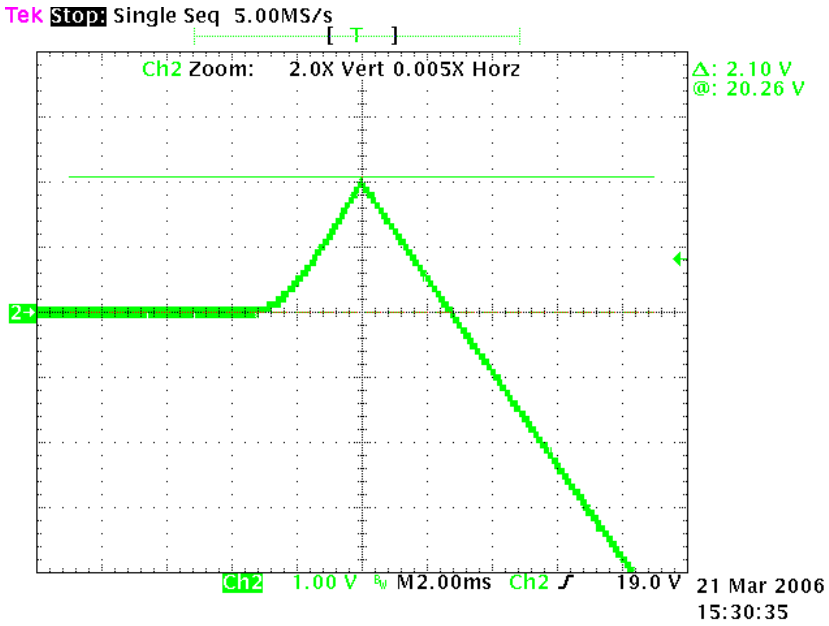
9.2- OVP REACTION TIME TEST

Overvoltage: Output voltages exceeding the OVP setpoint (20-36 volts) will cause a latched shutdown. Input Power or Remote on/off must be cycled to restore output. The overvoltage protection setpoint will be adjustable by the user using a front panel mounted potentiometer. The OVP adjustment range is 20 to 36 volts (24V model). In cases where the desired OV threshold exceeds the units adjustment range maximum of 29.4V, a programming resistor will be temporarily needed to provide the higher output voltage (voltage) to perform the adjustment.

OVERVOLTAGE TEST RESULT: OVP SETPOINT 20V (10% LOAD)

Conditions: Vin=110VAC, Vout=18.049V, Tamb=25°C.

Channel 2: Vout set to 18.0 V with sense lines opened with 4.2A load:

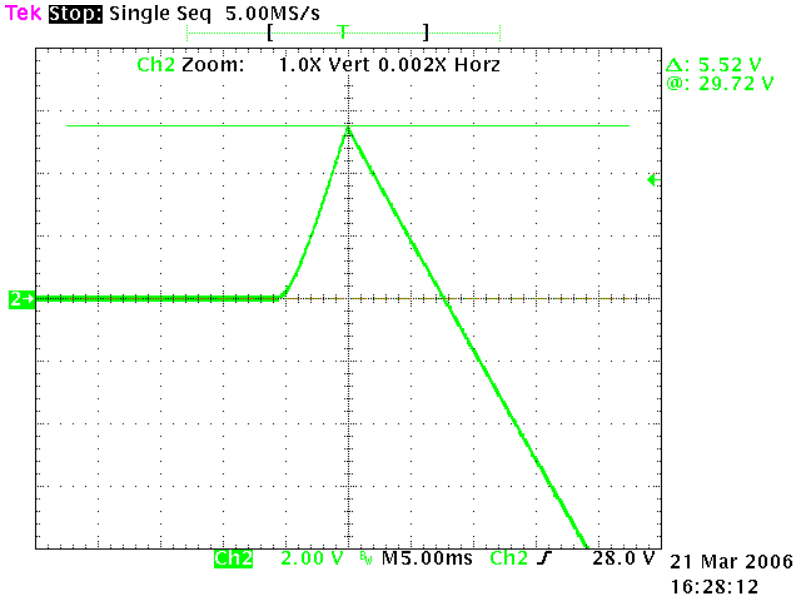


OVP set-point = 20V, OVP Trip-point = 20.26V

OVERVOLTAGE TEST RESULT: OVP SETPOINT 29.4V (10% LOAD)

Conditions: Vin=110VAC, Vout=24.052V, Tamb=25°C.

Channel 2: Vout set to 24.0 V with sense lines opened with 4.2A load:

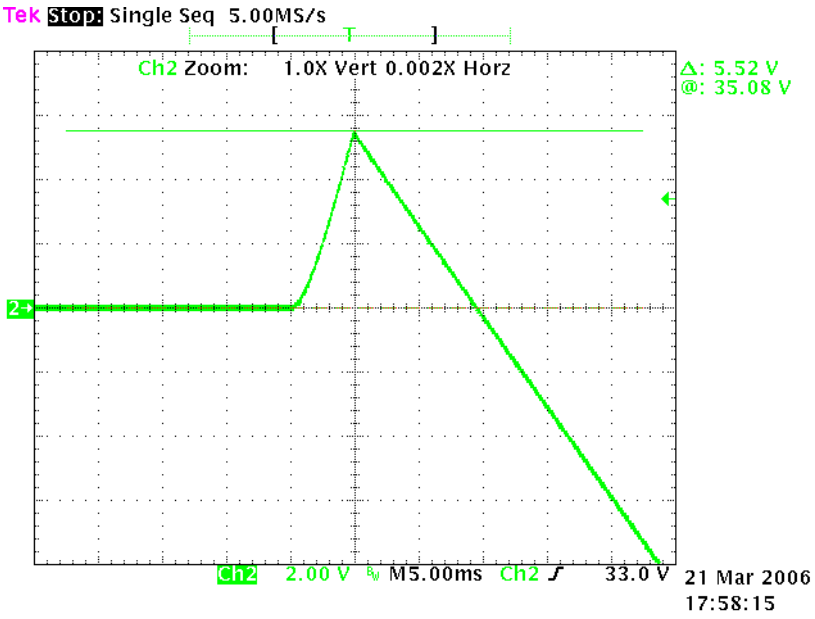


OVP set-point = 29.4V, OVP Trip-point = 29.72V

OVERVOLTAGE TEST RESULT: OVP SETPOINT 34.8V (10% LOAD)

Conditions: Vin=110VAC, Vout=29.411V, Tamb=25°C.

Channel 2: Vout set to 29.4 V with sense lines opened with 3.4A load:

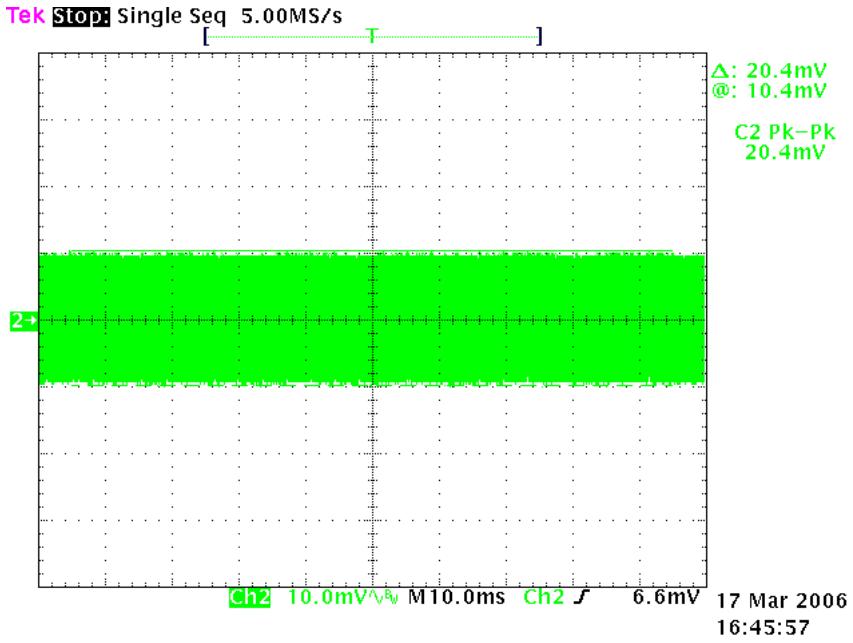


OVP set-point = 34.8V, OVP Trip-point = 35.08V

10.- Ripple noise test.
Ripple and Noise: 75mV pk-pk max, 20MHz bandwidth. EIAJ RC-9002A Procedure.

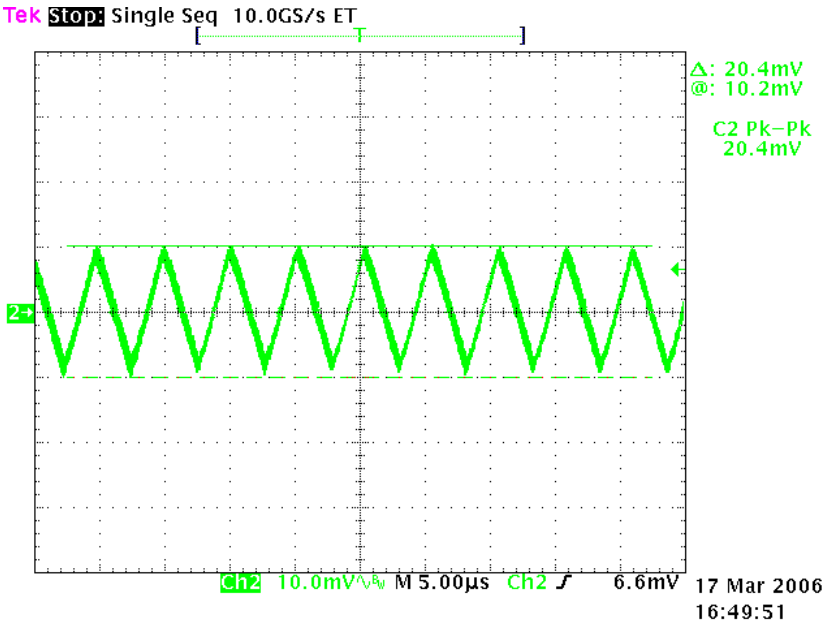
LF Ripple at 4.2Amp (10%) load Low Input Line.

Conditions: Vin= 85VAC, Vout=24.072V, Pin=200W, Pout=101W, Eff=50.7%, Tamb=25ºC.



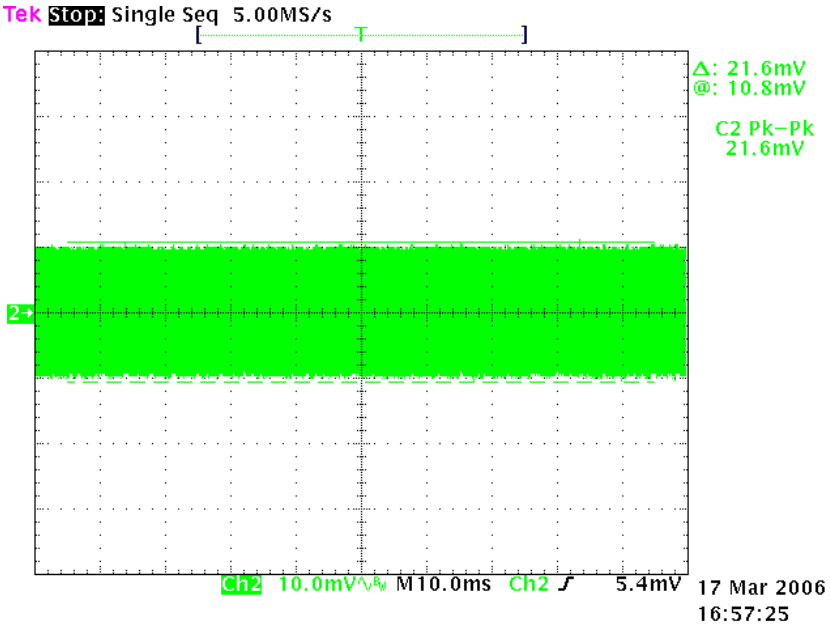
HF Ripple at 4.2Amp (10%) load Low Input Line.

Conditions: Vin= 85VAC, Vout=24.072V, Pin=200W, Pout=101W, Eff=50.7%, Tamb=25ºC.



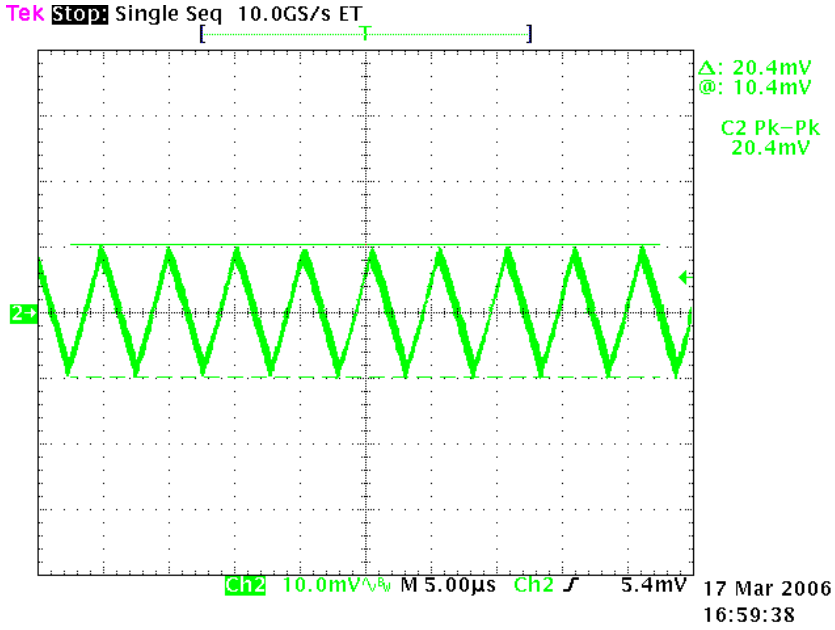
LF Ripple at 4.2Amp (10%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.072V, Pin=188W, Pout=101W, Eff=53.7%, Tamb=25°C.



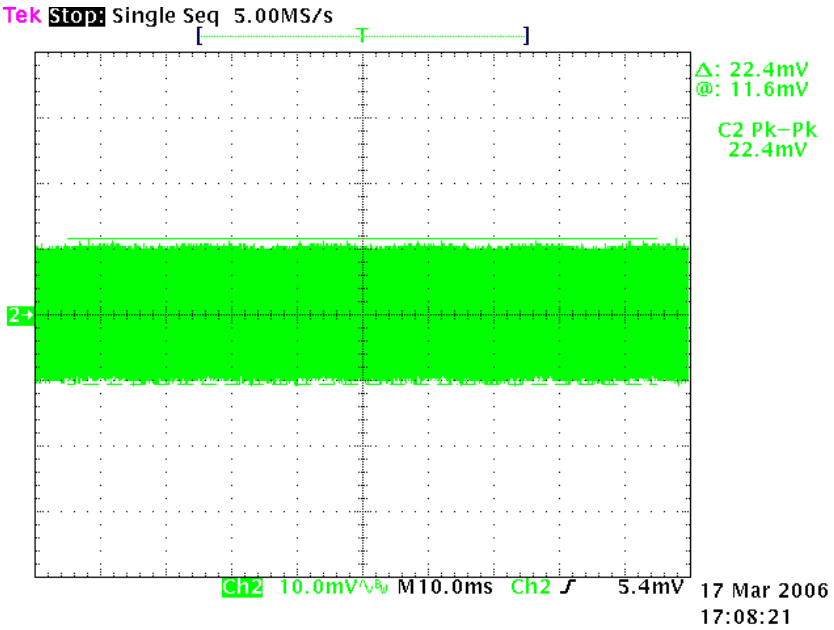
HF Ripple at 4.2Amp (10%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.072V, Pin=188W, Pout=101W, Eff=53.7%, Tamb=25°C.



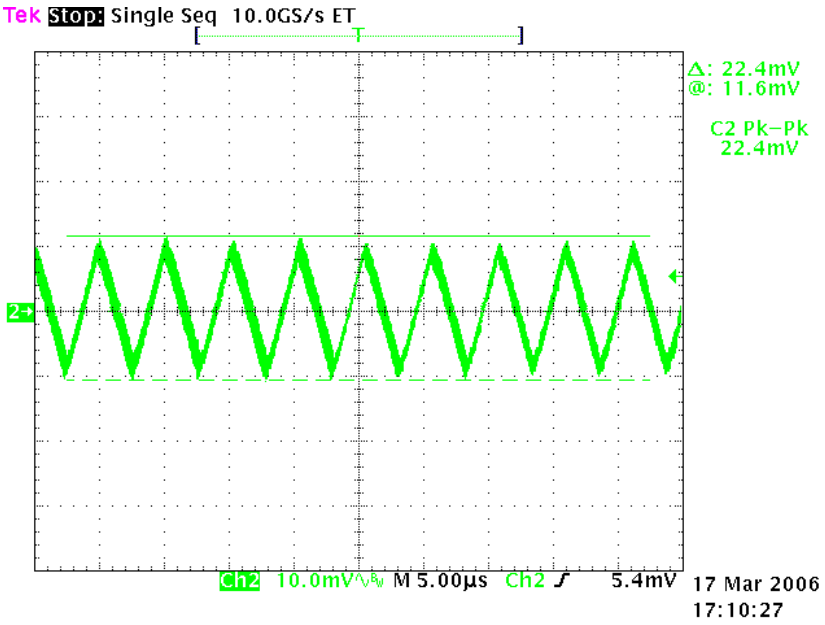
LF Ripple at 10.5Amp (25%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.069V, Pin=361W, Pout=252.7W, Eff=69.9%, Tamb=25°C.



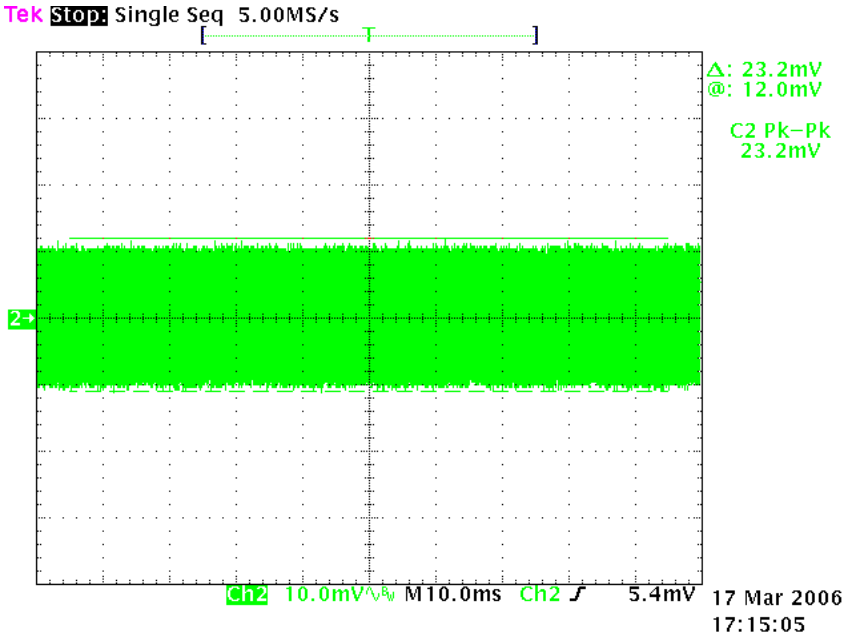
HF Ripple at 10.5Amp (25%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.069V, Pin=361W, Pout=252.7W, Eff=69.9%, Tamb=25°C.



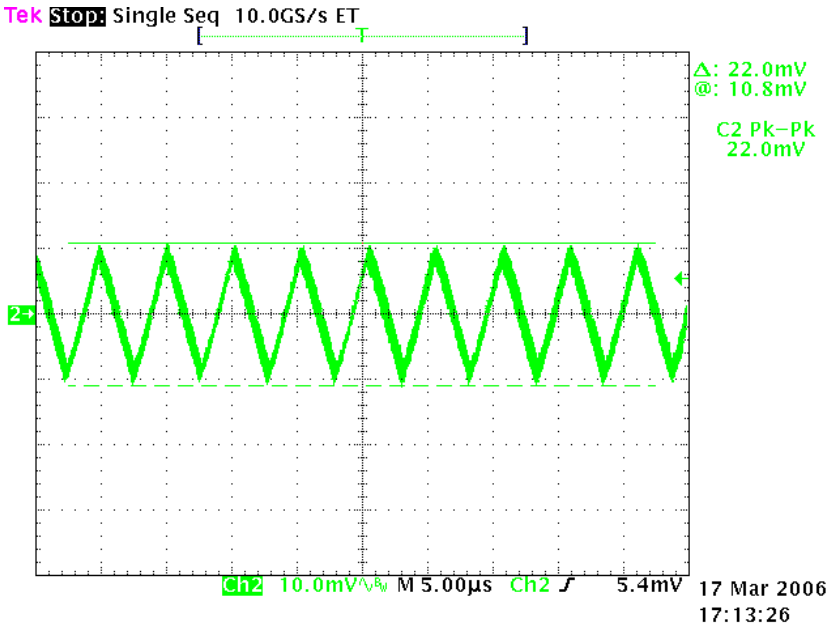
LF Ripple at 10.5Amp (25%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.069V, Pin=355W, Pout=252.7W, Eff=71.2%, Tamb=25°C.



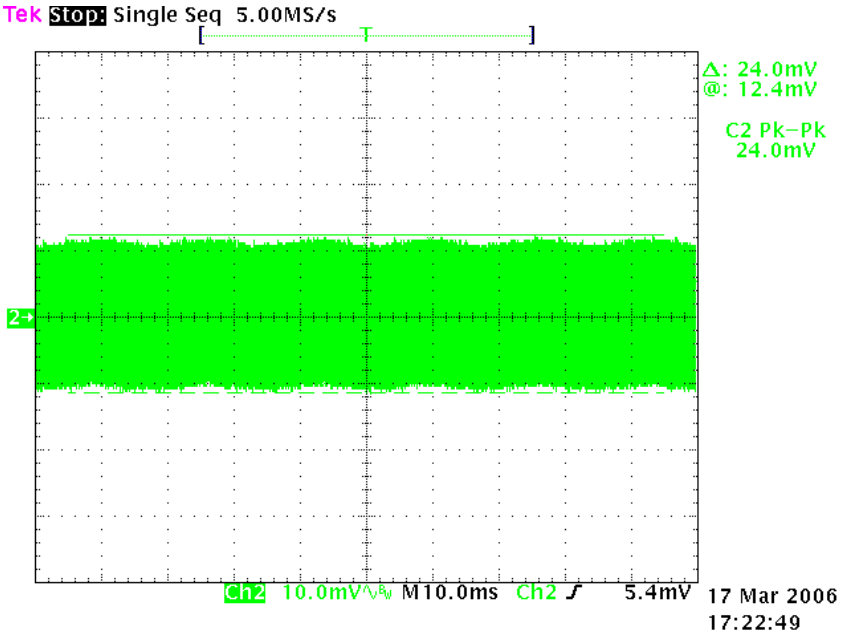
HF Ripple at 10.5Amp (25%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.069V, Pin=355W, Pout=252.7W, Eff=71.2%, Tamb=25°C.



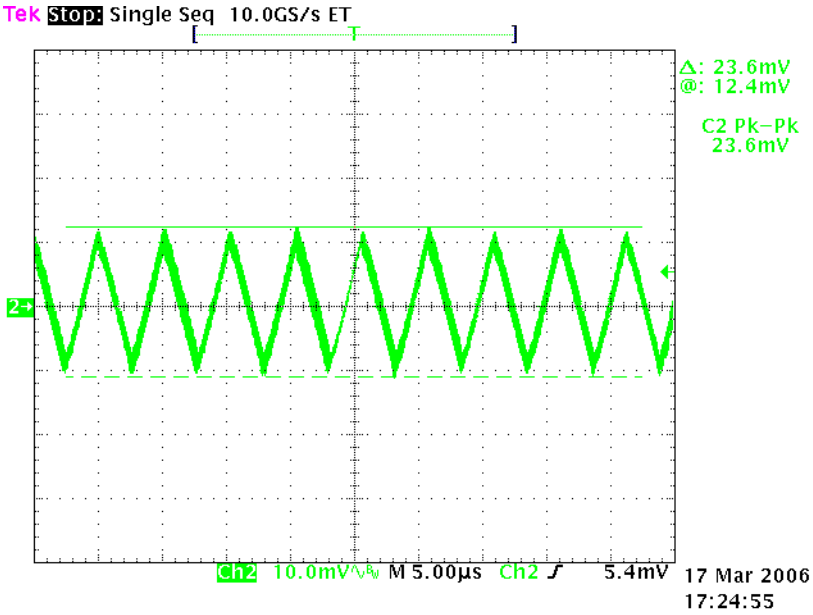
LF Ripple at 21.0Amp (50%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.049V, Pin=633W, Pout=505W, Eff=79.7%, Tamb=25°C.



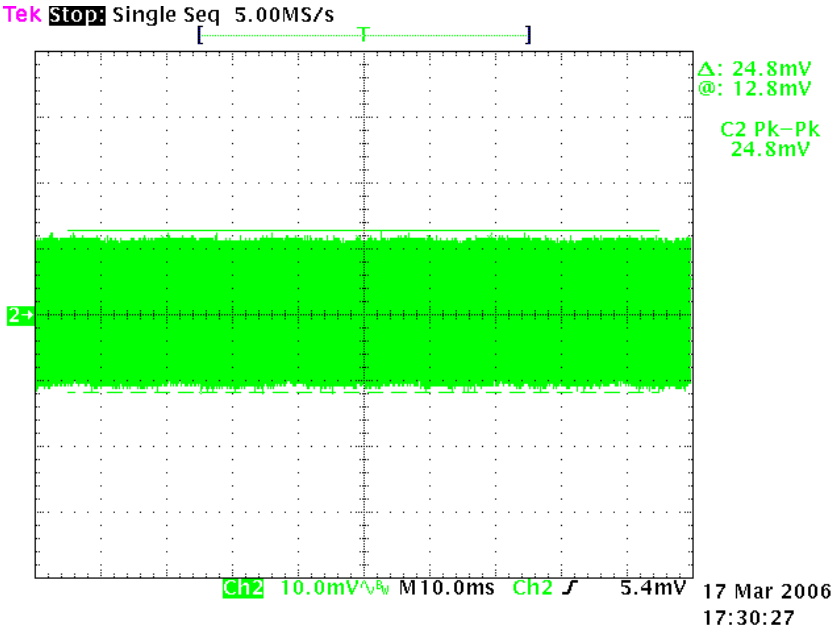
HF Ripple at 21.0Amp (50%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.049V, Pin=633W, Pout=505W, Eff=79.7%, Tamb=25°C.



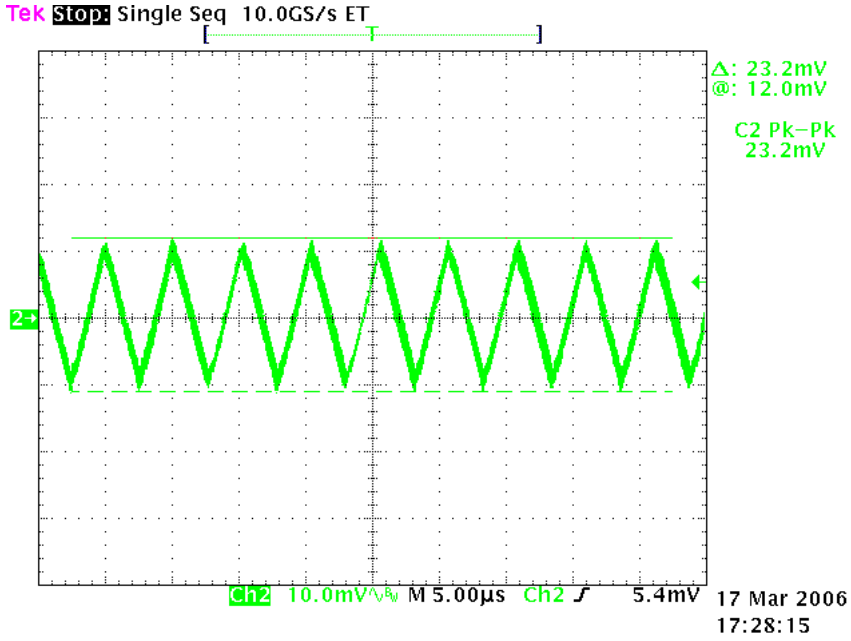
LF Ripple at 21.0Amp (50%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.049V, Pin=623W, Pout=505W, Eff=81.1%, Tamb=25°C.



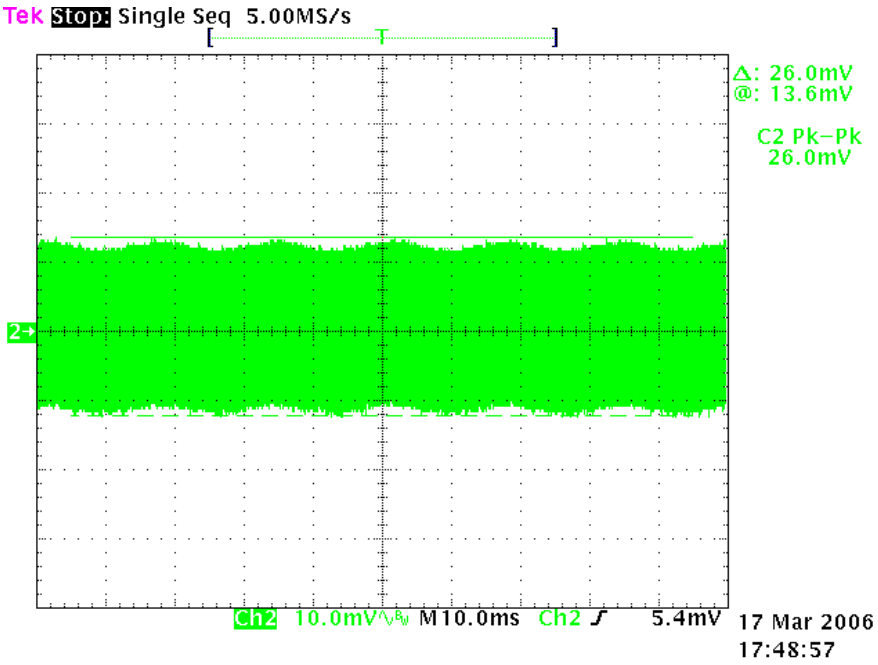
HF Ripple at 21.0Amp (50%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.049V, Pin=623W, Pout=505W, Eff=81.1%, Tamb=25°C.



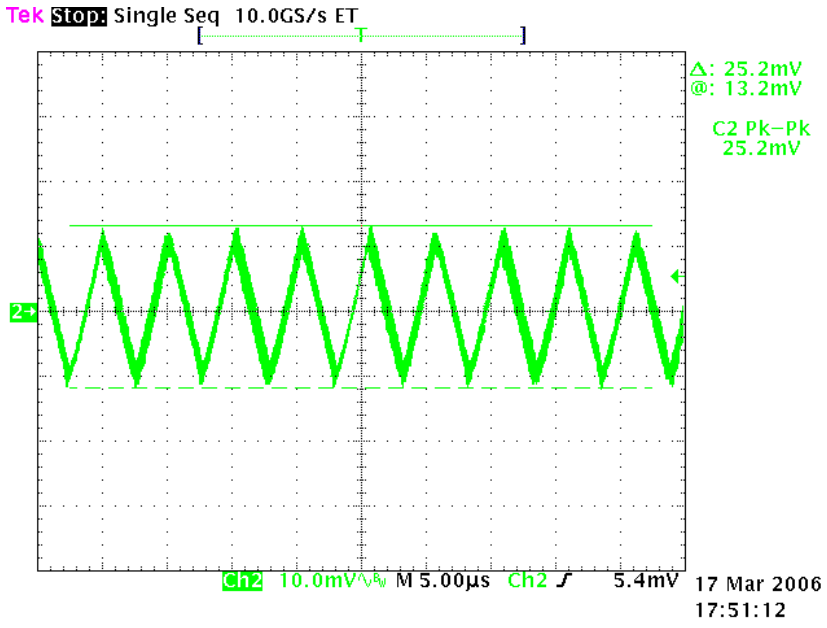
LF Ripple at 31.5Amp (75%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.042V, Pin=921W, Pout=757W, Eff=82.2%, Tamb=25°C.



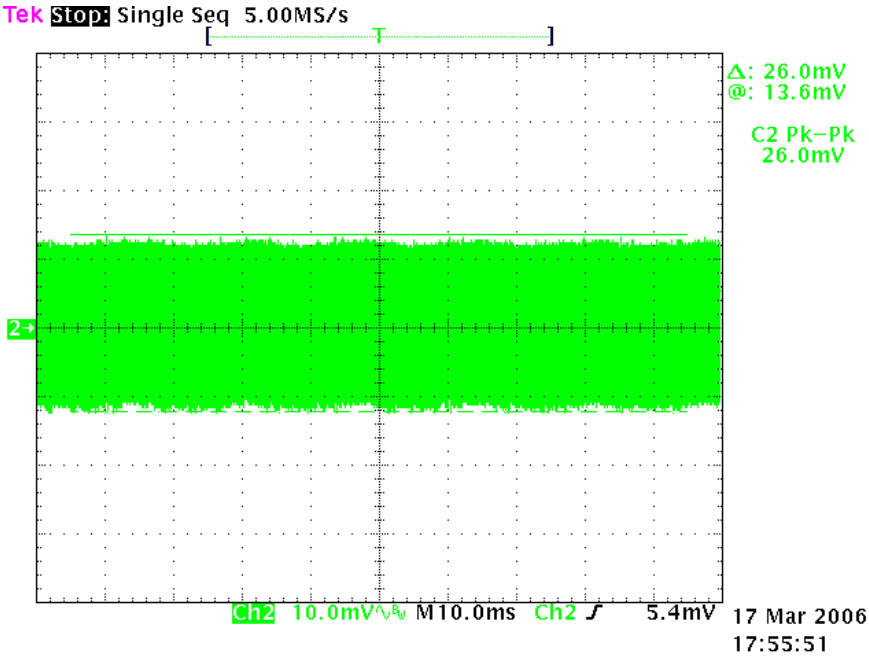
HF Ripple at 31.5Amp (75%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.042V, Pin=921W, Pout=757W, Eff=82.2%, Tamb=25°C.



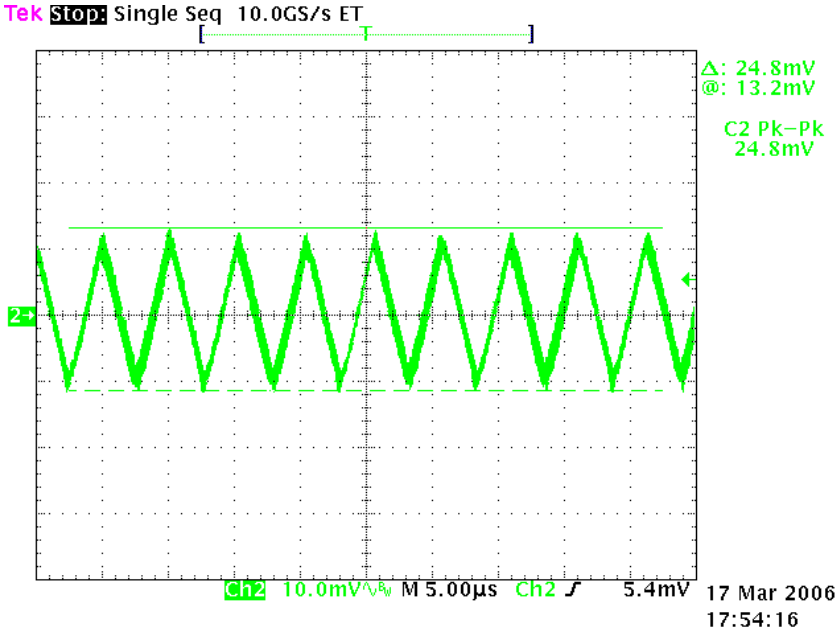
LF Ripple at 31.5Amp (75%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.042V, Pin=899W, Pout=757W, Eff=84.2%, Tamb=25°C.



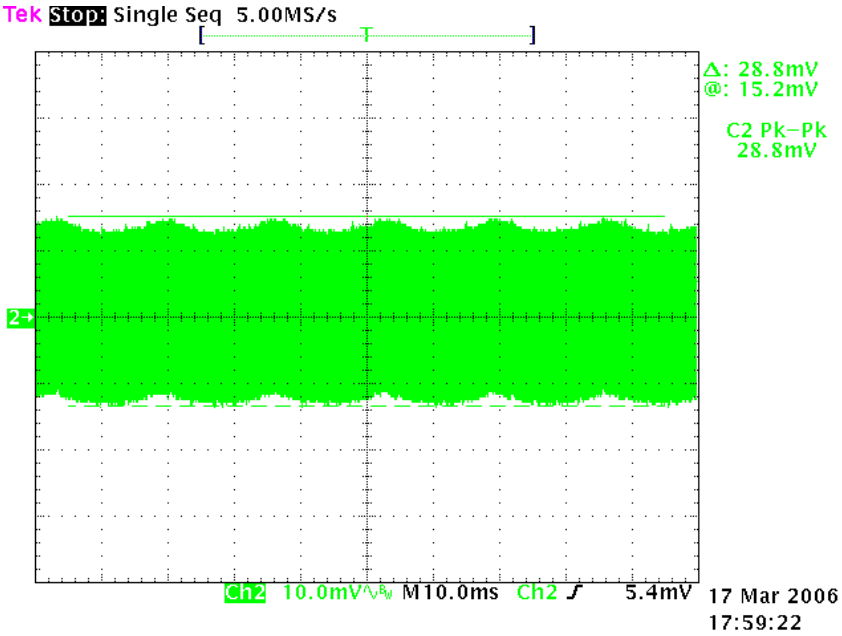
HF Ripple at 31.5Amp (75%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.042V, Pin=899W, Pout=757W, Eff=84.2%, Tamb=25°C.



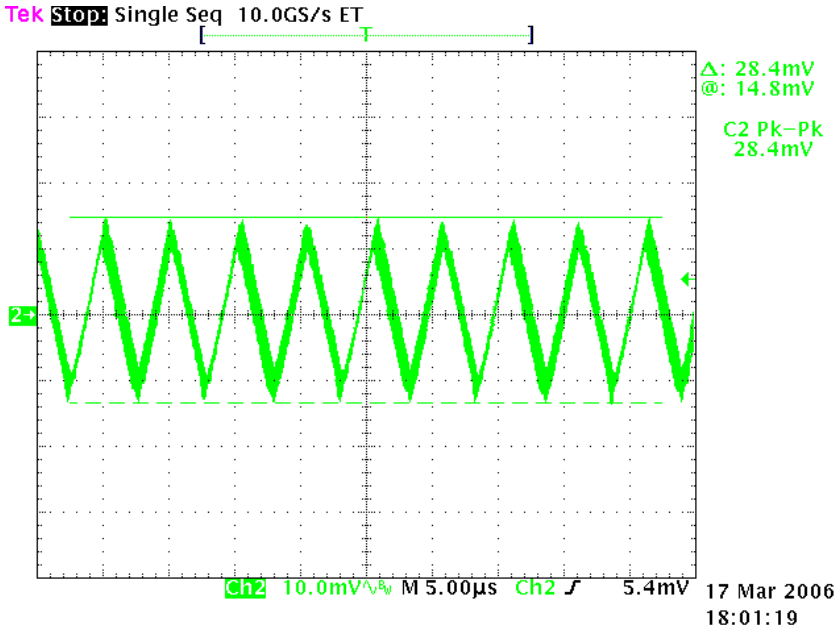
LF Ripple at 42.0Amp (100%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.038V, Pin=1220W, Pout=1010W, Eff=82.8%, Tamb=25°C.



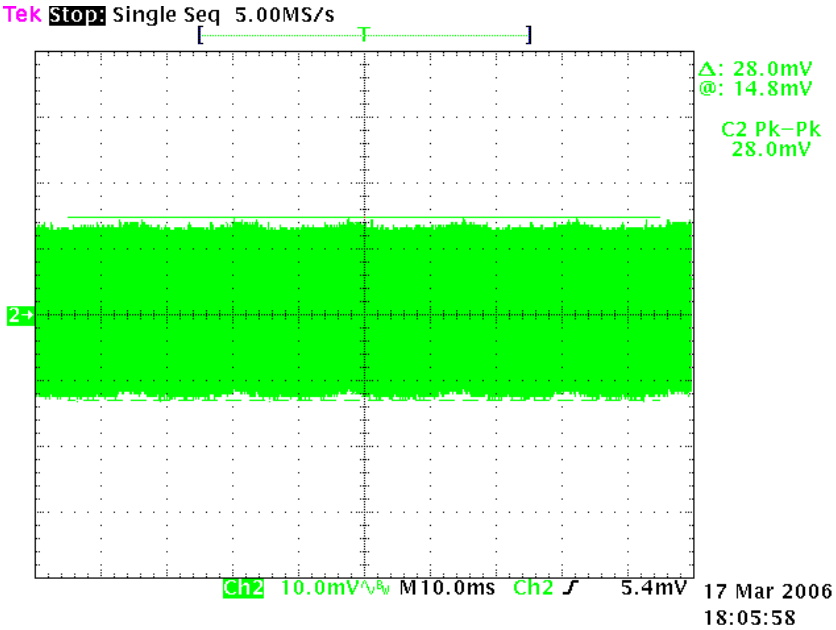
HF Ripple at 42.0Amp (100%) load Low Input Line.

Conditions: Vin=110VAC, Vout=24.038V, Pin=1220W, Pout=101W, Eff=82.8%, Tamb=25°C.



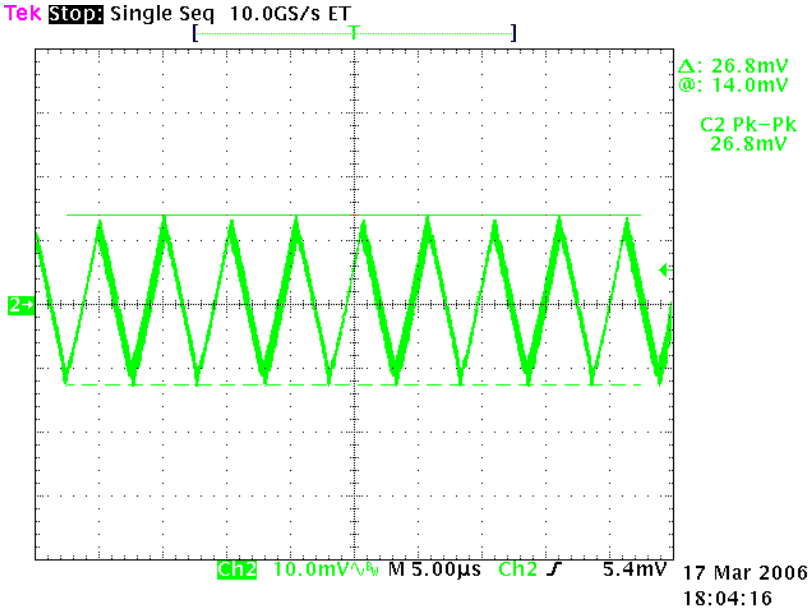
LF Ripple at 42.0Amp (100%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.037V, Pin=1181W, Pout=1010W, Eff=85.5%, Tamb=25°C.



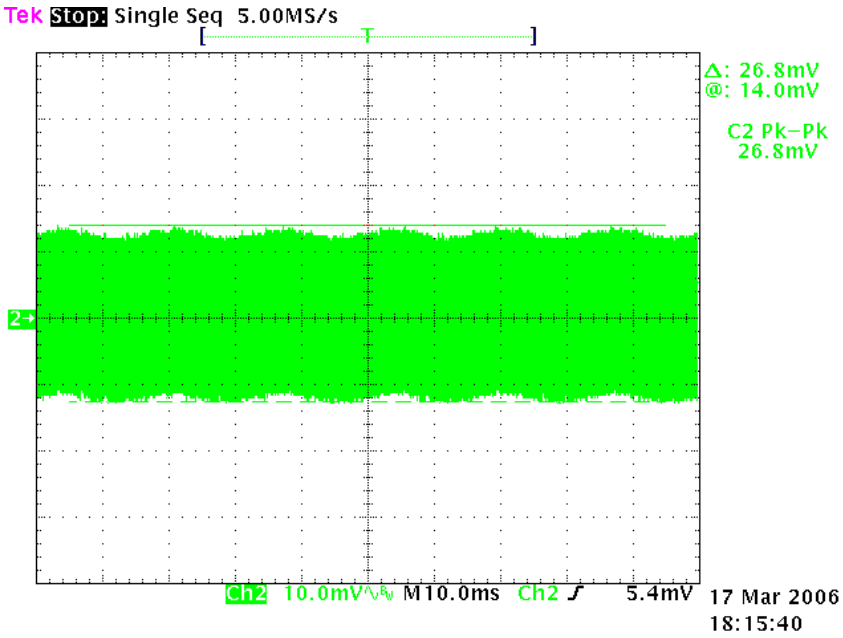
HF Ripple at 42.0Amp (100%) load High Input Line.

Conditions: Vin=220VAC, Vout=24.037V, Pin=1181W, Pout=101W, Eff=85.5%, Tamb=25°C.



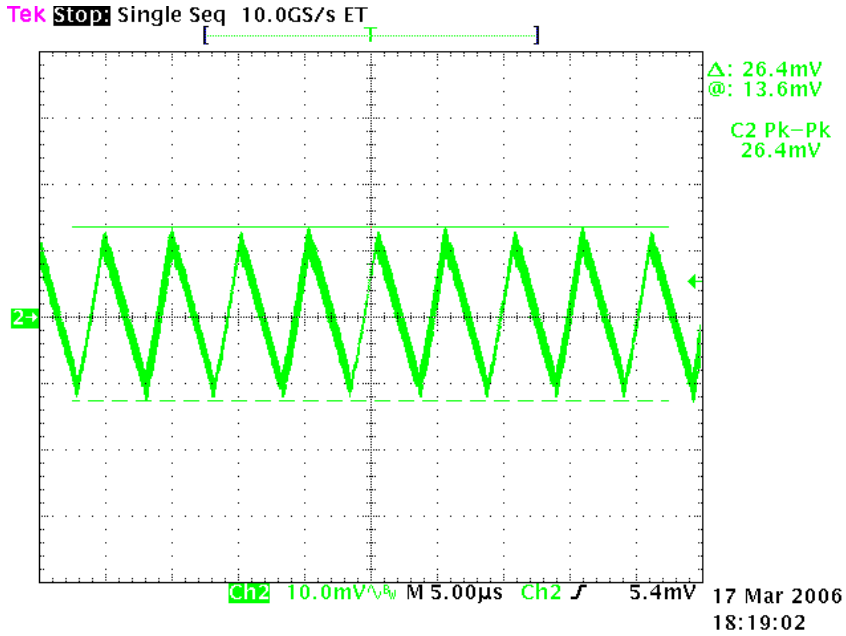
LF Ripple at 42.0Amp (100%) load Low Input Line.

Conditions: Vin=110VAC, Vout=18.009V, Pin=941W, Pout=756W, Eff=80.4%, Tamb=25°C.



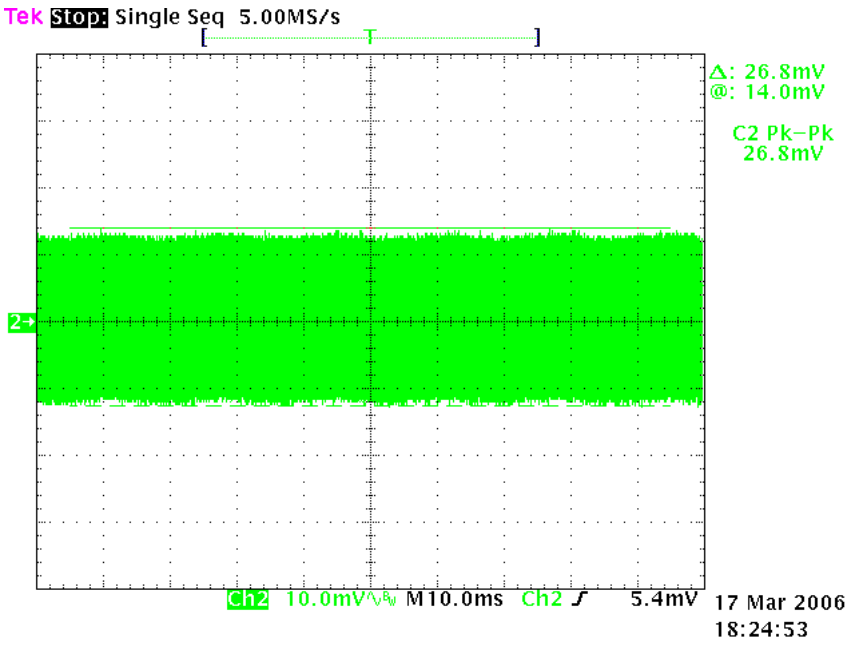
HF Ripple at 42.0Amp (100%) load Low Input Line.

Conditions: Vin=110VAC, Vout=18.009V, Pin=941W, Pout=756W, Eff=80.4%, Tamb=25°C.



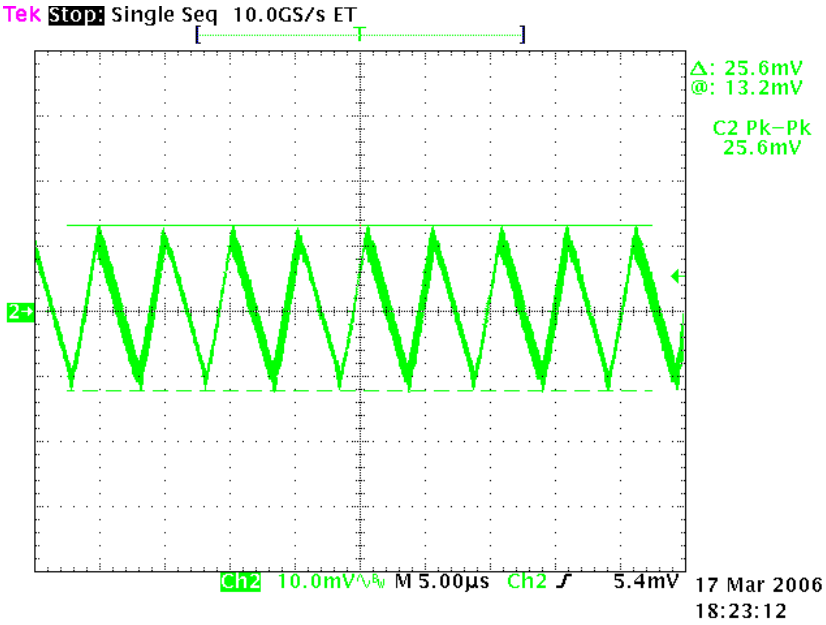
LF Ripple at 42.0Amp (100%) load High Input Line.

Conditions: Vin=220VAC, Vout=18.009V, Pin=917W, Pout=756W, Eff=82.4%, Tamb=25°C.



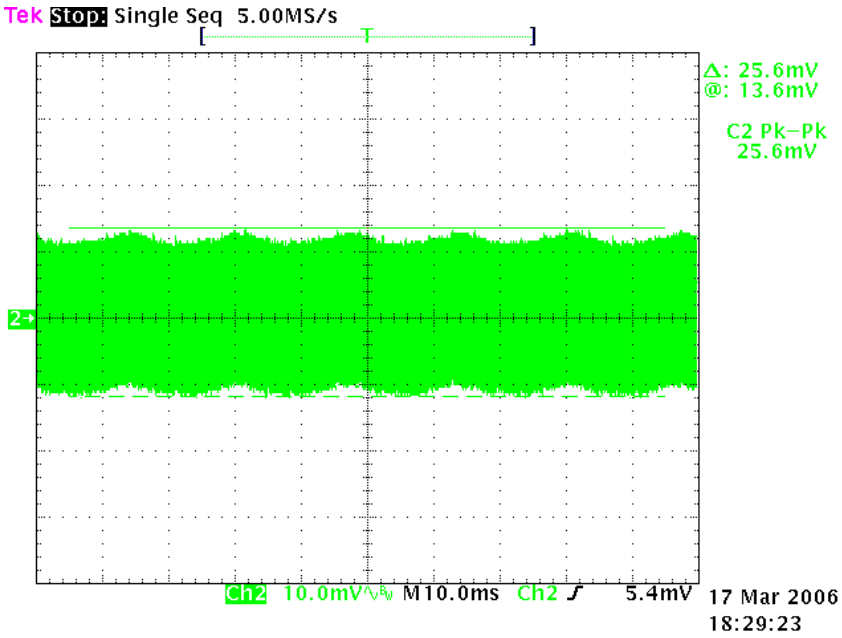
HF Ripple at 42.0Amp (100%) load High Input Line.

Conditions: Vin=220VAC, Vout=18.009V, Pin=917W, Pout=756W, Eff=82.4%, Tamb=25°C.



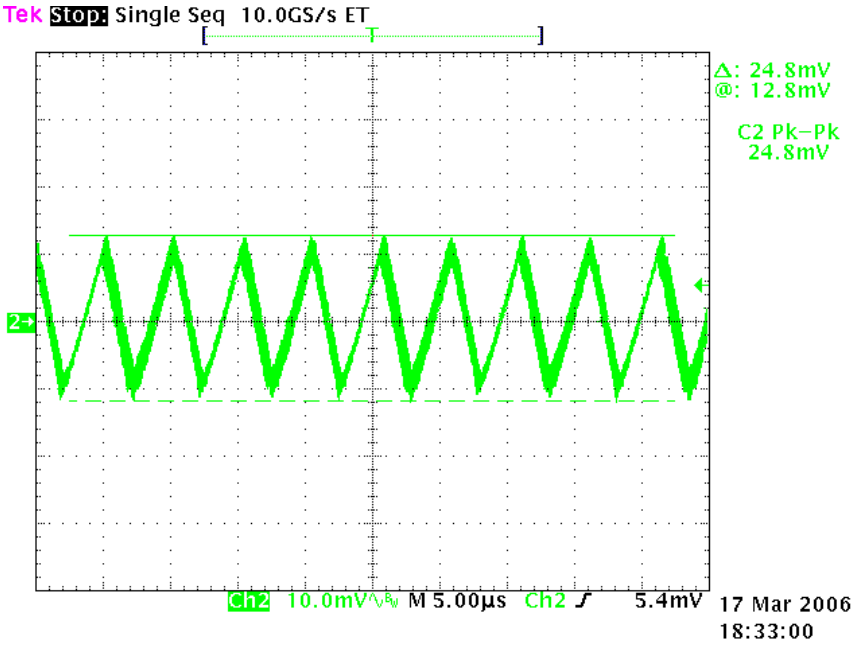
LF Ripple at 34.0Amp (100%) load Low Input Line.

Conditions: Vin=110VAC, Vout=29.193V, Pin=1184W, Pout=993W, Eff=83.8%, Tamb=25°C.



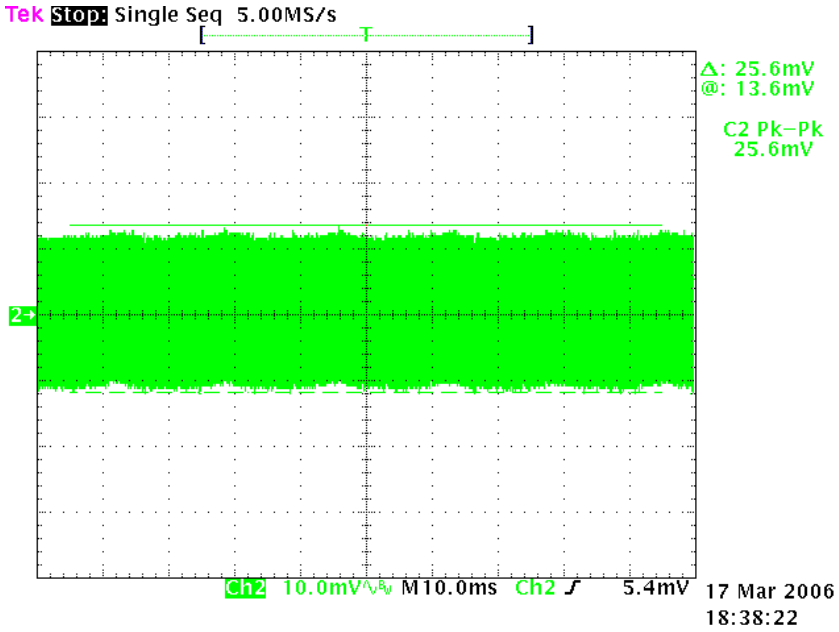
HF Ripple at 34.0Amp (100%) load Low Input Line.

Conditions: Vin=110VAC, Vout=29.193V, Pin=1184W, Pout=993W, Eff=83.8%, Tamb=25°C.



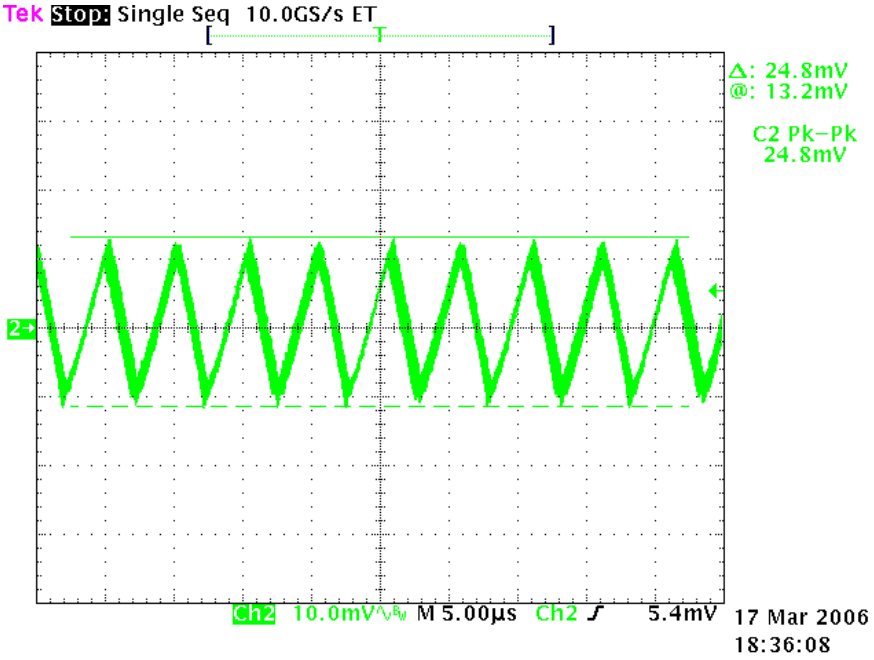
LF Ripple at 34.0Amp (100%) load High Input Line.

Conditions: Vin=220VAC, Vout=29.192V, Pin=1148W, Pout=993W, Eff=86.5%, Tamb=25°C.



HF Ripple at 34.0Amp (100%) load High Input Line.

Conditions: Vin=220VAC, Vout=29.192V, Pin=1148W, Pout=993W, Eff=86.5%, Tamb=25°C.

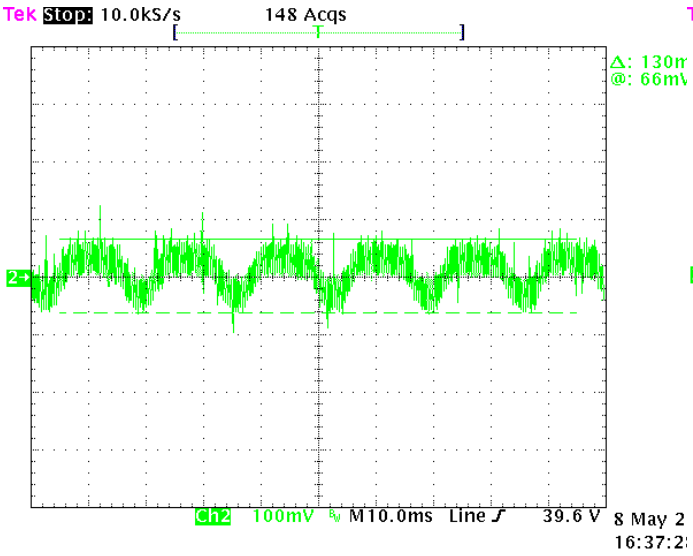


11.- Common noise test.

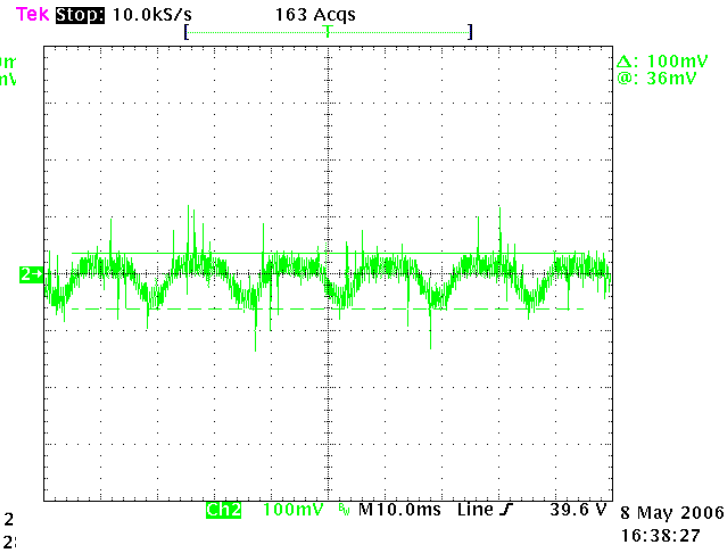
X1 scope probe connected to channel 2 of the above listed oscilloscope and placed directly across the ground and buss bars of the supply without the use of a ground strap.

Conditions: Vin=110VAC, Vout=24.045V, Pout=1000W, Tamb=25°C.

Common Noise test (+) bar.

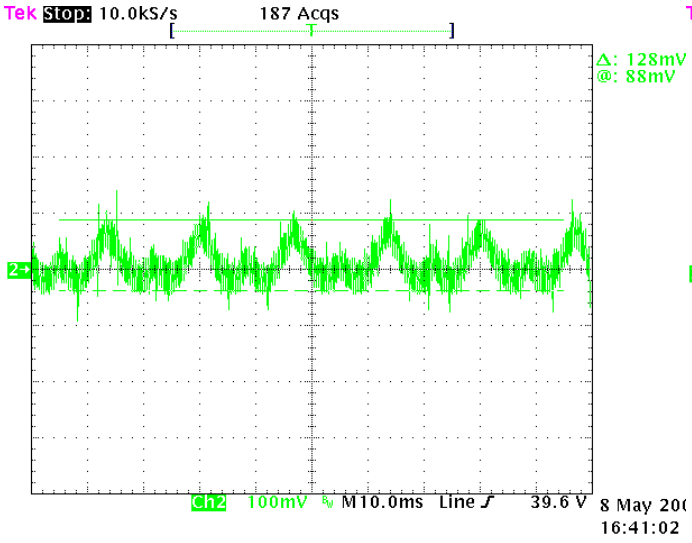


Common Noise test (-) bar.

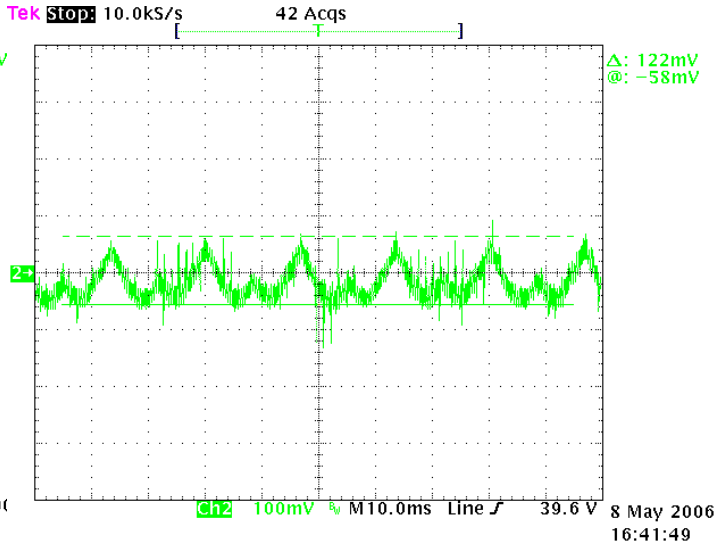


Conditions: Vin=220VAC, Vout=24.045V, Pout=1000W, Tamb=25°C.

Common Noise test (+) bar.



Common Noise test (-) bar.



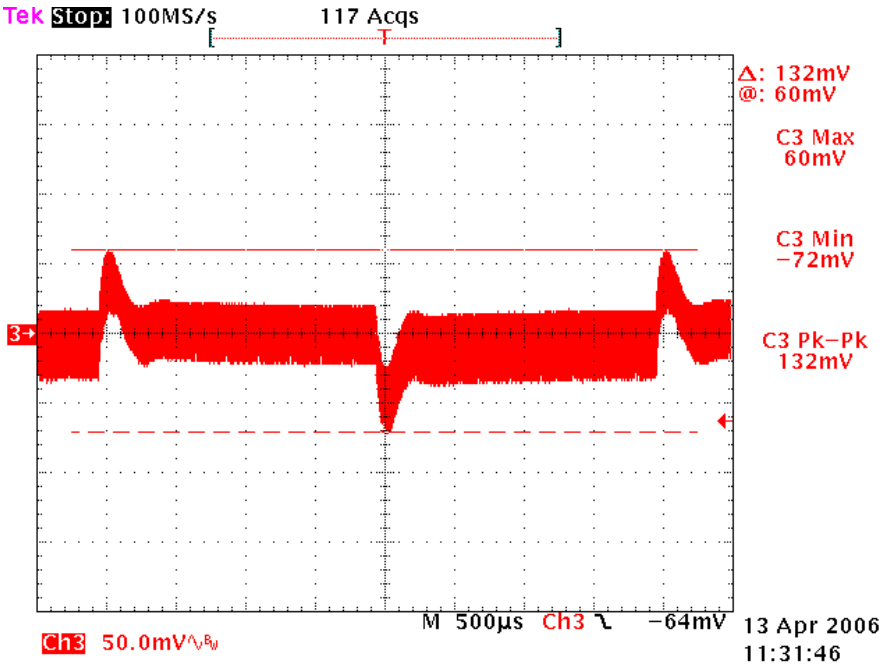
12.- Dynamic Load Response.

Conditions: Room temperature. Freq = 250 Hz, 50% Duty Cycle and dI/dT=1A/uS.

TRANSIENT RESPONSE 10% - 25% FULL LOAD:

Conditions: Vin=110VAC, Vout=18.0V, Tamb=25ºC. Load Step; 4.2A to 10.5A.
Channel 3: 18V Output.

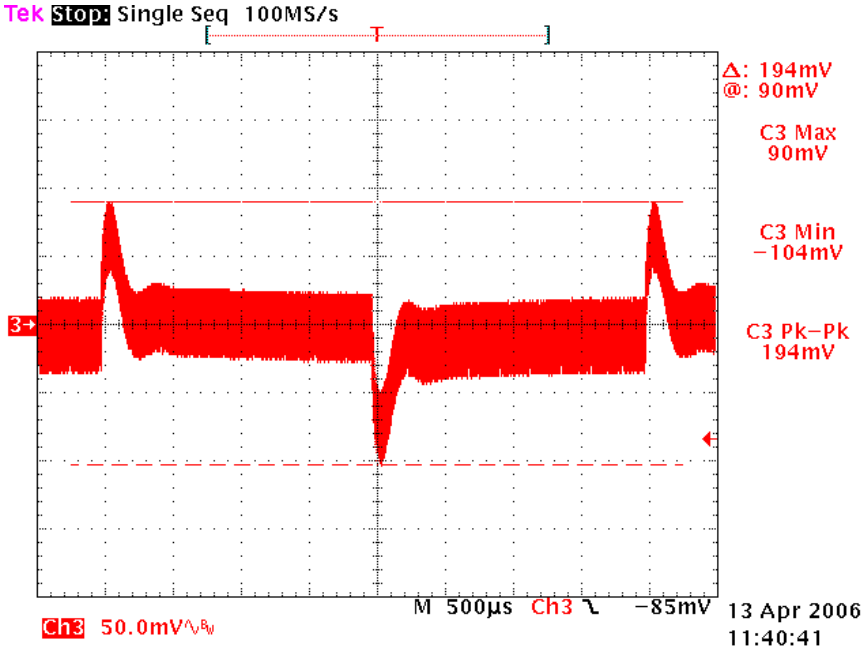
Peak Overshoot: 60mV
Peak Undershoot: 72mV



TRANSIENT RESPONSE 25% - 50% FULL LOAD:

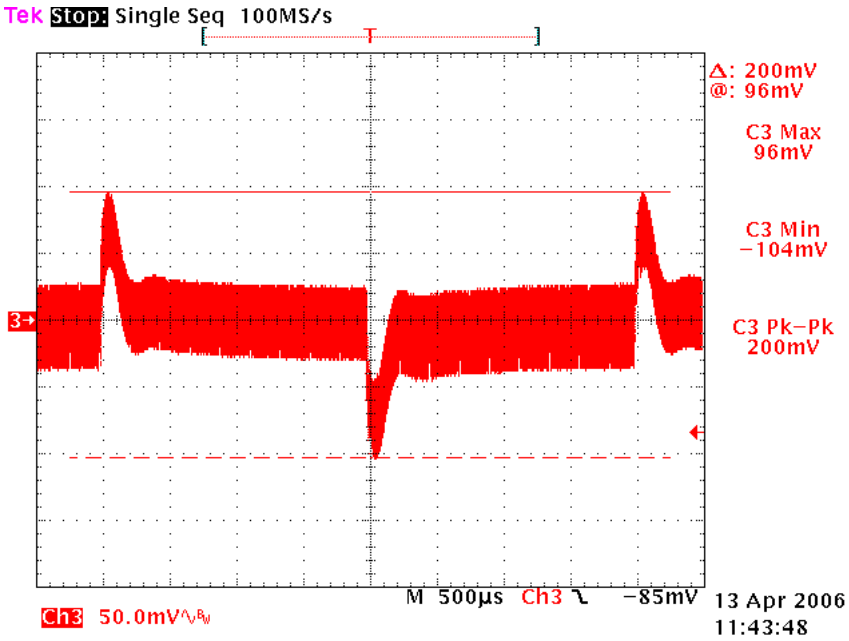
Conditions: Vin=110VAC, Vout=18.0V, Tamb=25ºC. Load Step; 10.5A to 21.0A.
Channel 3: 18V Output.

Peak Overshoot: 90mV
Peak Undershoot: 104mV



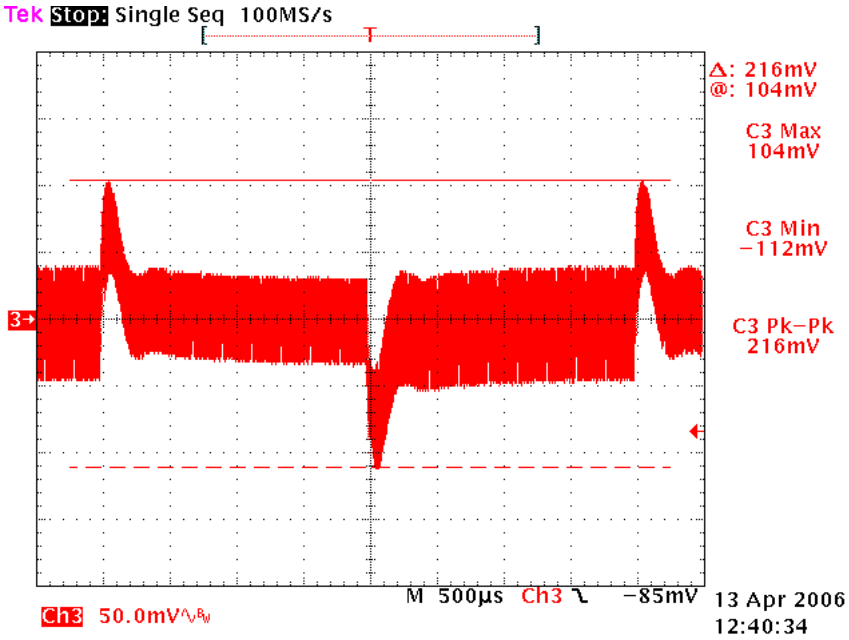
TRANSIENT RESPONSE 50% - 75% FULL LOAD:
Conditions: Vin=110VAC, Vout=18.0V, Tamb=25ºC. Load Step; 21.0A to 31.5A.
Channel 3: 18V Output.

Peak Overshoot: 96mV
Peak Undershoot: 104mV



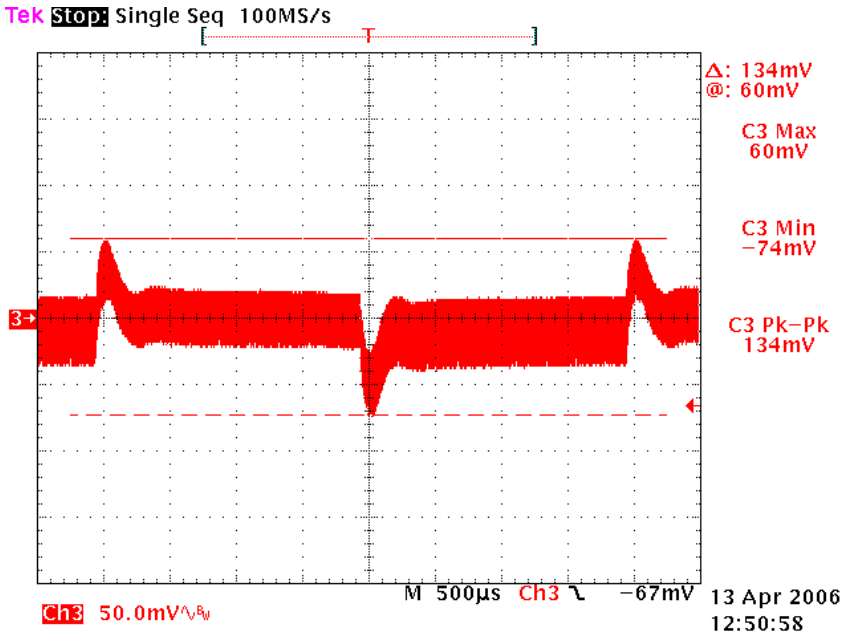
TRANSIENT RESPONSE 75% - 100% FULL LOAD:
Conditions: Vin=110VAC, Vout=18.0V, Tamb=25ºC. Load Step; 31.5A to 42.0A.
Channel 3: 18V Output.

Peak Overshoot: 104mV
Peak Undershoot: 112mV



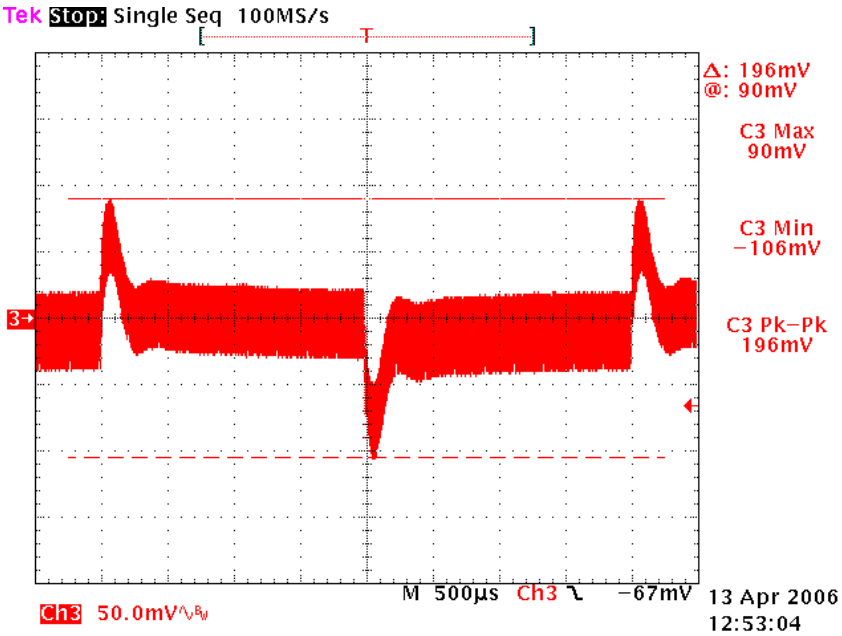
TRANSIENT RESPONSE 10% - 25% FULL LOAD:
Conditions: Vin=110VAC, Vout=24.0V, Tamb=25ºC. Load Step; 4.2A to 10.5A.
Channel 3: 18V Output.

Peak Overshoot: 60mV
Peak Undershoot: 74mV



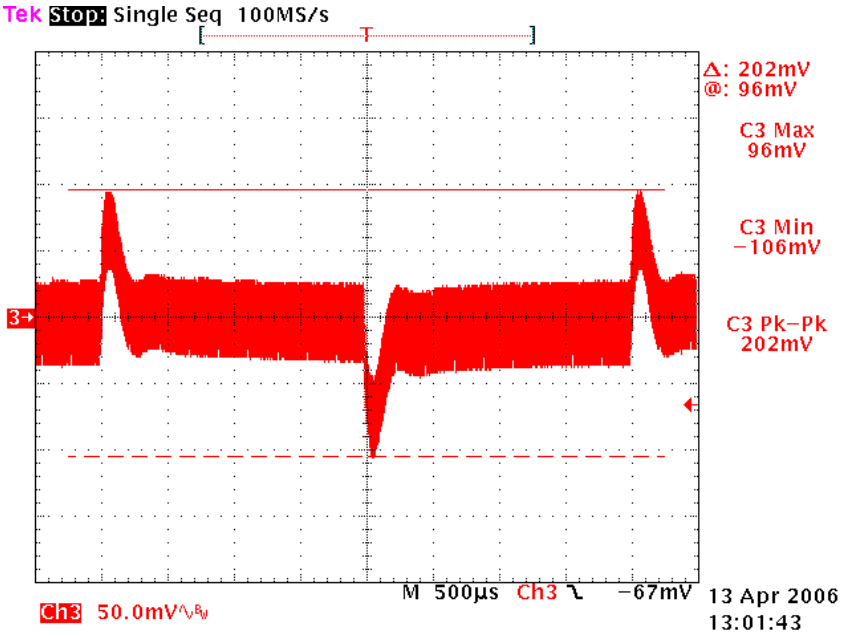
TRANSIENT RESPONSE 25% - 50% FULL LOAD:
Conditions: Vin=110VAC, Vout=24.0V, Tamb=25ºC. Load Step; 10.5A to 21.0A.
Channel 3: 18V Output.

Peak Overshoot: 90mV
Peak Undershoot: 106mV



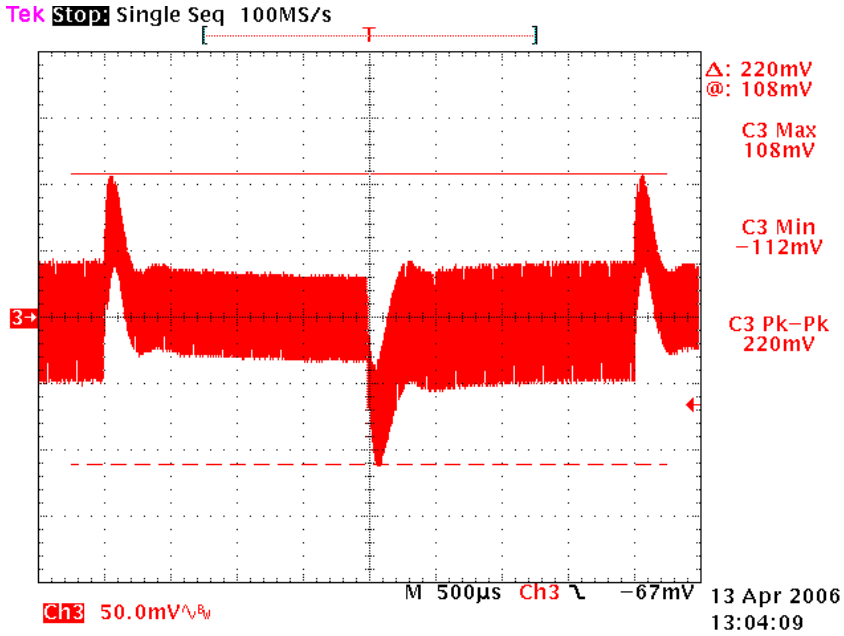
TRANSIENT RESPONSE 50% - 75% FULL LOAD:
Conditions: Vin=110VAC, Vout=24.0V, Tamb=25ºC. Load Step; 21.0A to 31.5A.
Channel 3: 18V Output.

Peak Overshoot: 96mV
Peak Undershoot: 106mV



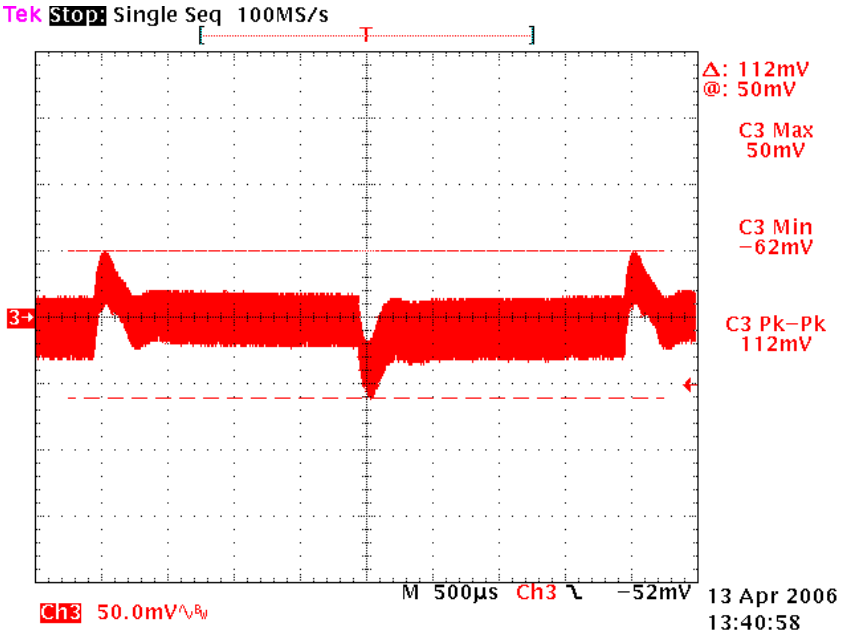
TRANSIENT RESPONSE 75% - 100% FULL LOAD:
Conditions: Vin=110VAC, Vout=24.0V, Tamb=25ºC. Load Step; 31.5A to 42.0A.
Channel 3: 18V Output.

Peak Overshoot: 108mV
Peak Undershoot: 112mV



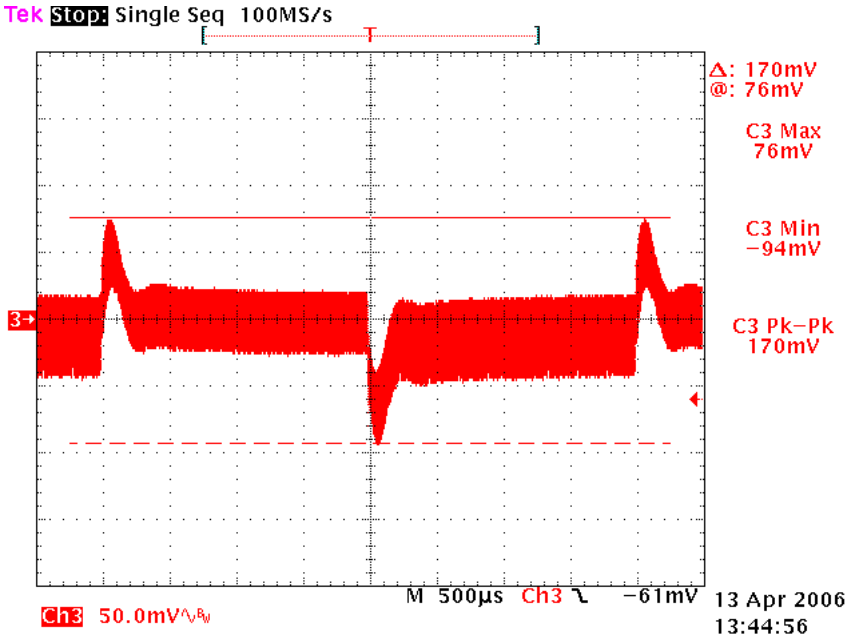
TRANSIENT RESPONSE 10% - 25% FULL LOAD:
Conditions: Vin=110VAC, Vout=29.4V, Tamb=25ºC. Load Step; 3.4A to 8.5A.
Channel 3: 18V Output.

Peak Overshoot: 50mV
Peak Undershoot: 62mV



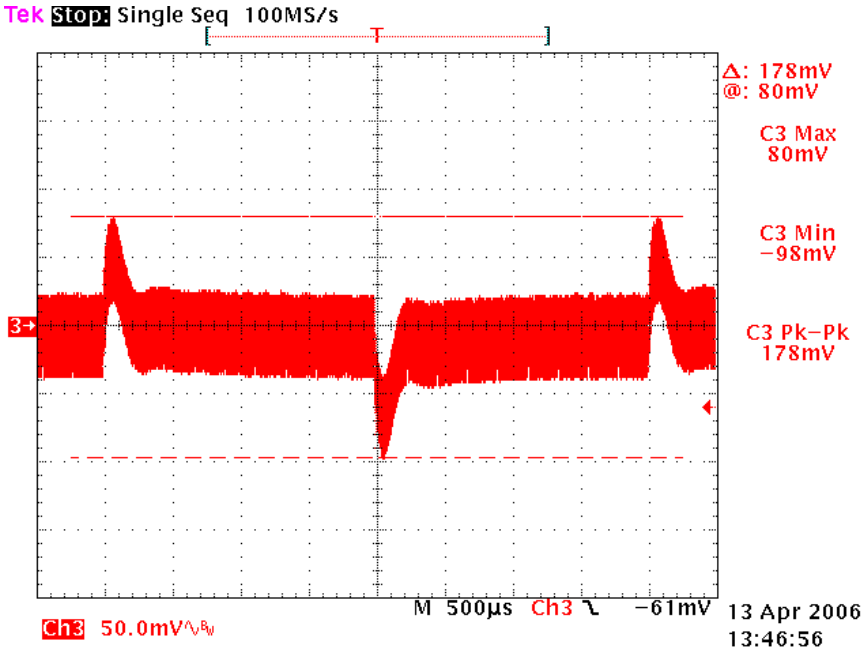
TRANSIENT RESPONSE 25% - 50% FULL LOAD:
Conditions: Vin=110VAC, Vout=29.4V, Tamb=25ºC. Load Step; 8.5A to 17.0A.
Channel 3: 18V Output.

Peak Overshoot: 76mV
Peak Undershoot: 94mV



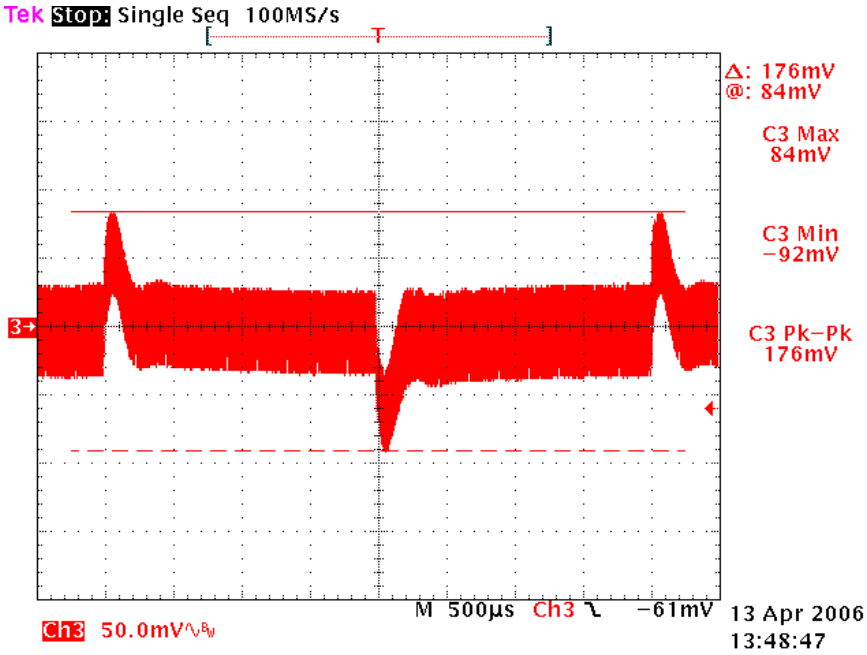
TRANSIENT RESPONSE 50% - 75% FULL LOAD:
Conditions: Vin=110VAC, Vout=29.4V, Tamb=25ºC. Load Step; 17.0A to 25.5A.
Channel 3: 18V Output.

Peak Overshoot: 80mV
Peak Undershoot: 98mV



TRANSIENT RESPONSE 75% - 100% FULL LOAD:
Conditions: Vin=110VAC, Vout=29.4V, Tamb=25ºC. Load Step; 25.5A to 34.0A.
Channel 3: 18V Output.

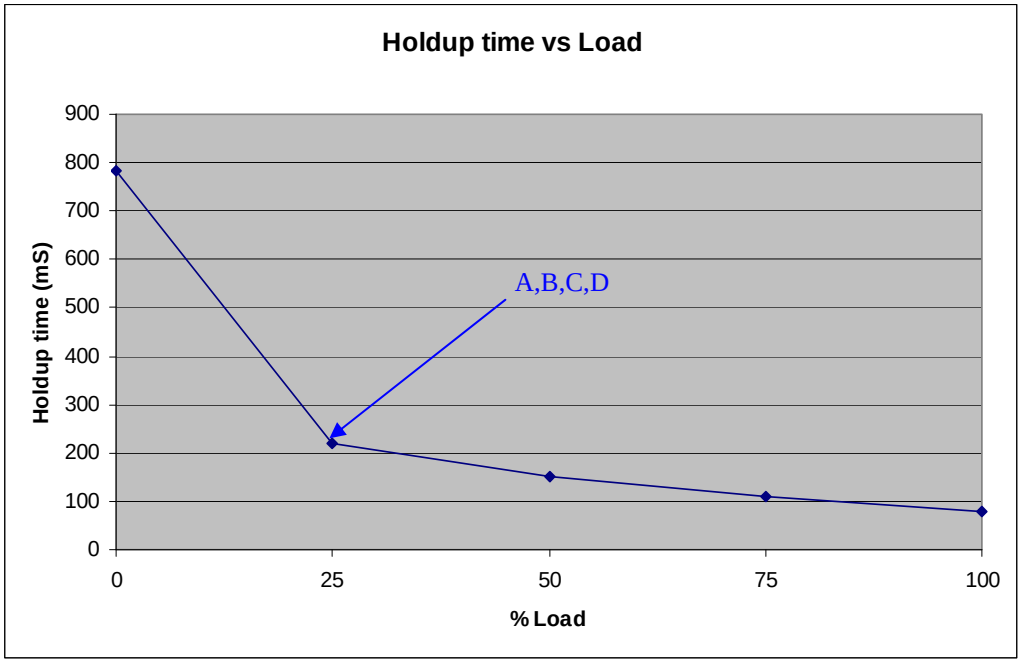
Peak Overshoot: 84mV
Peak Undershoot: 92mV



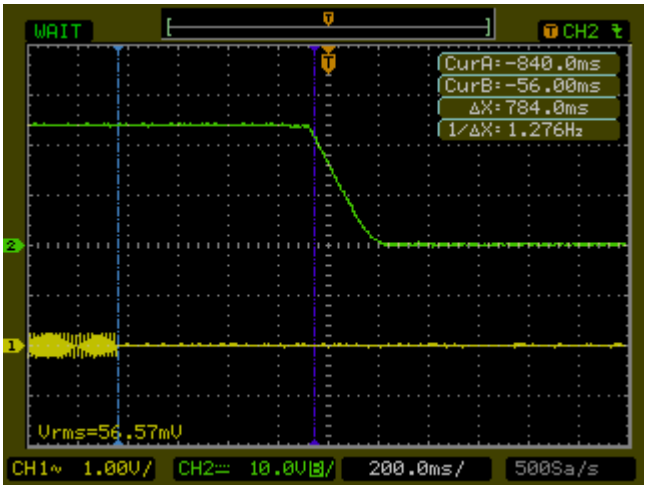
13.- Hold up time characteristics.

Vout = 24vdc , 100%Iout = 42Amps. , Ta = 25C

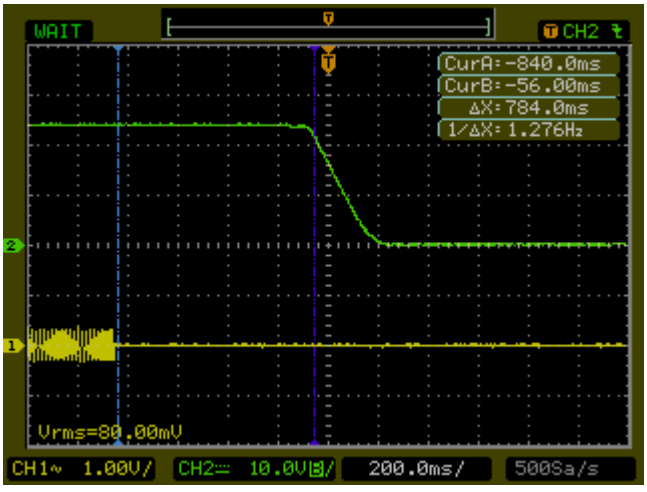
A – 85Vac
B – 115Vac
C – 230Vac
D – 265Vac



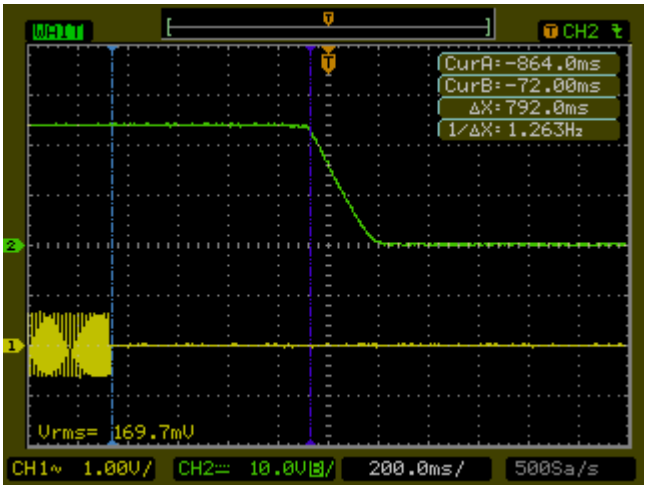
Vout = 24vdc
Iout = 0% Load
CH1 – Input Line Differential Amplifier 100V/DIV
CH2 – Output Voltage 10V/DIV



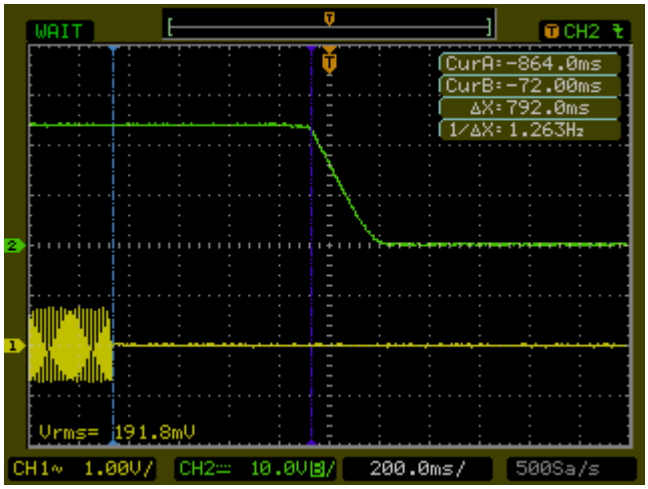
Vin = 85Vac



Vin = 115Vac



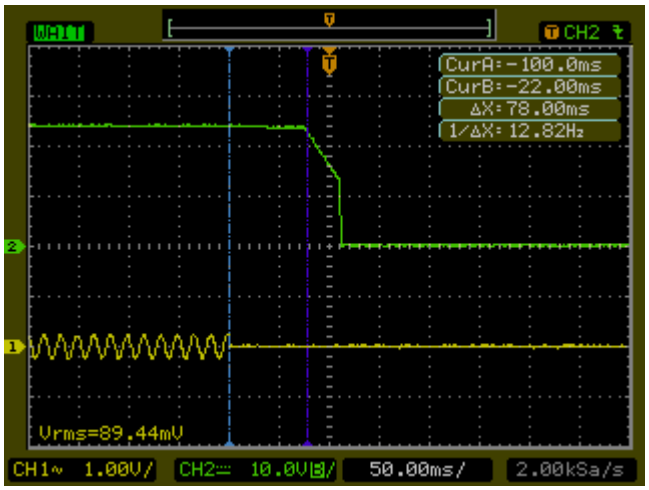
Vin = 230Vac



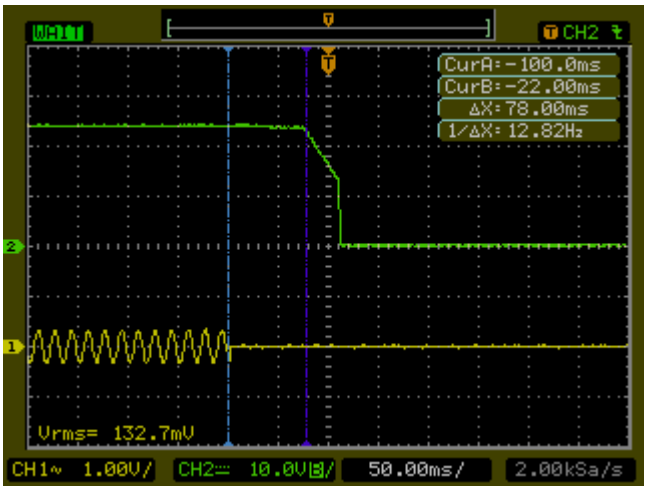
Vin = 265Vac

Vout = 24vdc
Iout = 100% Load

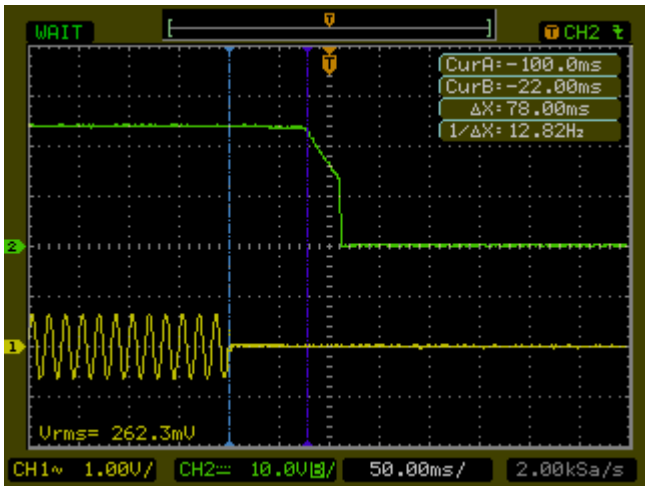
CH1 – Input Line Differential Amplifier 100V/DIV
CH2 – Output Voltage 10V/DIV



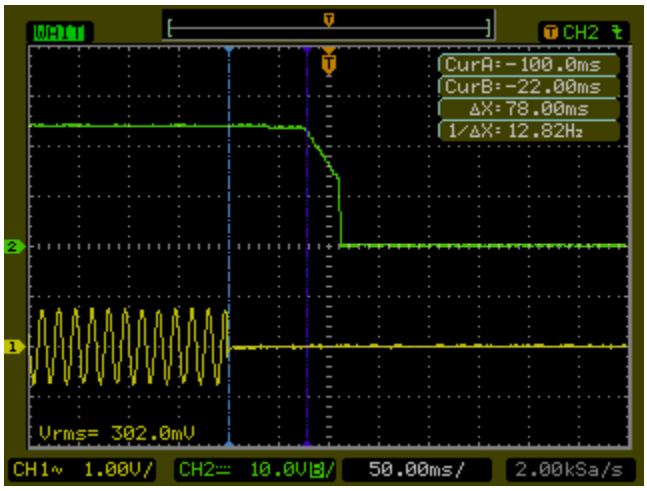
Vin = 85Vac



Vin = 115Vac



Vin = 230Vac

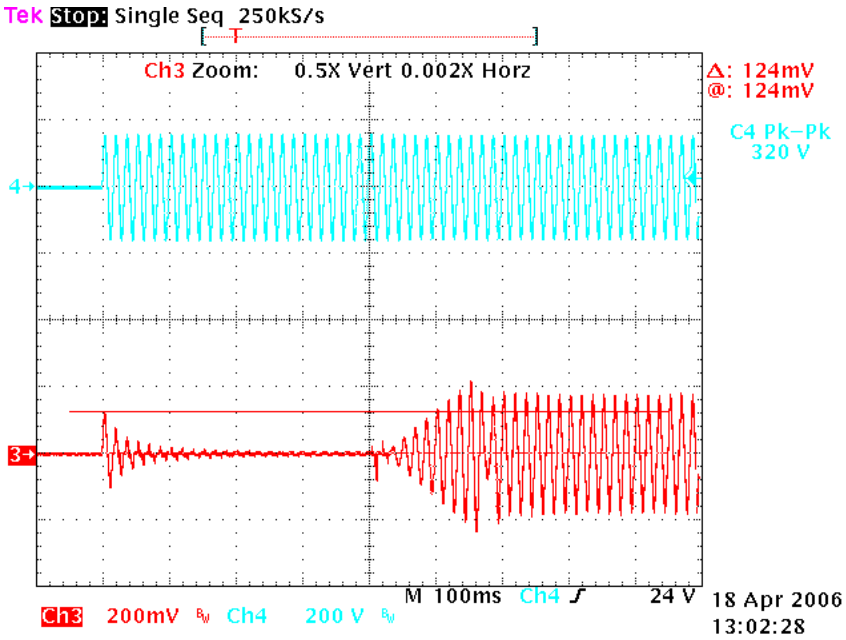


Vin = 265Vac

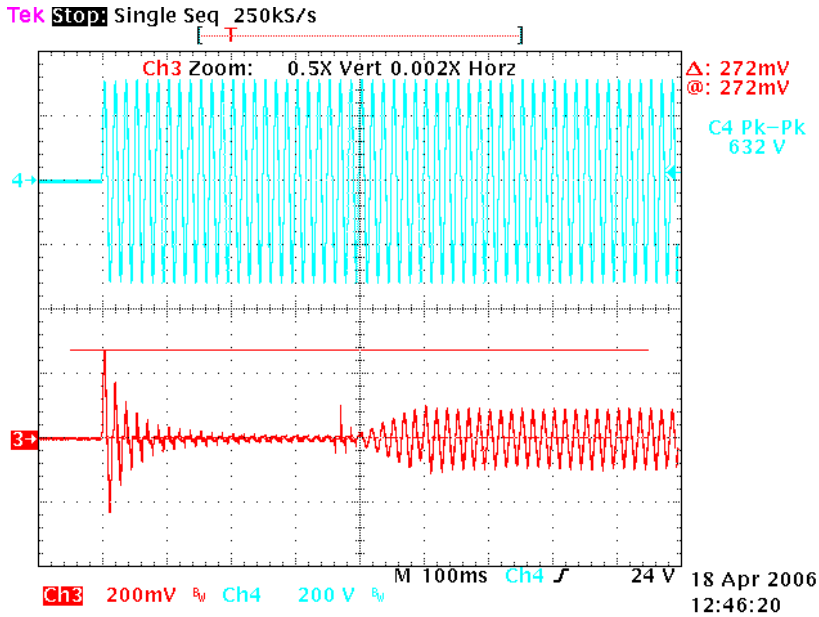
14.- Peak Inrush Current characteristics.

Spec: maximum 40 Amps at 110VAC Input / 80 Amps at 220VAC input

CH1: Input current 10A/100mV shunt
12.4 A pk. Primary Inrush Current
23.2 A pk. Secondary Inrush Current
CH2: Input Line X100 scope proble = 110 VAC



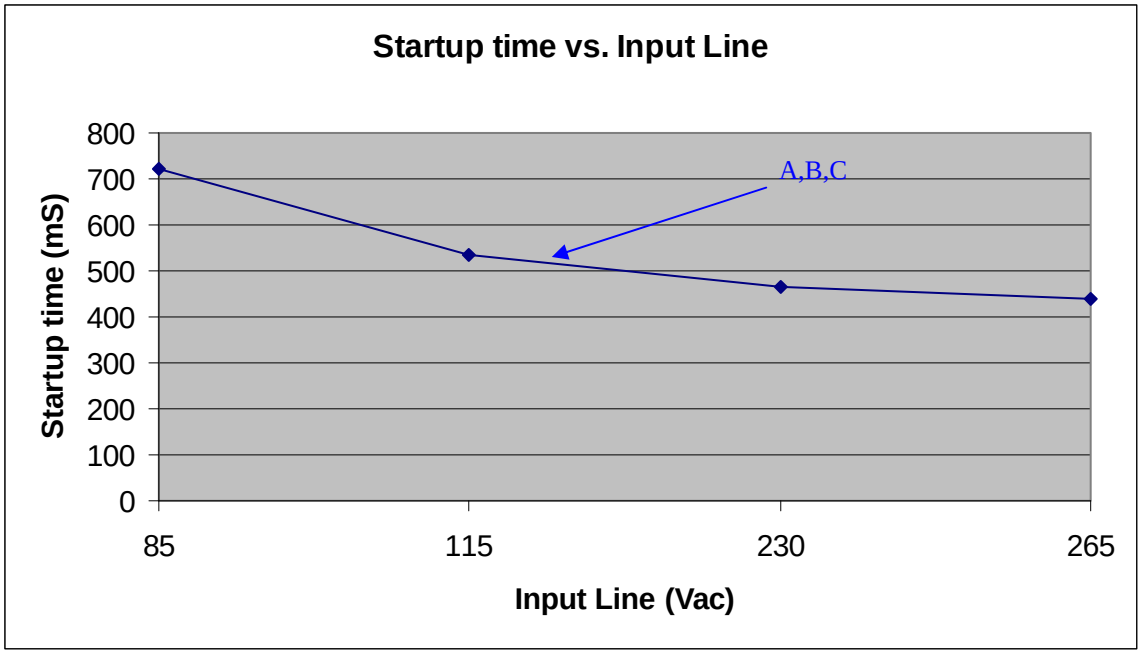
CH1: Input current 10A/100mV shunt =37.2A pk.
CH2: Input Line = 220 VAC



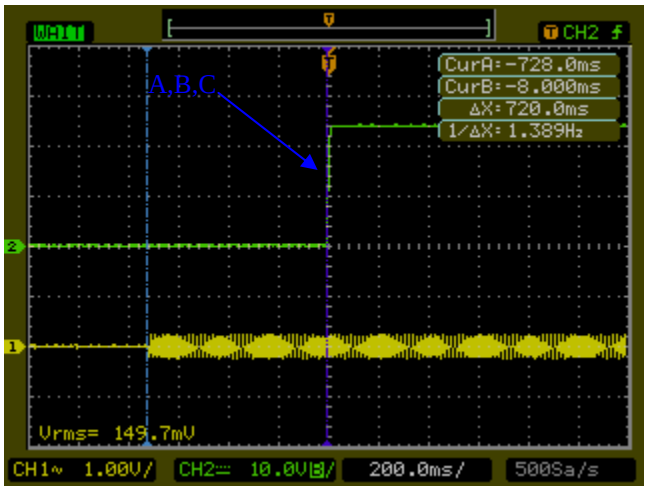
15.- Start up time characteristics

Vout = 24Vdc , 100% Iout = 42 Amps , Ta = 25C

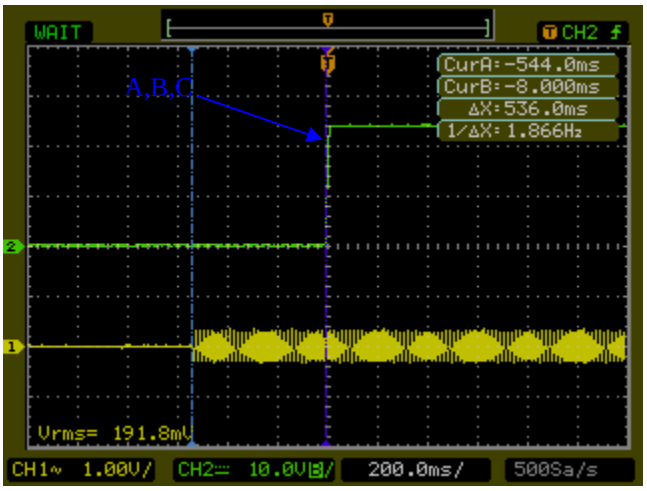
A - Iout = 0%
B - Iout = 50%
C - Iout = 100%



CH1 – Input Line Differential Amplifier 100V/DIV
CH2 – Output Voltage 10V/DIV

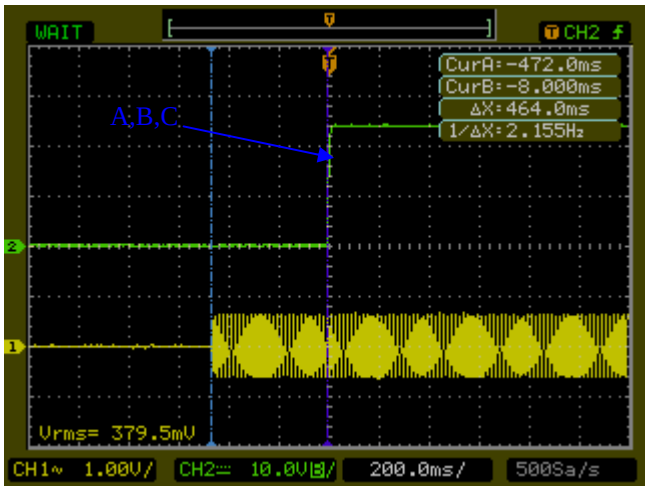


Vin = 85Vac

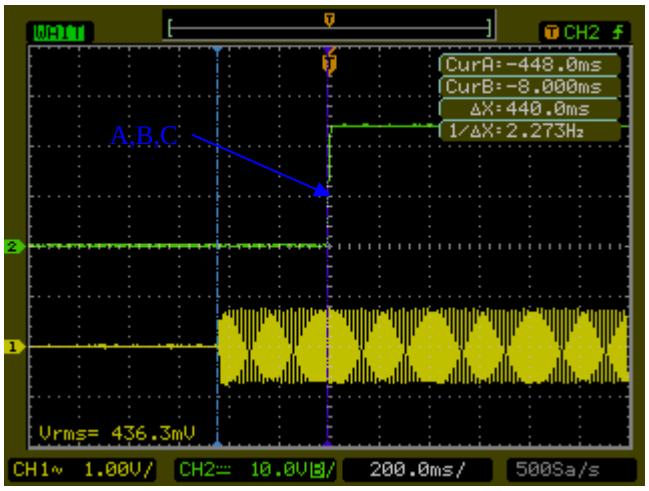


Vin = 115Vac

CH1 – Input Line Differential Amplifier 100V/DIV
CH2 – Output Voltage 10V/DIV



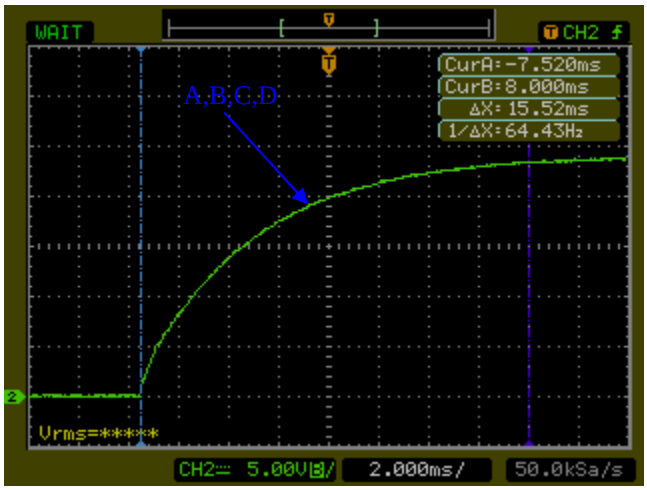
Vin = 230Vac



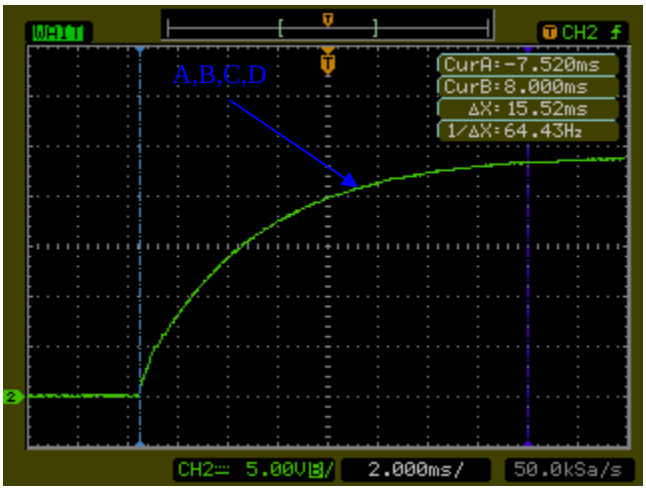
Vin = 265Vac

16.- Output Rise Time characteristics

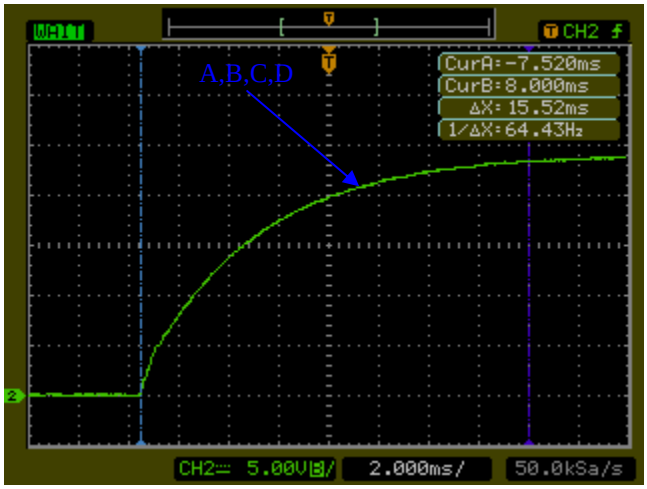
Vout = 24Vdc , 100% Load = 42Amps , Ta = 25C
A – 85VAC
B – 115VAC
C – 230VAC
D – 265VAC



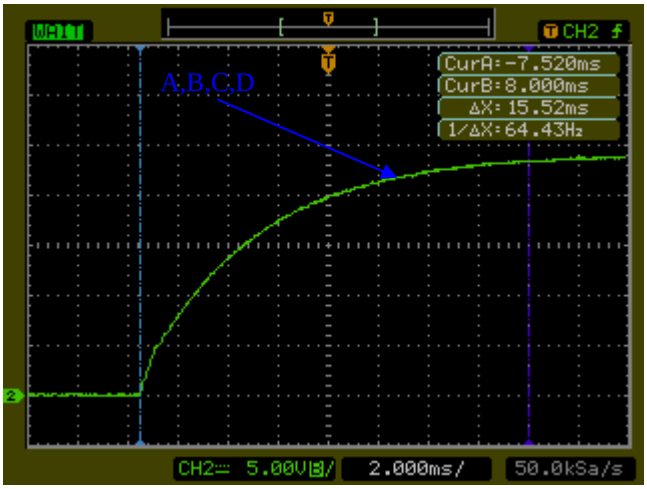
Iout = 0% Load



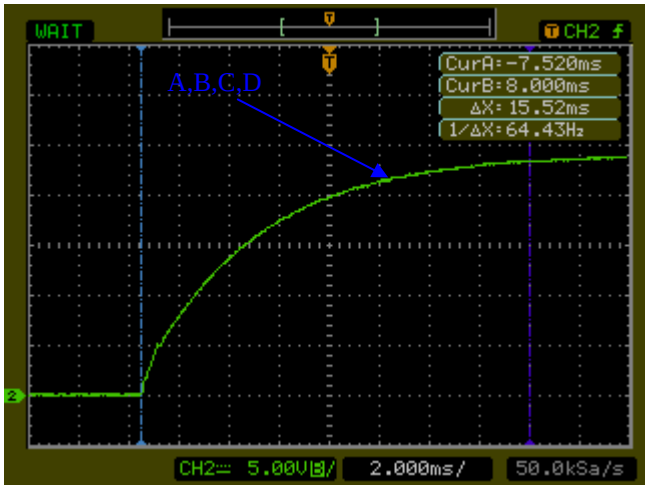
Iout = 25% Load



Iout = 50% Load



Iout = 75% Load

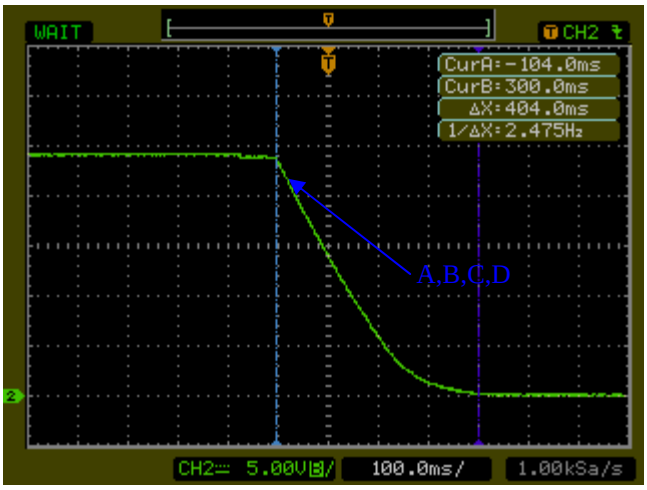


Iout = 100% Load

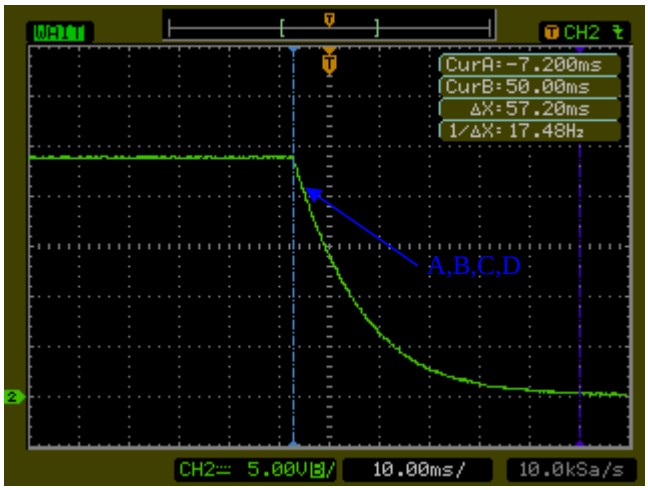
17.- Output Fall Time characteristics

Vout = 24Vdc , 100% Load = 42Amps , Ta = 25C

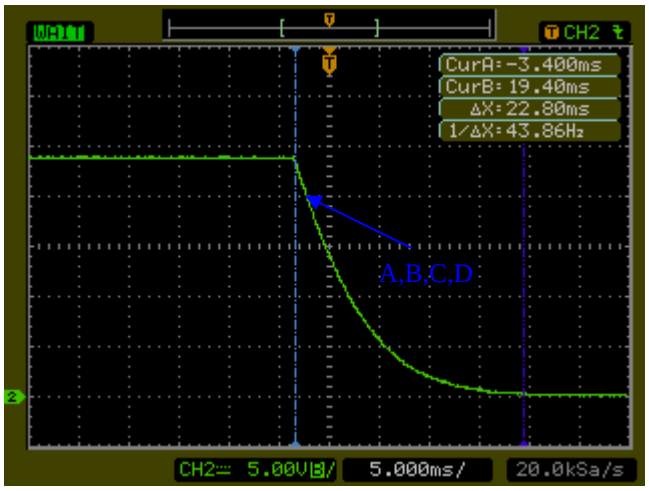
A – 85VAC
B – 115VAC
C – 230VAC
D – 265VAC



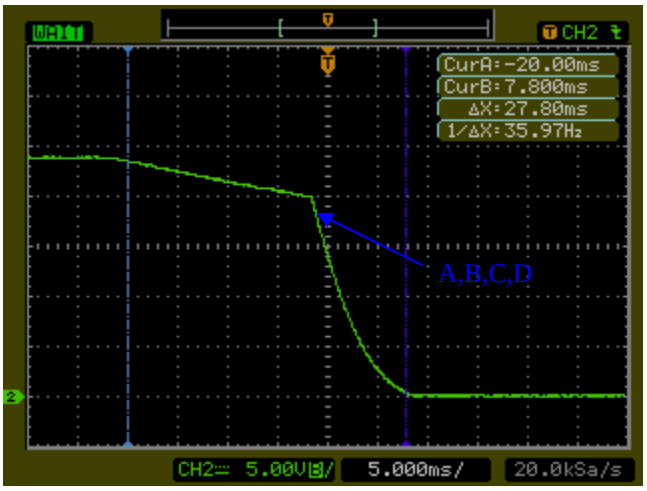
Iout = 0% Load



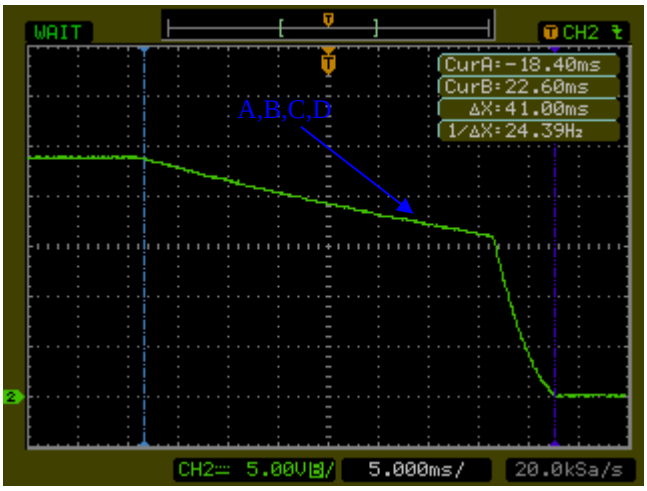
Iout = 25% Load



Iout = 50% Load



Iout = 75% Load



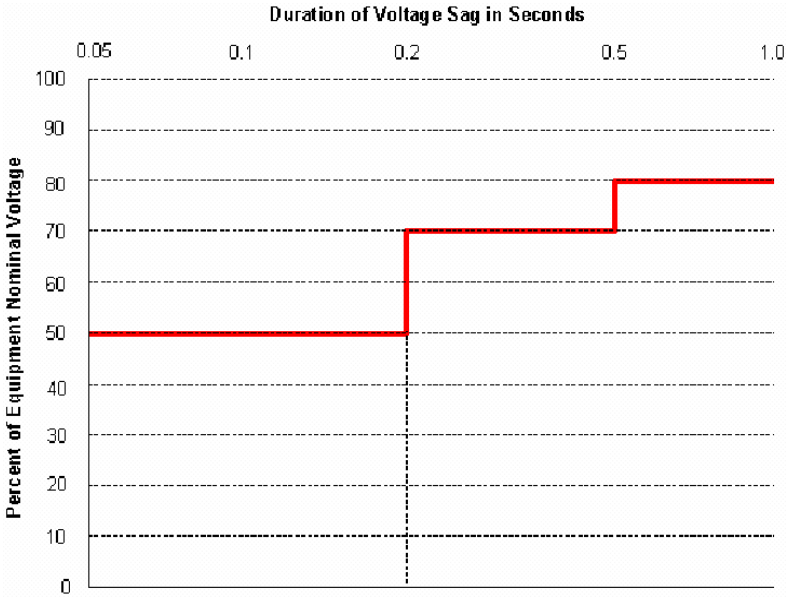
Iout = 100% Load

18.- Dynamic Line Response

SEMI F47 Compliant – Must tolerate voltage sags as follows:

a. **50% of nominal voltage for 200 msec (required)**
b. **70% for 500 msec (required)**
c. **80% for 1 second (required)**
d. **0 % for 1 cycle, 17 msec or 20 msec (recommended)**
e. **80% for 10 seconds (recommended)**
f. 90% for continuous, 15 second test (recommended)

SEE GRAPH # 1 BELOW FOR VISUAL SUMMARY OF POWER LINE CONDITIONS.



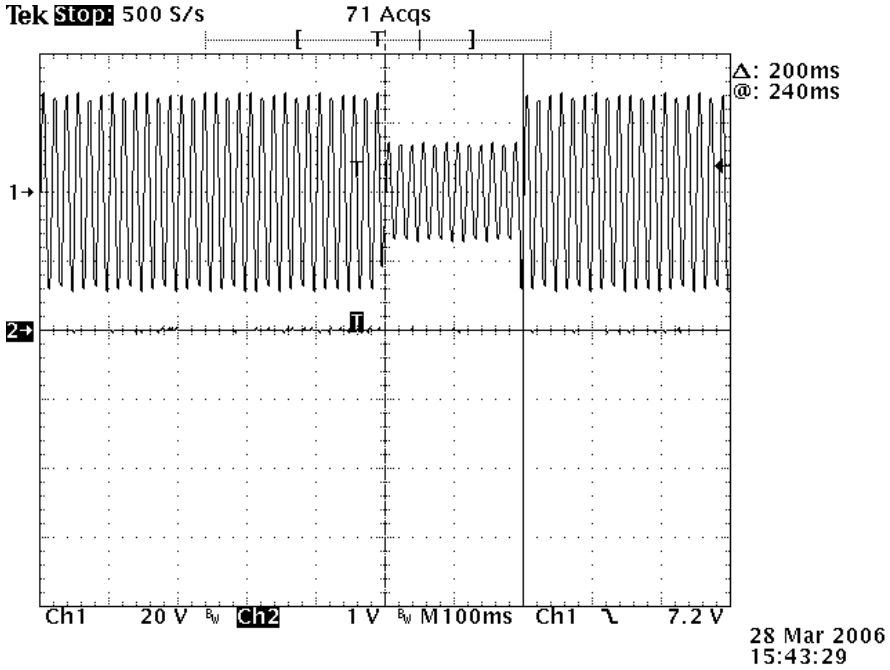
GRAPH #1 (SEMI F47 REQUIREMENTS)

a. 50% drop of input voltage for 200mS.

Conditions: Vin=110VAC, Vout=24.0V, Iout=42A, Pout=1008W, Tamb=25°C.

CH1: Input Line (from isolation transformer)

CH2: 24V Output



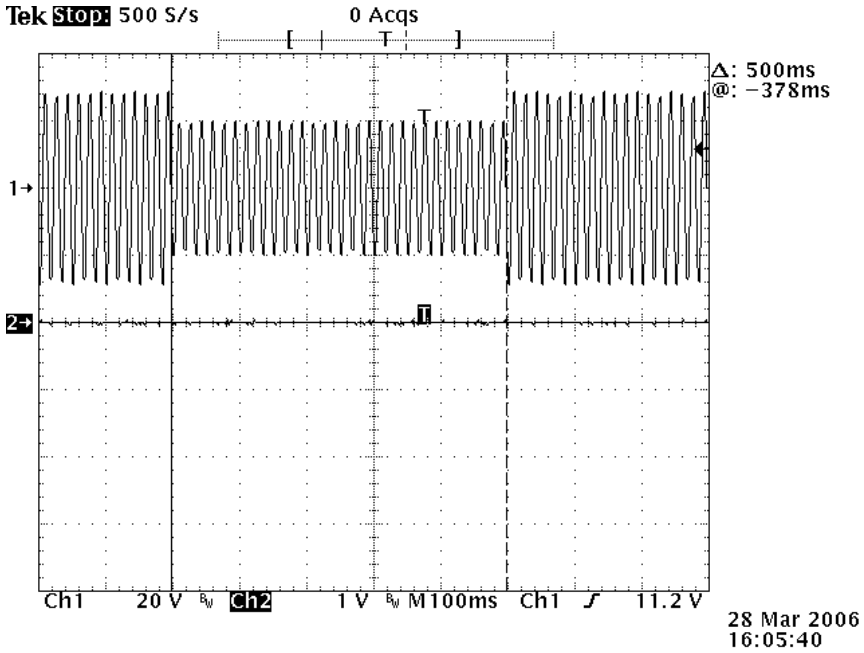
SPEC: NO OUTPUT VARIATION FOR DURATION OF SAG; PASS

b. 30% drop of input voltage for 500mS.

Conditions: Vin=110VAC, Vout=24.0V, Iout=42A, Pout=1008W, Tamb=25°C.

CH1: Input Line (from isolation transformer)

CH2: 24V Output



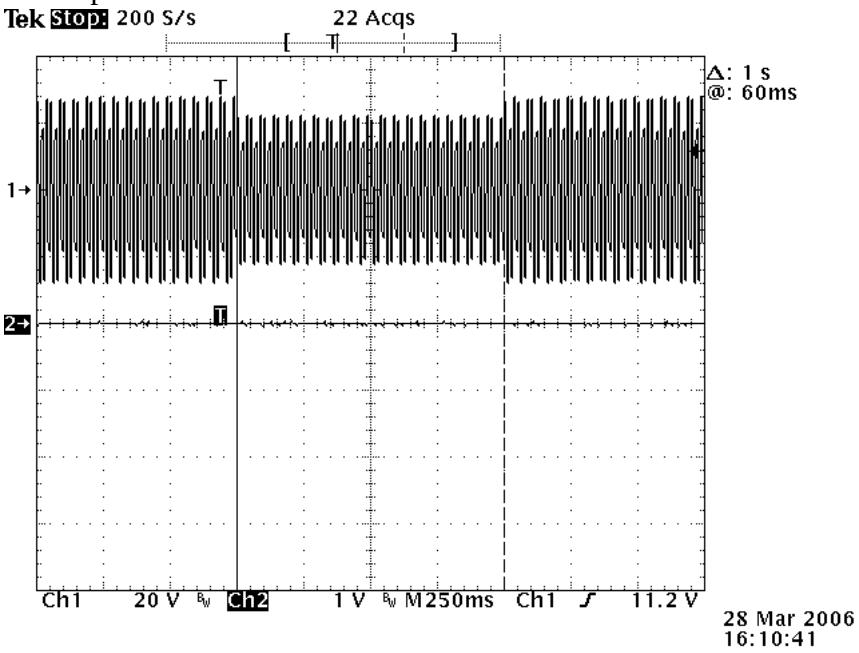
SPEC: NO OUTPUT VARIATION FOR DURATION OF SAG; PASS

c. 20% drop of input voltage for 1 second.

Conditions: Vin=110VAC, Vout=24.0V, Iout=42A, Pout=1008W, Tamb=25°C.

CH1: Input Line (from isolation transformer)

CH2: 24V Output



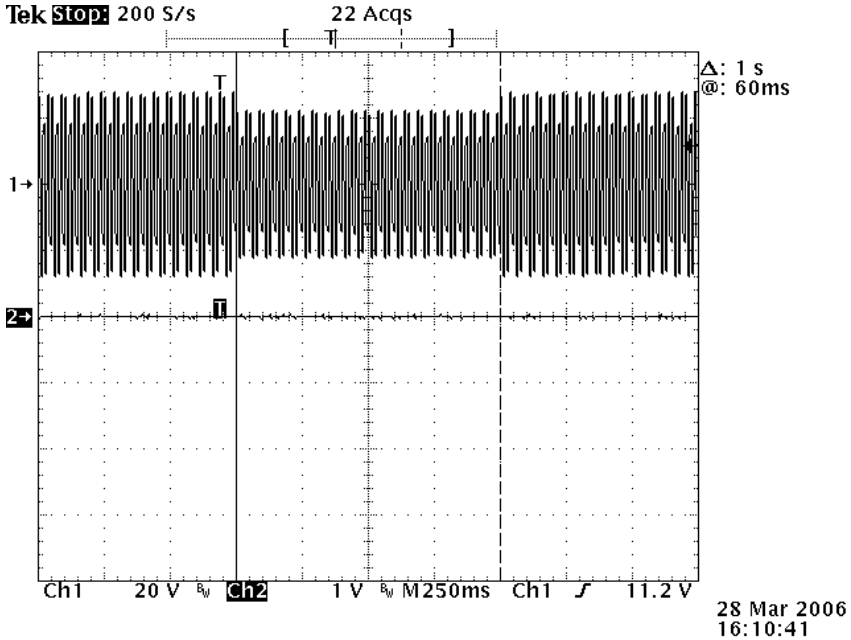
SPEC: NO OUTPUT VARIATION FOR DURATION OF SAG; PASS

d. 100% drop of input voltage for 1 cycle.

Conditions: Vin=110VAC, Vout=24.0V, Iout=42A, Pout=1008W, Tamb=25°C.

CH1: Input Line (from isolation transformer)

CH2: 24V Output



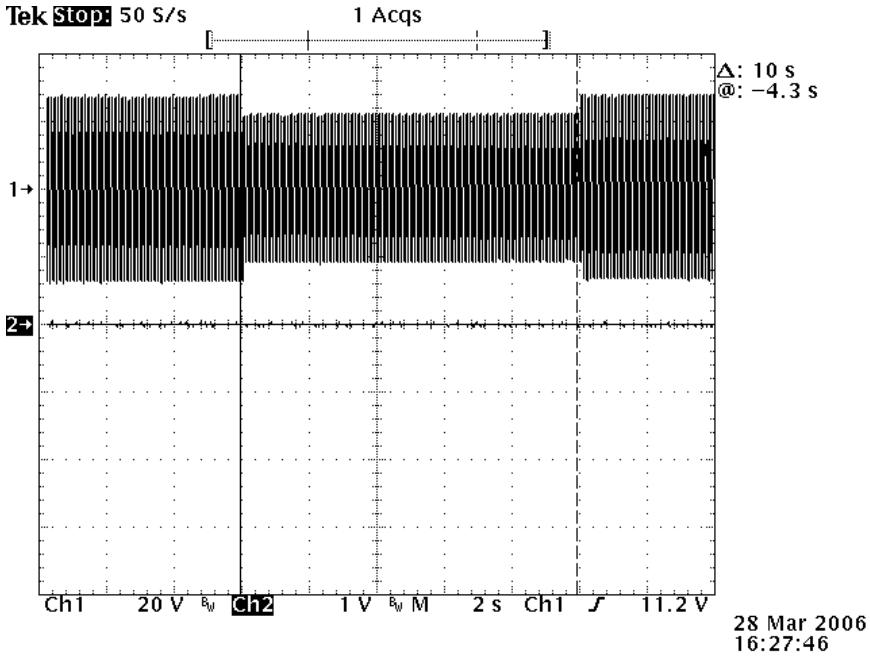
SPEC: NO OUTPUT VARIATION FOR DURATION OF SAG; PASS

e. 20% drop of input voltage for 10 seconds.

Conditions: Vin=110VAC, Vout=24.0V, Iout=42A, Pout=1008W, Tamb=25°C.

CH1: Input Line (from isolation transformer)

CH2: 24V Output



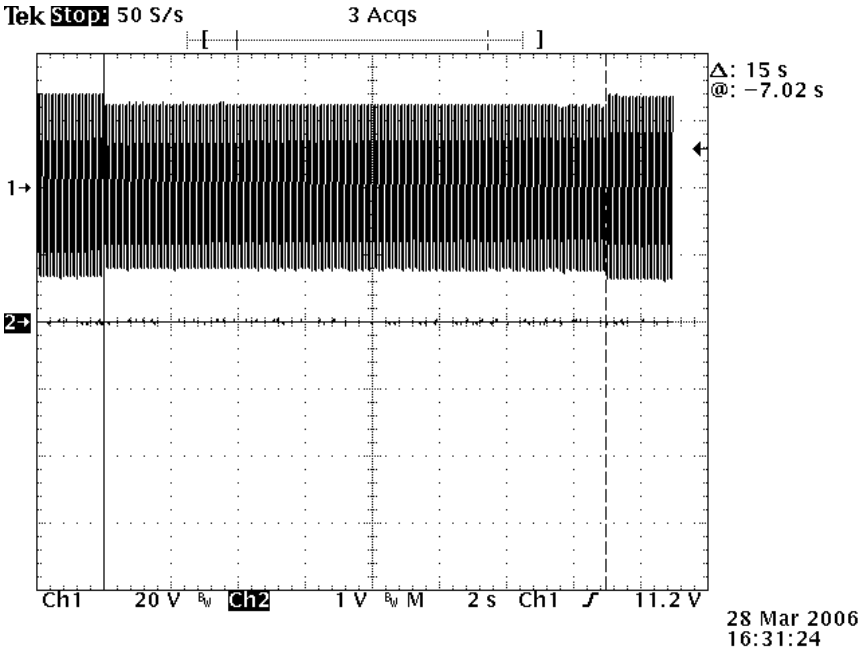
SPEC: NO OUTPUT VARIATION FOR DURATION OF SAG; PASS

f. 10% drop of input voltage for 15 seconds.

Conditions: Vin=110VAC, Vout=24.0V, Iout=42A, Pout=1008W, Tamb=25°C.

CH1: Input Line (from isolation transformer)

CH2: 24V Output



SPEC: NO OUTPUT VARIATION FOR DURATION OF SAG; PASS

19.- OCP Characteristics
Vin = 115VAC , Vout =24Vdc , Ta = 25C
CC = Constant Current Mode
CR = Constant Resistance Mode