CME200A

EVALUATION DATA

型式データ

TDK-Lambda

CA845-53-01A

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使用記号　Terminology used

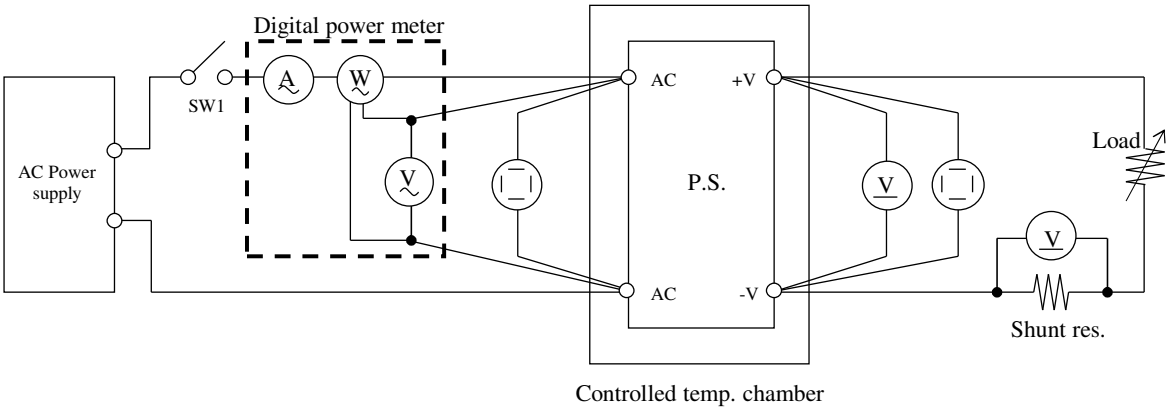
	定義　Definition
Vin	..... 入力電圧　Input voltage
Vout	..... 出力電圧　Output voltage
Iin	..... 入力電流　Input current
Iout	..... 出力電流　Output current
Ta	..... 周囲温度　Ambient temperature
f	..... 周波数　Frequency
Vstby	..... 内蔵補助電源出力電圧　Standby output voltage
Istby	..... 内蔵補助電源出力電流　Standby output current

1. 測定方法　Evaluation Method

1.1　測定回路　Circuit used for determination

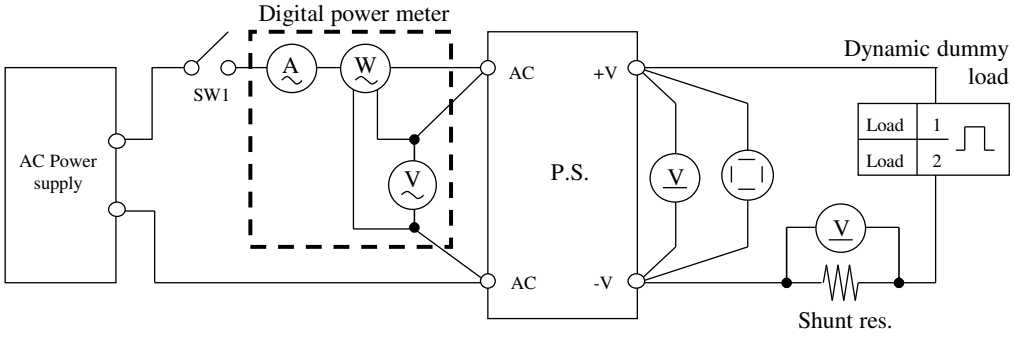
測定回路1 Circuit 1 used for determination

- ・静特性　Steady state data
- ・通電ドリフト特性　Warm up voltage drift characteristics
- ・出力保持時間特性　Hold up time characteristics
- ・出力立ち上がり特性　Output rise characteristics
- ・出力立ち下がり特性　Output fall characteristics
- ・過電流保護特性　Over current protection (OCP) characteristics
- ・過電圧保護特性　Over voltage protection (OVP) characteristics
- ・入力電圧瞬停特性　Response to brown out characteristics

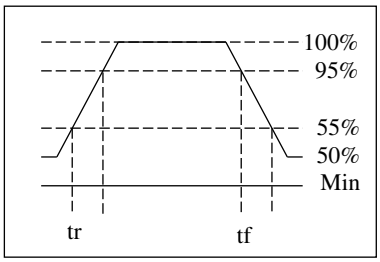


測定回路2 Circuit 2 used for determination

- ・過渡応答（負荷急変）特性　Dynamic load response characteristics

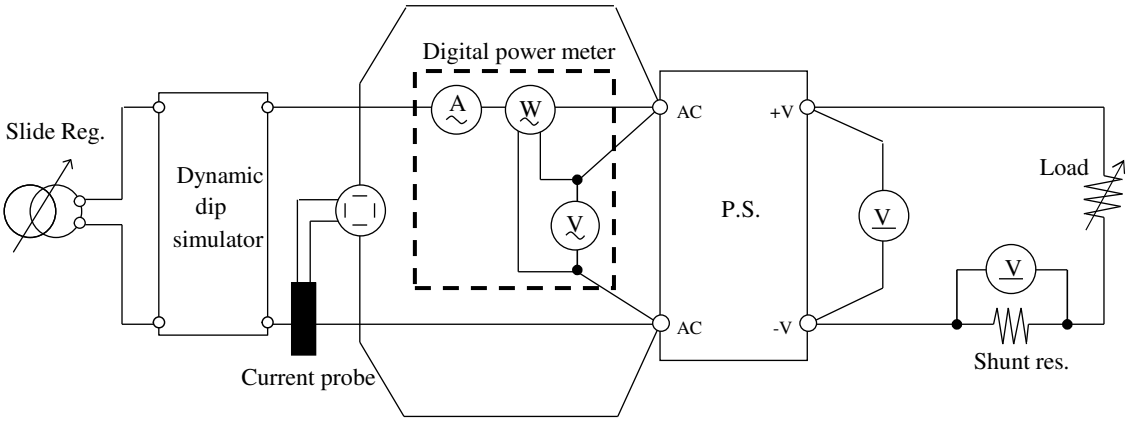


Output current waveform
Iout 50% <==> 100%



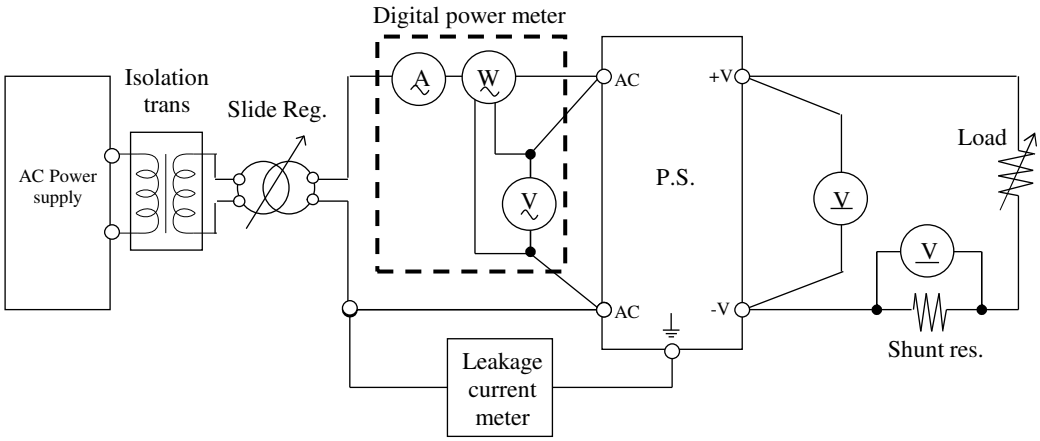
測定回路3 Circuit 3 used for determination

・入力サージ電流（突入電流）波形　Inrush current waveform



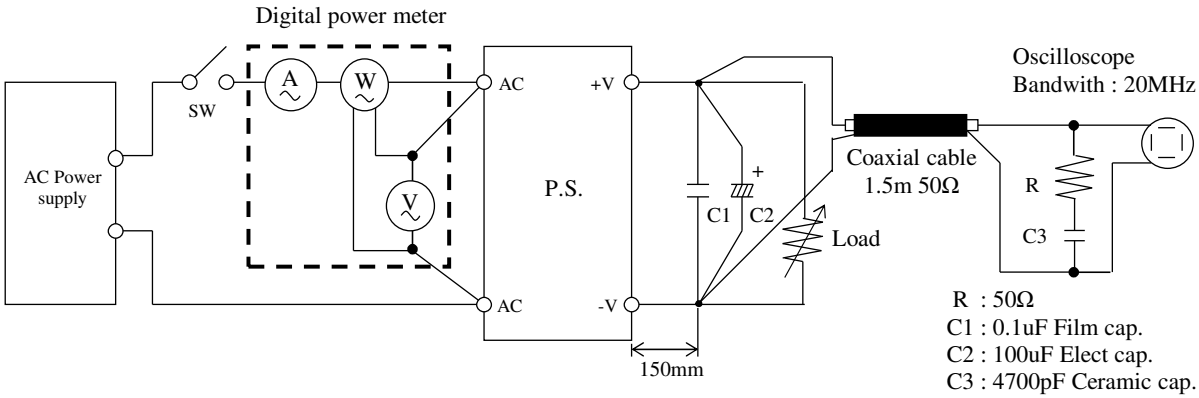
測定回路4 Circuit 4 used for determination

・リーク電流特性　Leakage current characteristics



測定回路5 Circuit 5 used for determination

・出力リップル、ノイズ波形　　Output ripple and noise waveform

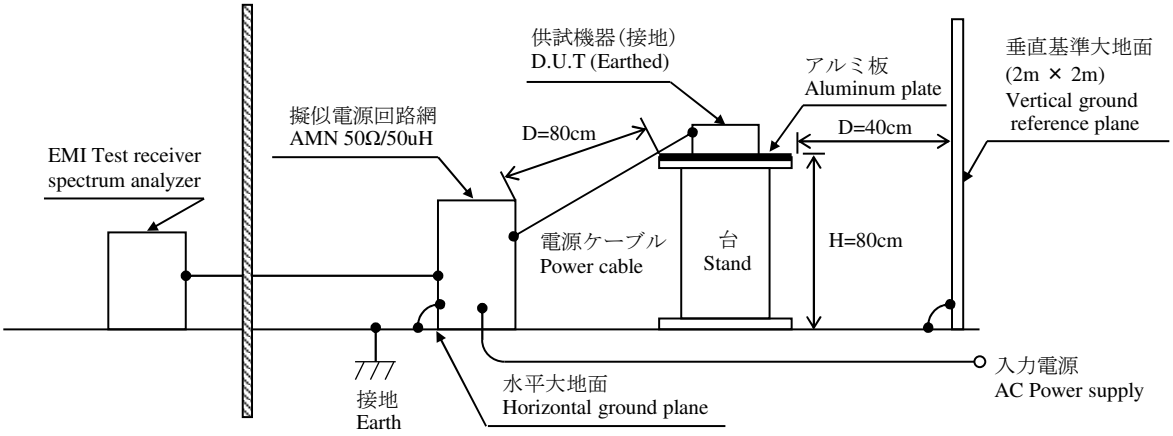


測定構成 Configuration used for determination

・EMI特性　Electro-Magnetic Interference characteristics

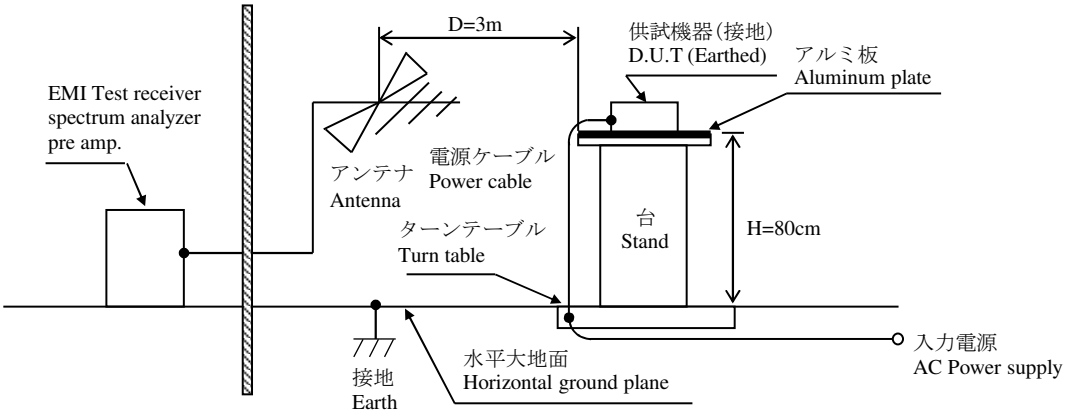
(a) 雑音端子電圧 (帰還ノイズ)

Conducted Emission



(b) 雑音電界強度 (放射ノイズ)

Radiated Emission



1.2 使用測定機器　　List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DLM2054
2	DIGITAL MULTIMETER	FLUKE	111
3	DIGITAL POWER METER	YOKOGAWA ELECT.	WT110 / WT210
4	CURRENT PROBE	YOKOGAWA ELECT.	701932
5	DYNAMIC DUMMY LOAD	CHROMA	63201
6	ISOLATION TRANS	TOUZHONG	BJZ-3KVA
7	CVCF	KIKUSUI	PCR2000LE
8	CVCF	CHROMA	61605
9	LEAKAGE CURRENT METER	SIMPSON	228
10	CONTROLLED TEMP. CHAMBER	ESPEC	SH-661
11	EMI TEST RECEIVER / SPECTRUM ANALYZER	ROHDE & SCHWARZ	ESCI-03
12	PRE AMP.	AGILENT	8447D
13	AMN	SCHWARZBECK	NNLK8121
14	ANTENNA	SCHWARZBECK	VULB9168
15	HARMONIC / FLICKER ANALYZER	SCHAFFNER	CCN100-1

1.3 評価負荷条件　　Load conditions

*入力電圧が115VAC以下の場合、下記のとおり出力ディレーティングが必要です。
Output derating is needed when input voltage is less than 115VAC.

Vin	Iout: Full load	12V	18V	24V	48V
85VAC	80%	13.36A	8.96A	6.72A	3.36A
115 - 265VAC	100%	16.7A	11.2A	8.4A	4.2A

* Vstby=5V, Istby=0A

2. 特性データ　　Characteristics

2.1 静特性　　Steady state data

(1) 入力・負荷・温度変動／出力起動・遮断電圧

Regulation - line and load, Temperature drift / Start up voltage and Drop out voltage

12V

1. Regulation - line and load　　Condition　Ta :　25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	12.006V	12.007V	12.008V	12.008V	2mV	0.017%
50%	12.001V	12.001V	12.001V	12.001V	0mV	0.000%
100%	-	11.994V	11.993V	11.993V	1mV※1	0.008%
Load regulation	5mV	13mV	15mV	15mV		
	0.042%	0.108%	0.125%	0.125%		

2. Temperature drift　　Conditions　Vin : 115 VAC
Iout : Full load

Ta	-20℃	+25℃	+50℃	temperature stability	
Vout	11.982V	11.994V	11.983V	12mV	0.100%

3. Start up voltage and Drop out voltage　　Conditions　Ta :　25 ℃
Iout :　100%

Start up voltage (Vin)	79VAC
Drop out voltage (Vin)	76VAC

24V

1. Regulation - line and load　　Condition　Ta :　25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	24.027V	24.028V	24.027V	24.027V	1mV	0.004%
50%	24.019V	24.020V	24.019V	24.019V	1mV	0.004%
100%	-	24.020V	24.020V	24.020V	0mV※1	0.000%
Load regulation	8mV	8mV	8mV	8mV		
	0.033%	0.033%	0.033%	0.033%		

2. Temperature drift　　Conditions　Vin : 115 VAC
Iout : Full load

Ta	-20℃	+25℃	+50℃	temperature stability	
Vout	23.937V	24.020V	23.991V	83mV	0.346%

3. Start up voltage and Drop out voltage　　Conditions　Ta :　25 ℃
Iout :　100%

Start up voltage (Vin)	79VAC
Drop out voltage (Vin)	76VAC

48V

1. Regulation - line and load　　Condition　Ta :　25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	48.028V	48.027V	48.031V	48.026V	5mV	0.010%
50%	48.006V	48.006V	48.006V	48.006V	0mV	0.000%
100%	-	48.006V	48.006V	48.006V	0mV※1	0.000%
Load regulation	22mV	21mV	25mV	20mV		
	0.046%	0.044%	0.052%	0.042%		

2. Temperature drift　　Conditions　Vin : 115 VAC
Iout : Full load

Ta	-20℃	+25℃	+50℃	temperature stability	
Vout	47.786V	48.006V	47.996V	220mV	0.458%

3. Start up voltage and Drop out voltage　　Conditions　Ta :　25 ℃
Iout :　100%

Start up voltage (Vin)	79VAC
Drop out voltage (Vin)	76VAC

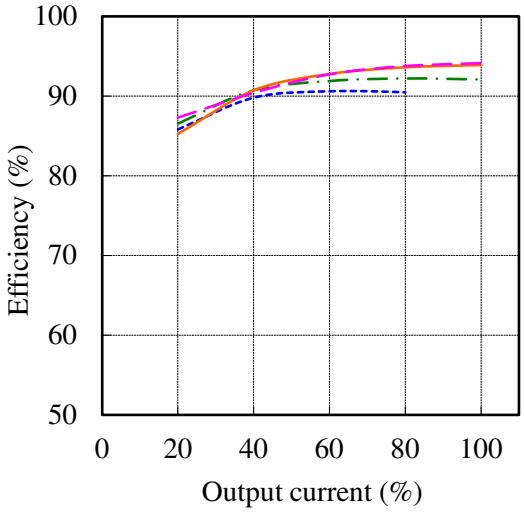
※1　Line regulation : 115VAC - 265VAC

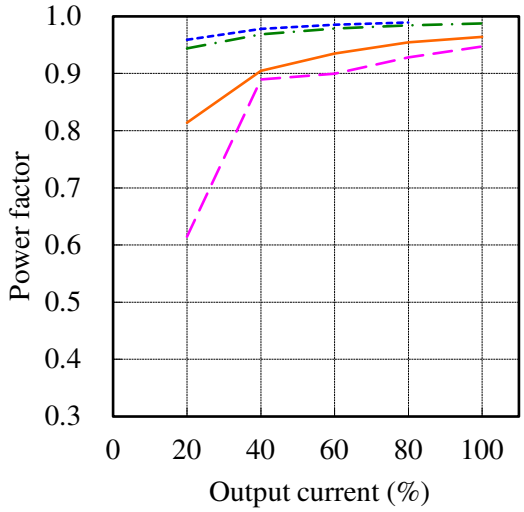
(2) 効率・力率対出力電流

Efficiency and Power factor vs. Output current

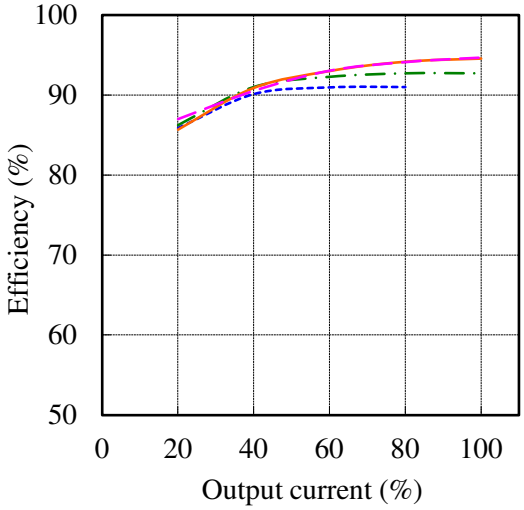
Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

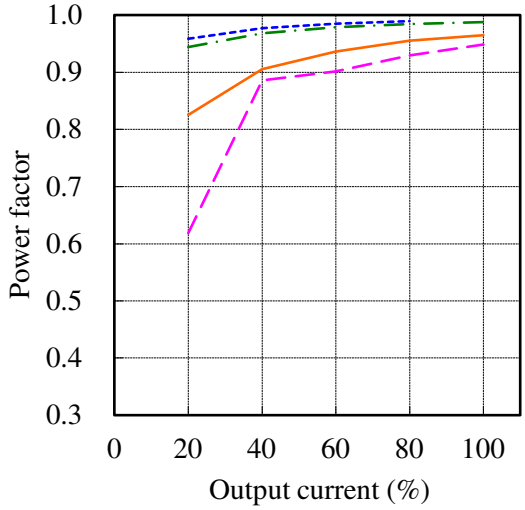
12V



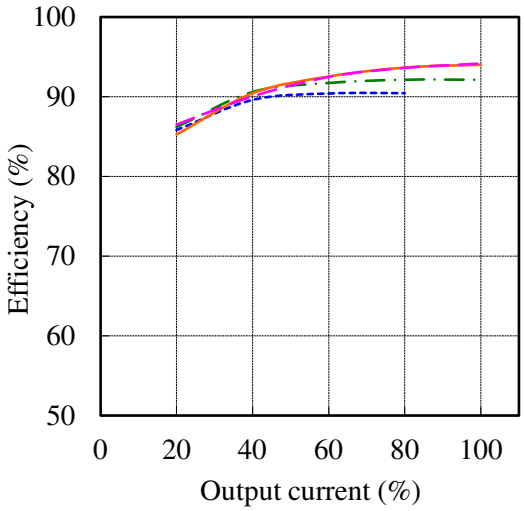


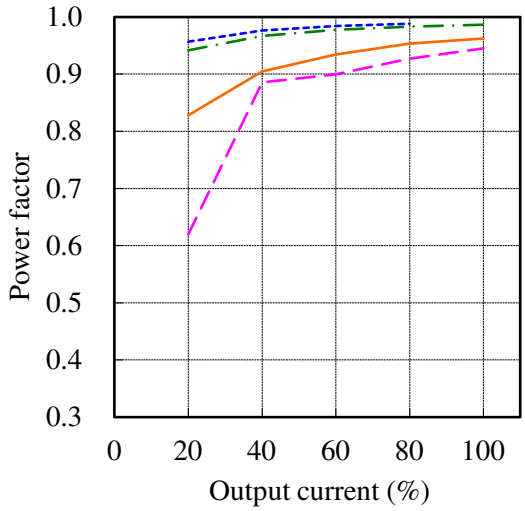
24V





48V



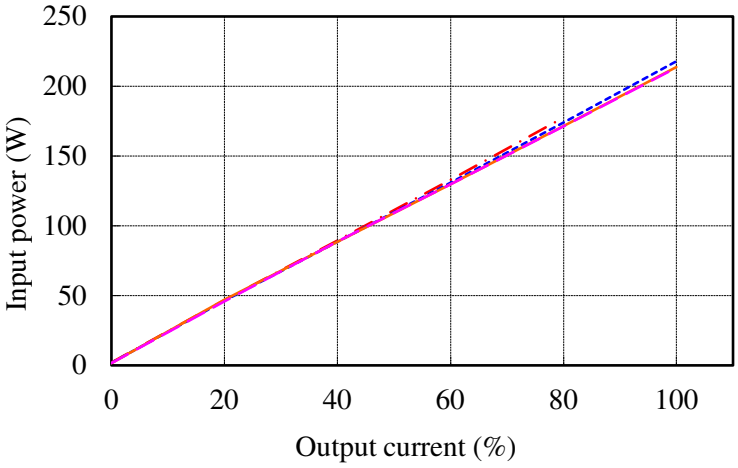


(3) 入力電力対出力電流
Input power vs. Output current

Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

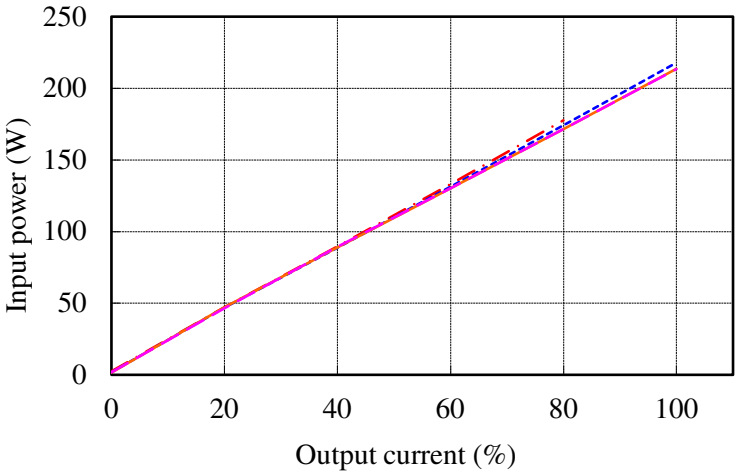
12V

Vin	Input power
	Iout : 0%
85VAC	2.18W
115VAC	1.82W
230VAC	1.62W
265VAC	1.78W



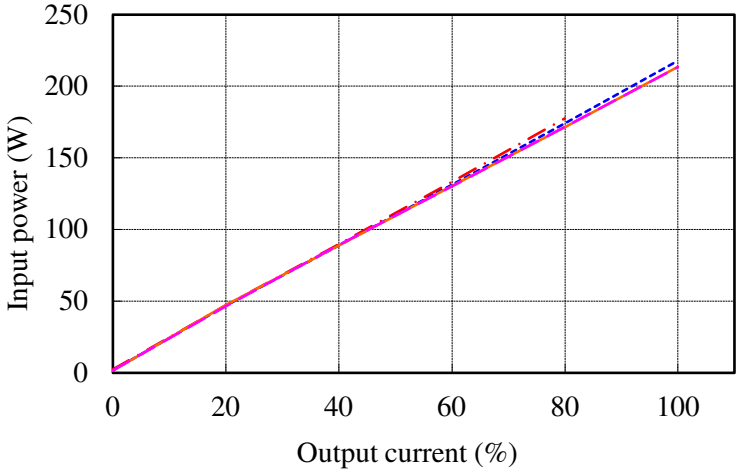
24V

Vin	Input power
	Iout : 0%
85VAC	2.41W
115VAC	1.78W
230VAC	1.60W
265VAC	1.80W



48V

Vin	Input power
	Iout : 0%
85VAC	2.62W
115VAC	1.92W
230VAC	1.80W
265VAC	2.00W

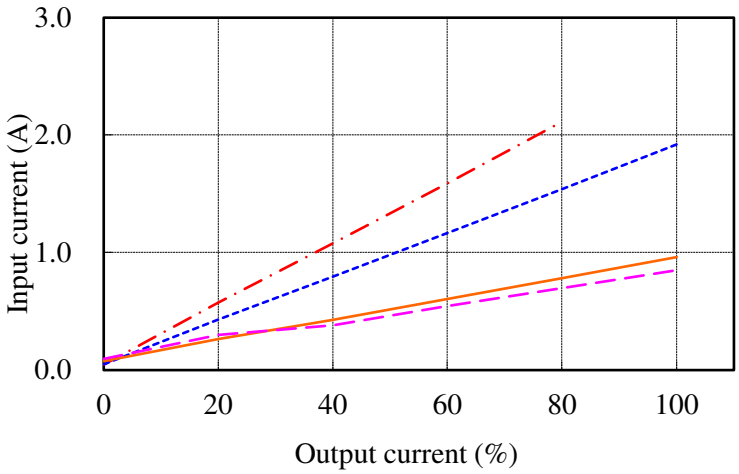


(4) 入力電流対出力電流
Input current vs. Output current

Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

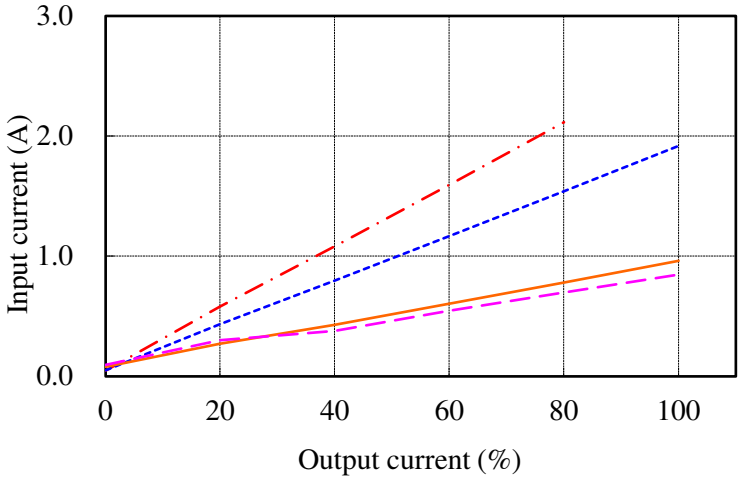
12V

Vin	Input current
	Iout : 0%
85VAC	0.046A
115VAC	0.049A
230VAC	0.077A
265VAC	0.096A



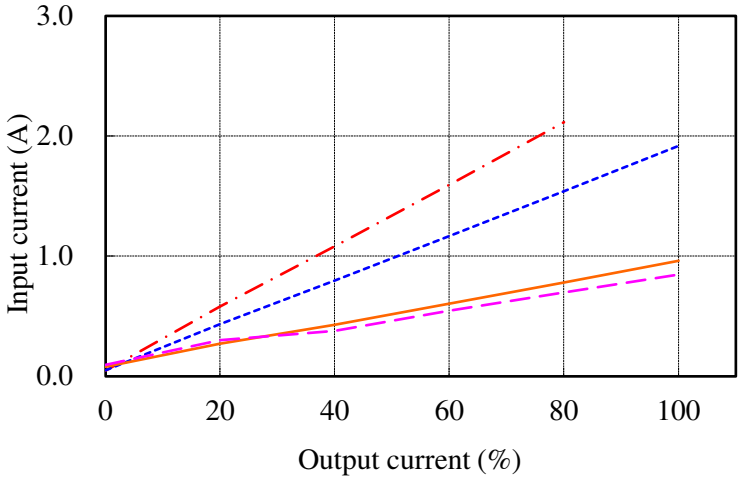
24V

Vin	Input current
	Iout : 0%
85VAC	0.047A
115VAC	0.050A
230VAC	0.080A
265VAC	0.095A



48V

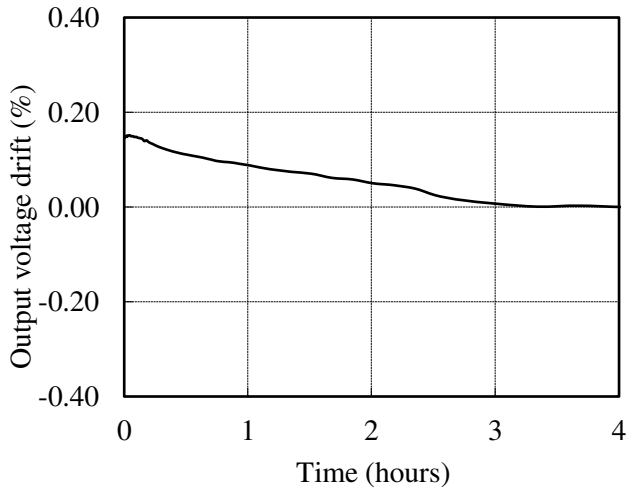
Vin	Input current
	Iout : 0%
85VAC	0.050A
115VAC	0.050A
230VAC	0.076A
265VAC	0.098A



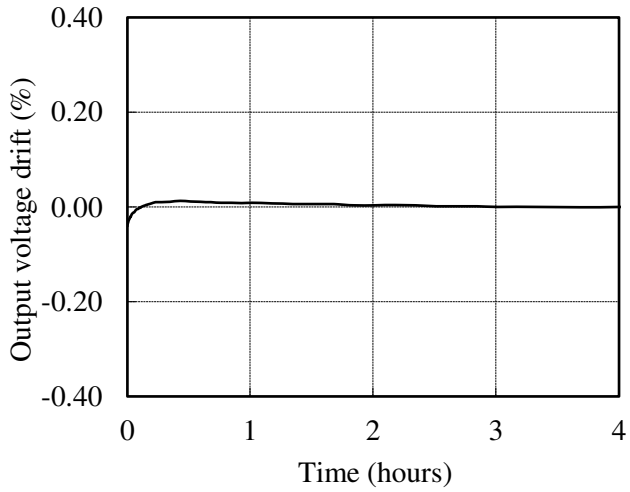
2.2 通電ドリフト特性
Warm up voltage drift characteristics

Conditions Vin : 115 VAC
Iout : Full load
Ta : 25 ℃

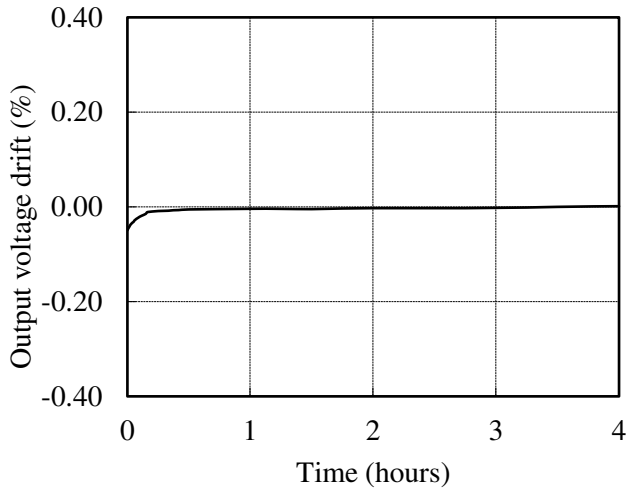
12V



24V

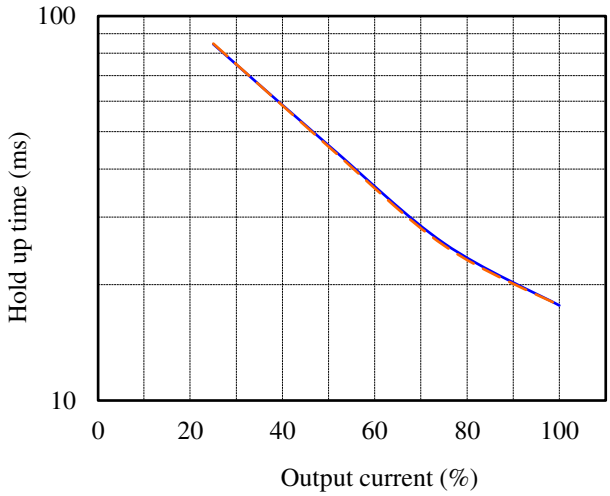


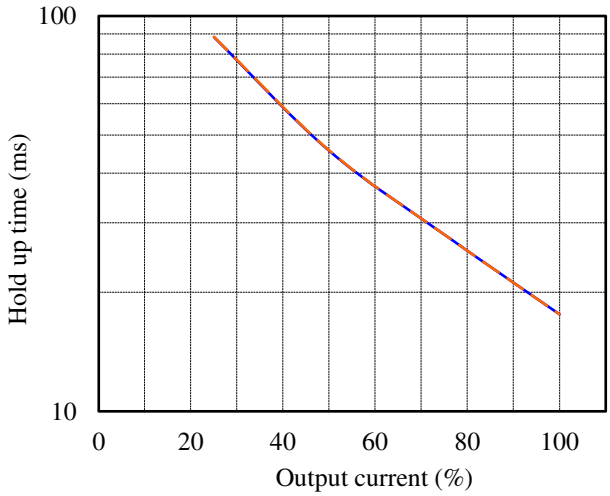
48V

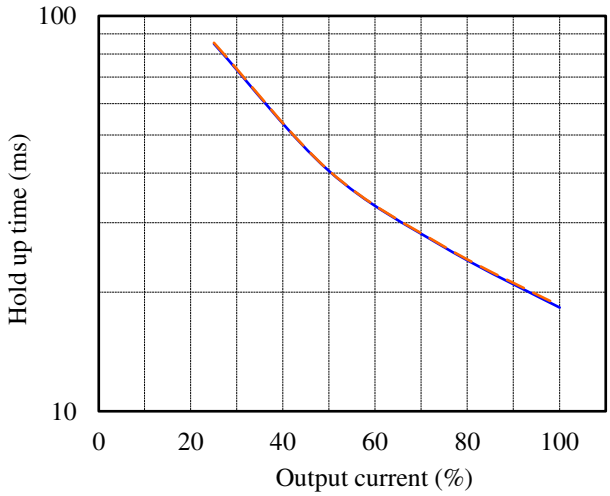


2.3 出力保持時間特性
Hold up time characteristics

Conditions Vin : 115 VAC
230 VAC
Ta : 25 ℃





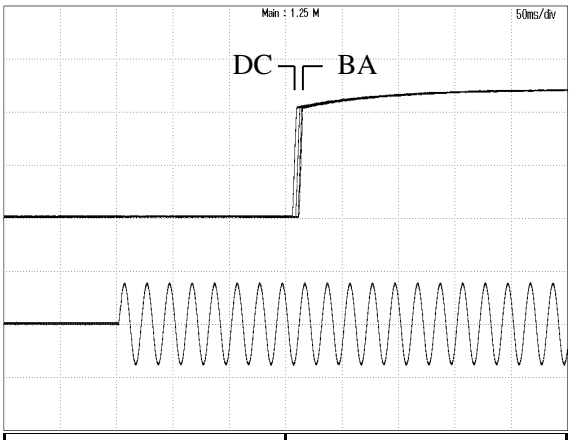


2.4 出力立ち上がり特性
Output rise characteristics

Conditions Vin : 85 VAC (A)
115 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃

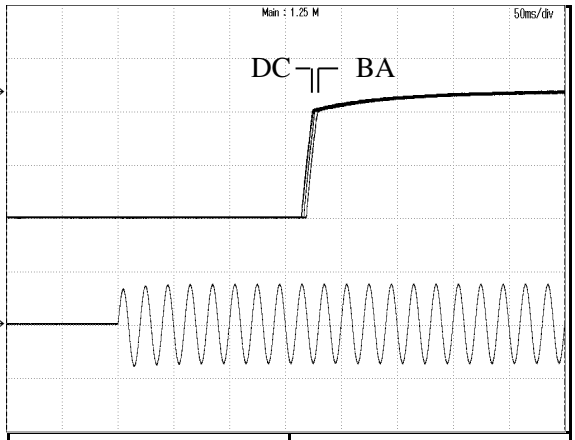
12V

Iout : 0%



5V/DIV | 50ms/DIV

Iout:Full load

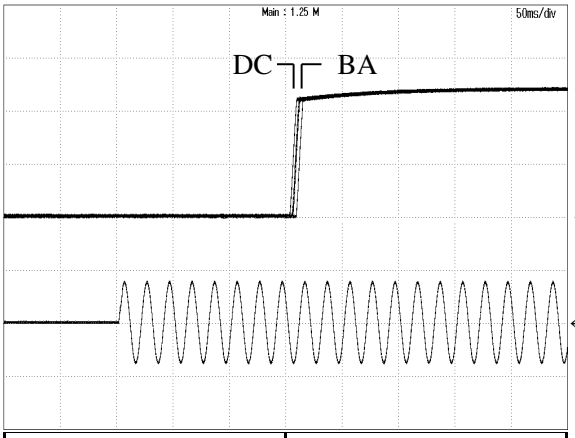


5V/DIV | 50ms/DIV

← Vout →
← 0V →
← Vin →

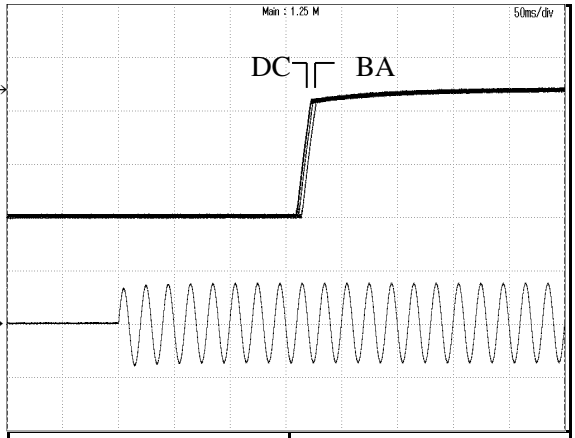
24V

Iout : 0%



10V/DIV | 50ms/DIV

Iout:Full load

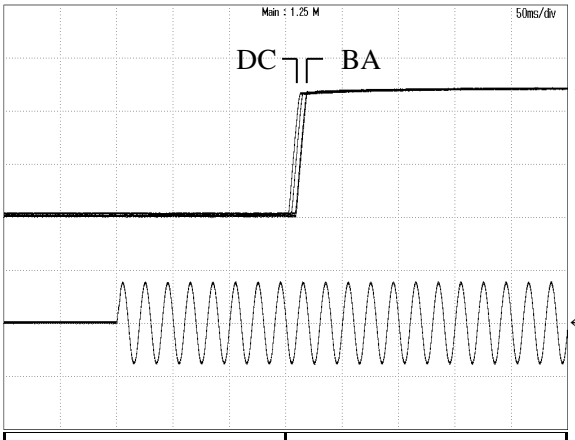


10V/DIV | 50ms/DIV

← Vout →
← 0V →
← Vin →

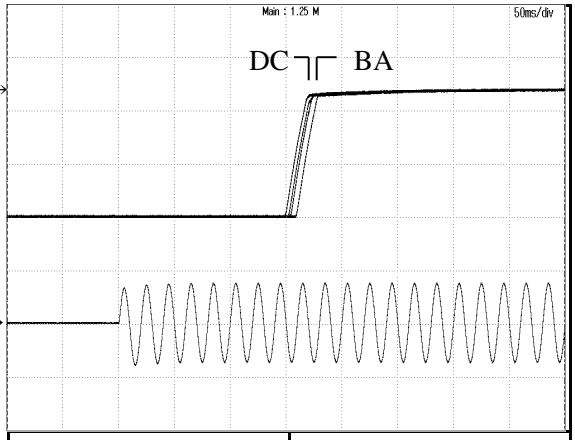
48V

Iout : 0%



20V/DIV | 50ms/DIV

Iout:Full load



20V/DIV | 50ms/DIV

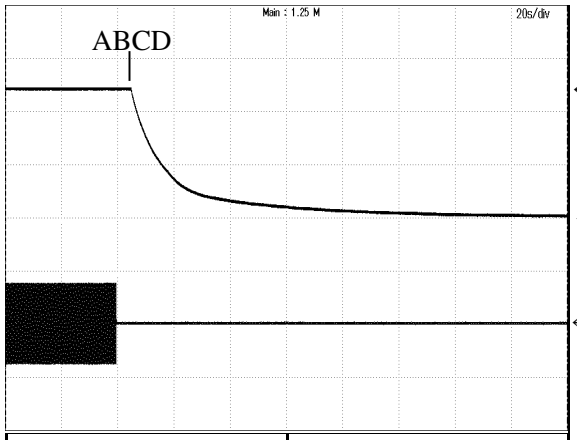
← Vout →
← 0V →
← Vin →

2.5 出力立ち下がり特性
Output fall characteristics

Conditions Vin : 85 VAC (A)
115 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃

12V

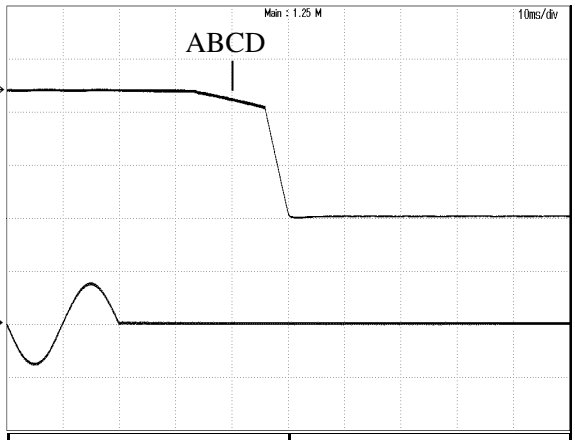
Iout : 0%



5V/DIV | 20s/DIV

← Vout →
← 0V →
← Vin →

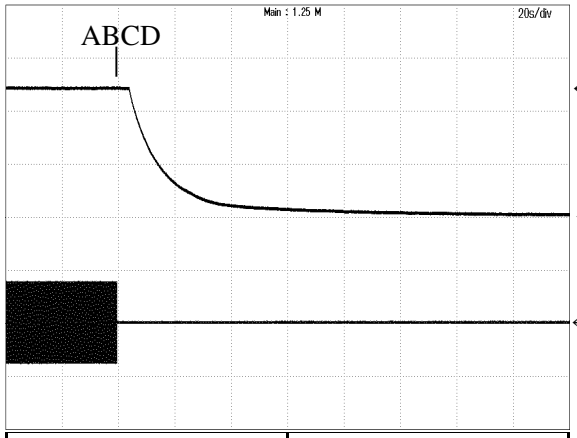
Iout:Full load



5V/DIV | 10ms/DIV

24V

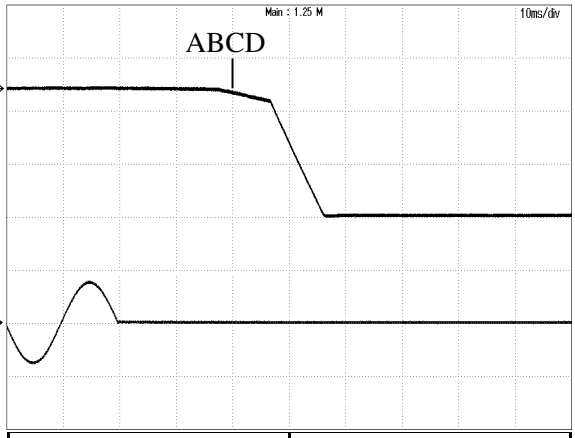
Iout : 0%



10V/DIV | 20s/DIV

← Vout →
← 0V →
← Vin →

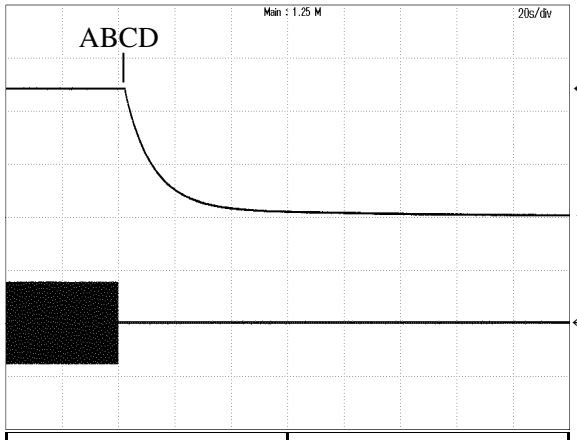
Iout:Full load



10V/DIV | 10ms/DIV

48V

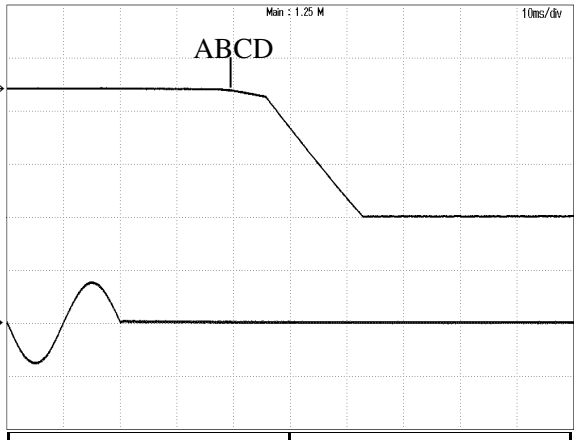
Iout : 0%



20V/DIV | 20s/DIV

← Vout →
← 0V →
← Vin →

Iout:Full load

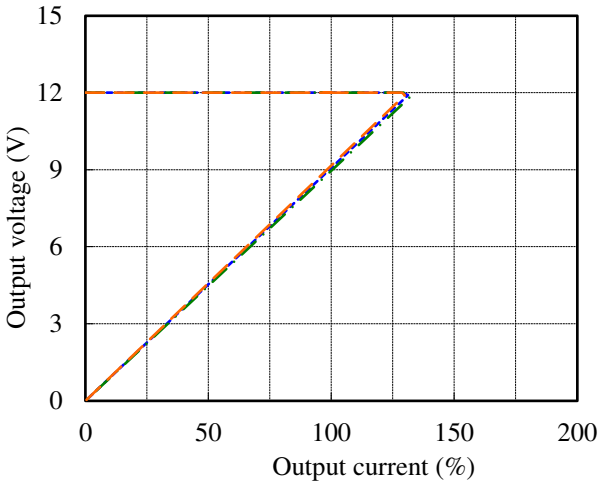


20V/DIV | 10ms/DIV

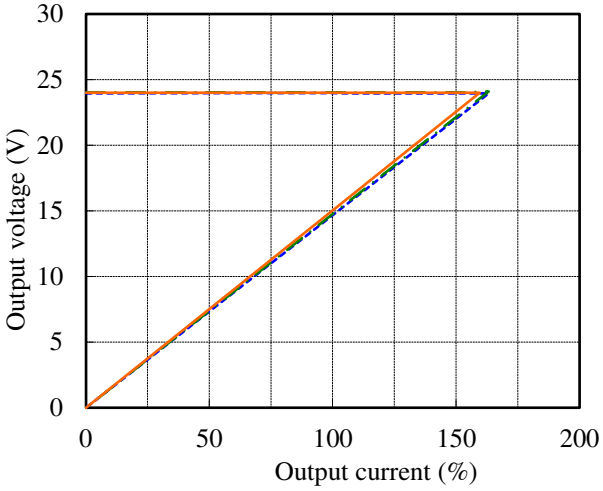
2. 6 過電流保護特性
Over current protection (OCP) characteristics

Conditions Vin : 115 VAC
Ta : -20 ℃
25 ℃
50 ℃

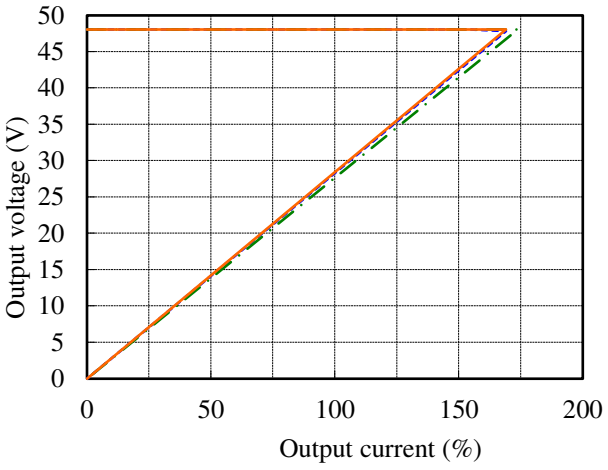
12V



24V

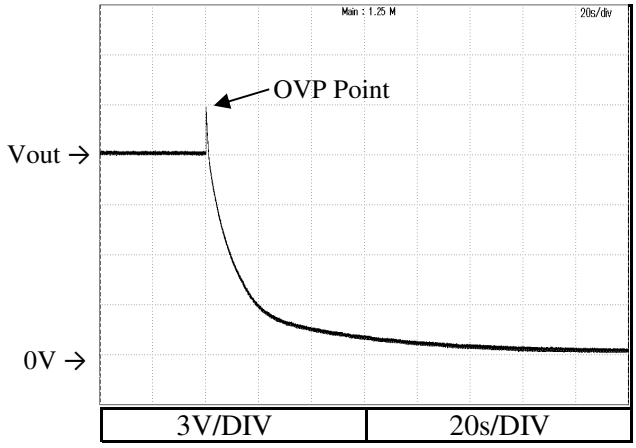


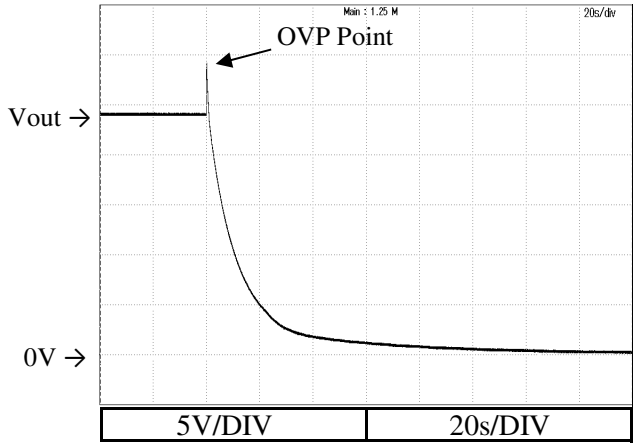
48V

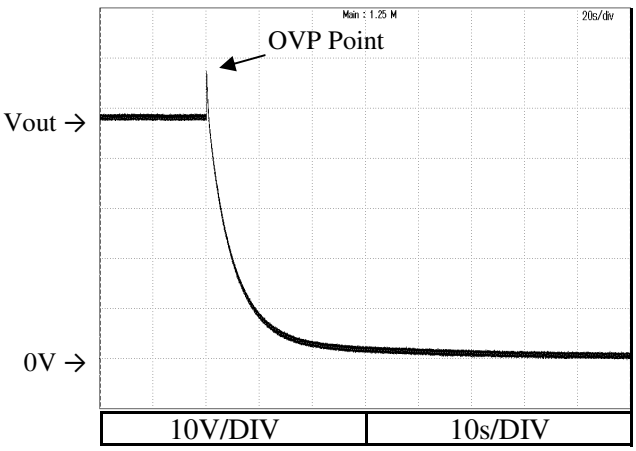


2. 7 過電圧保護特性
Over voltage protection (OVP) characteristics

Conditions Vin : 115 VAC
Iout : 0 %
Ta : 25 ℃







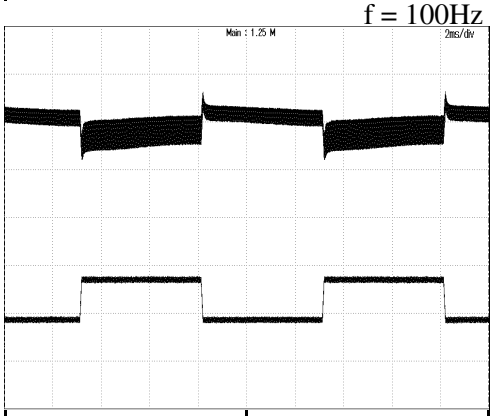
2.8 過渡応答（負荷急変）特性

Dynamic load response characteristics

Conditions Vin : 115 VAC
Iout : 50 % ⟷ 100 %
(tr = tf = 75us)
Ta : 25 ℃

12V

f = 100Hz



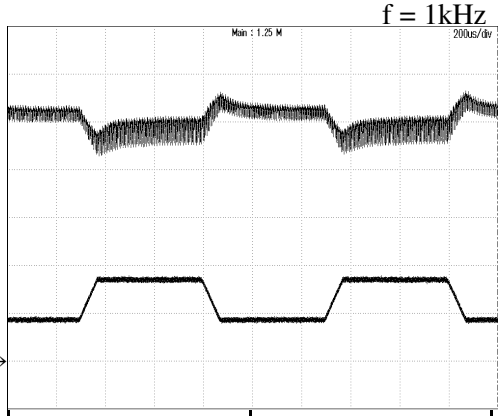
200mV/DIV	2ms/DIV
+1.05%	-1.31%

← Vout →

← Iout →

← Iout:0% →

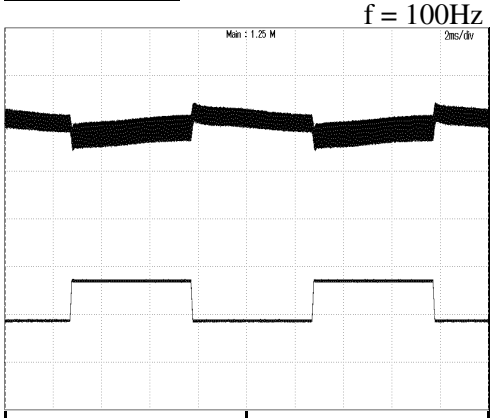
f = 1kHz



200mV/DIV	200 μ s/DIV
+1.08%	-1.18%

24V

f = 100Hz



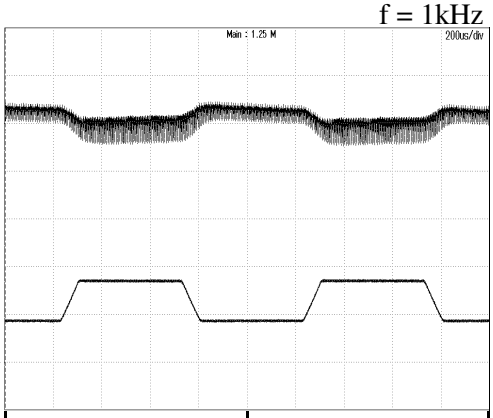
200mV/DIV	2ms/DIV
+0.36%	-0.48%

← Vout →

← Iout →

← Iout:0% →

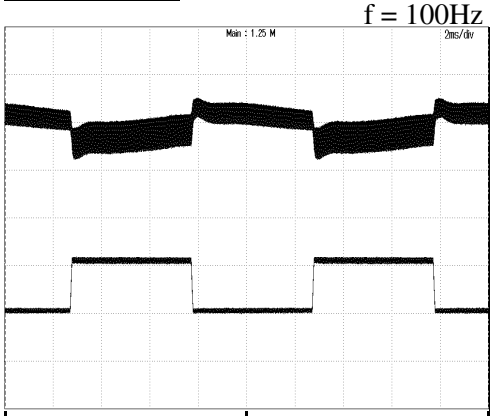
f = 1kHz



200mV/DIV	200 μ s/DIV
+0.38%	-0.39%

48V

f = 100Hz



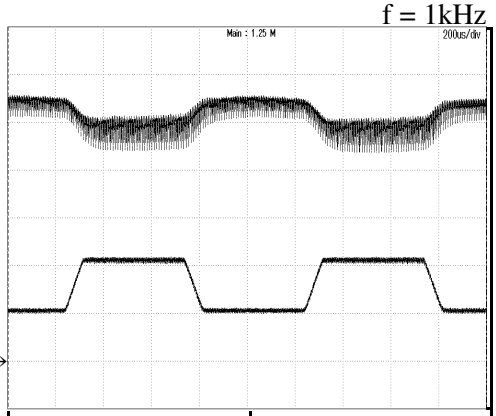
200mV/DIV	2ms/DIV
+0.21%	-0.32%

← Vout →

← Iout →

← Iout:0% →

f = 1kHz



200mV/DIV	200 μ s/DIV
+0.24%	-0.26%

2.9 入力電圧瞬停特性
Response to brown out characteristics

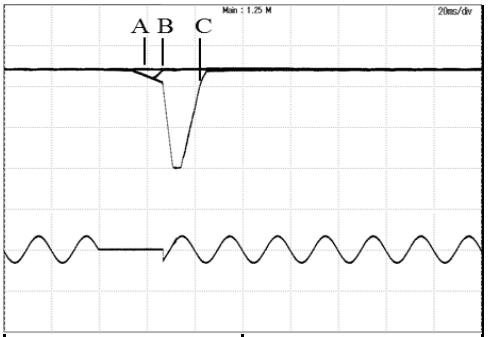
Conditions Ta : 25 ℃
Iout : Full load

瞬停時間 Interruption time

A : 出力電圧が低下なし Output voltage does not drop.
B : 出力電圧の低下が0Vまでいかない Output voltage drop down not reaching 0V.
C : 出力電圧が0Vまで低下 Output voltage drops until 0V.

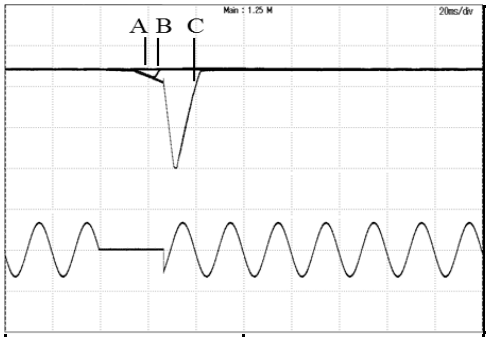
12V

Vin : 115VAC
A = 16ms, B = 22ms, C = 25ms



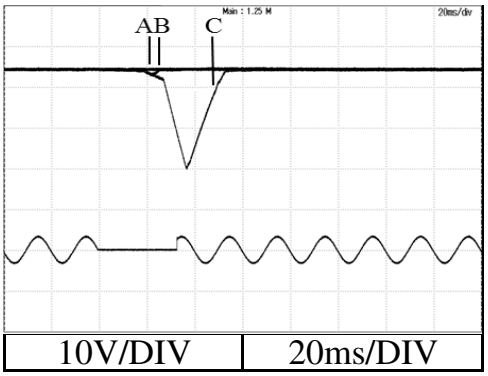
Vout
0V
Vin

Vin : 230VAC
A = 16ms, B = 22ms, C = 27ms



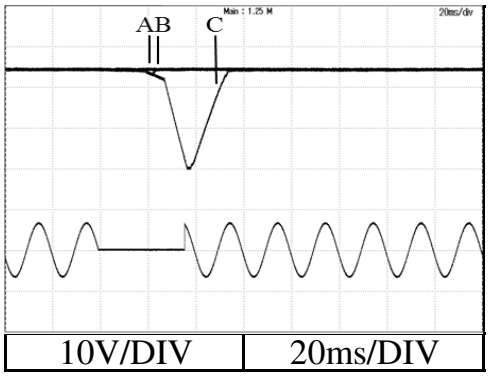
24V

Vin : 115VAC
A = 17ms, B = 22ms, C = 33ms



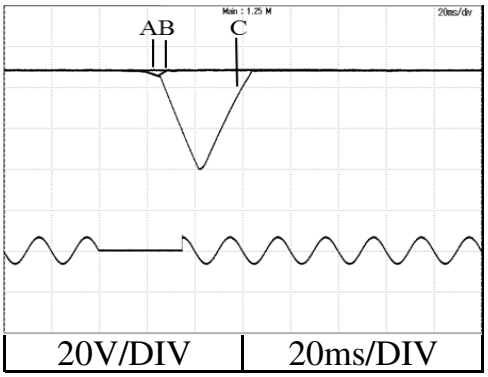
Vout
0V
Vin

Vin : 230VAC
A = 18ms, B = 22ms, C = 36ms



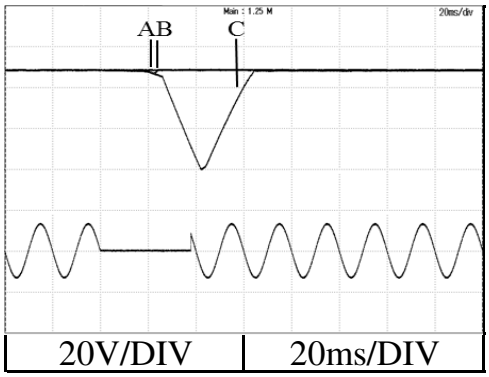
48V

Vin : 115VAC
A = 18ms, B = 22ms, C = 34ms



Vout
0V
Vin

Vin : 230VAC
A = 18ms, B = 22ms, C = 38ms

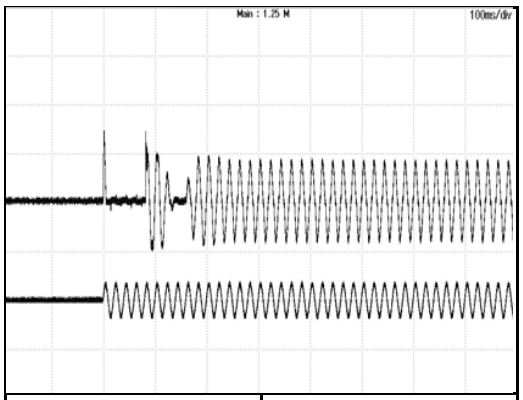


2.10 入力サージ電流（突入電流）波形
Inrush current waveform

12V

Conditions Vin : 115 VAC
Iout : Full load
Ta : 25 ℃

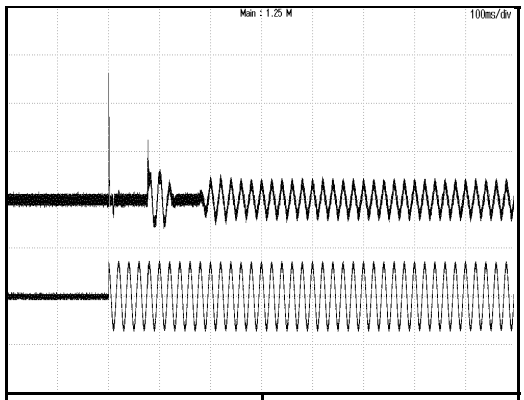
Switch on phase angle of input AC voltage
ϕ = 0°



← Iin →
← Vin →

5A/DIV | 100ms/DIV

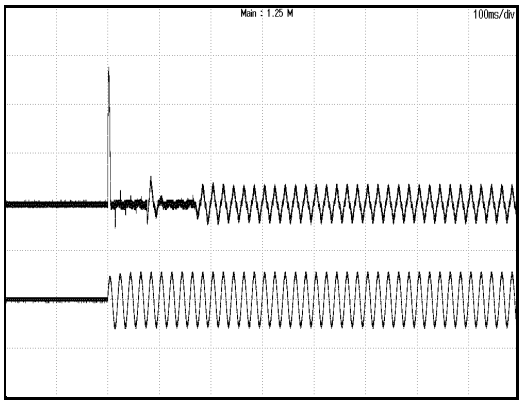
Switch on phase angle of input AC voltage
ϕ = 90°



10A/DIV | 100ms/DIV

Conditions Vin : 230 VAC
Iout : Full load
Ta : 25 ℃

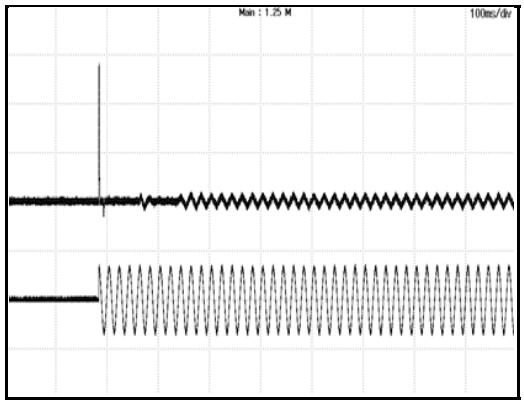
Switch on phase angle of input AC voltage
ϕ = 0°



← Iin →
← Vin →

5A/DIV | 100ms/DIV

Switch on phase angle of input AC voltage
ϕ = 90°



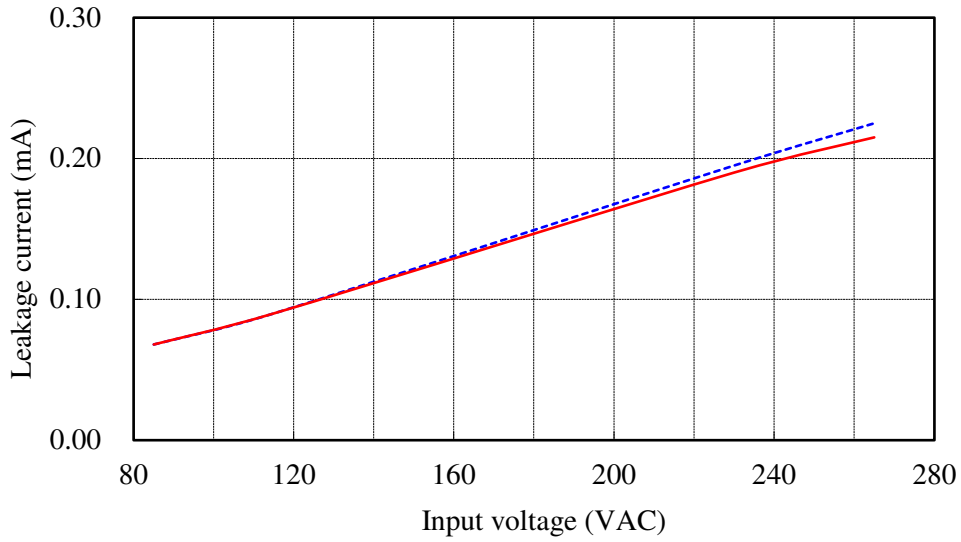
20A/DIV | 100ms/DIV

2.11 リーク電流特性
Leakage current characteristics

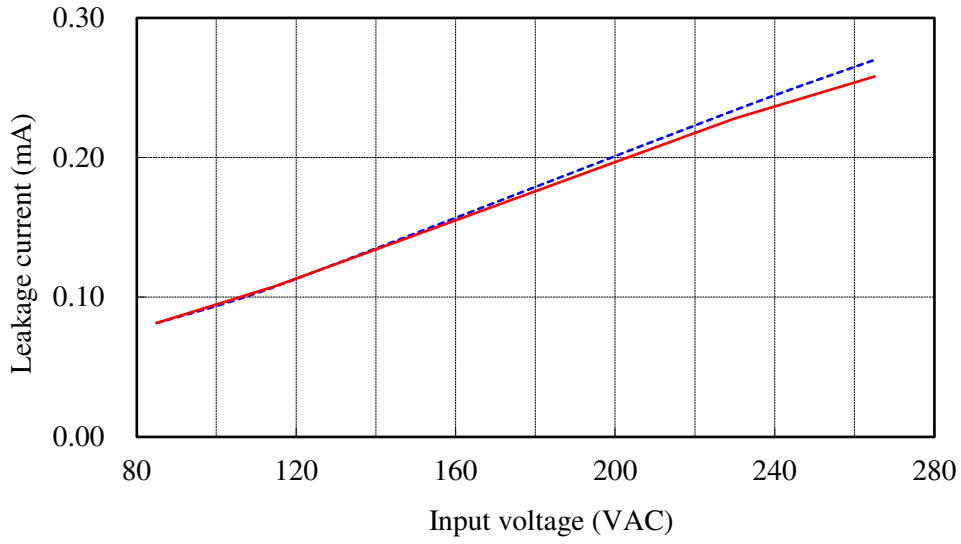
Conditions Iout : 0 %
Full Load
Ta : 25 ℃
Equipment used : MODEL 228
(Simpson)

12V

f : 50 Hz



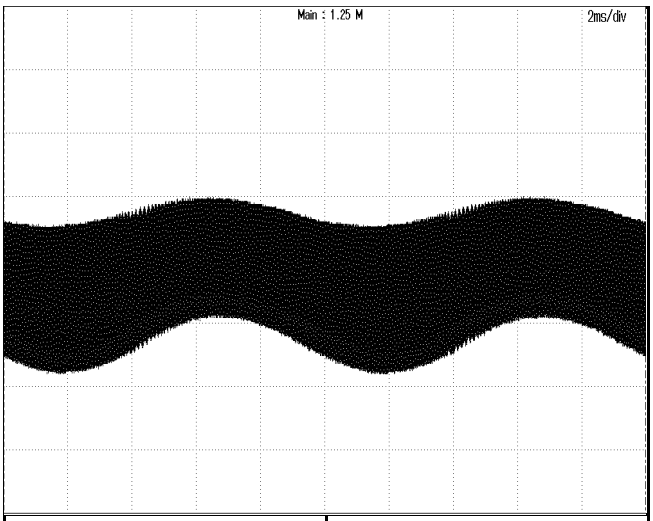
f : 60 Hz



2.12 出力リップル、ノイズ波形
Output ripple and noise waveform

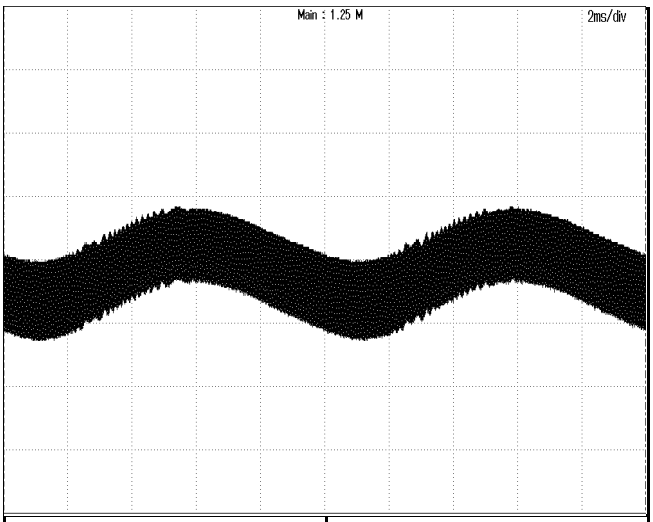
Conditions Vin : 115 VAC
Iout : Full load
Ta : 25 ℃

12V



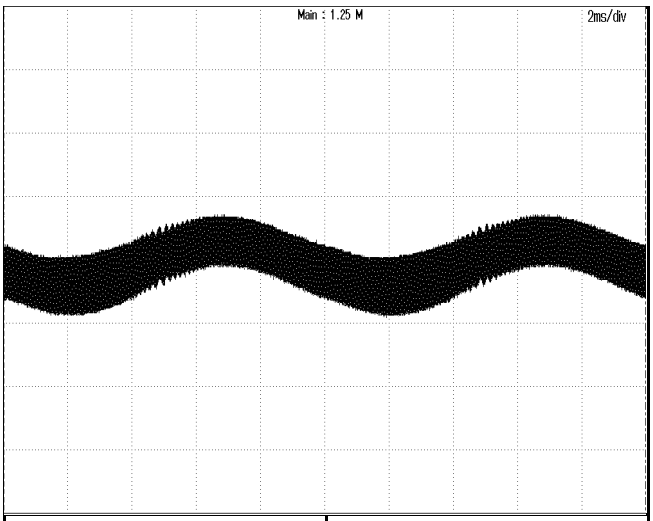
50mV/DIV	2ms/DIV

24V



50mV/DIV	2ms/DIV

48V



100mV/DIV	2ms/DIV

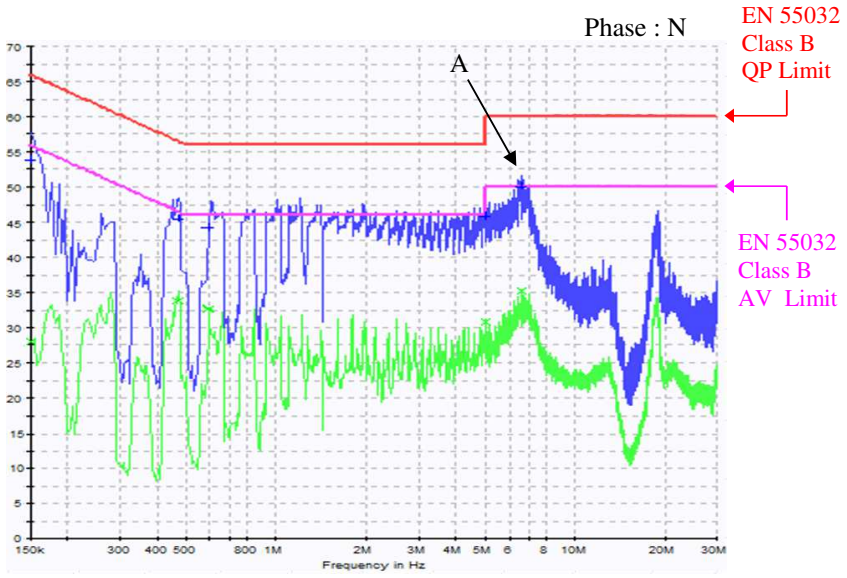
2.13 ＥＭＩ特性
Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Iout : Full load
Ta : 25 ℃

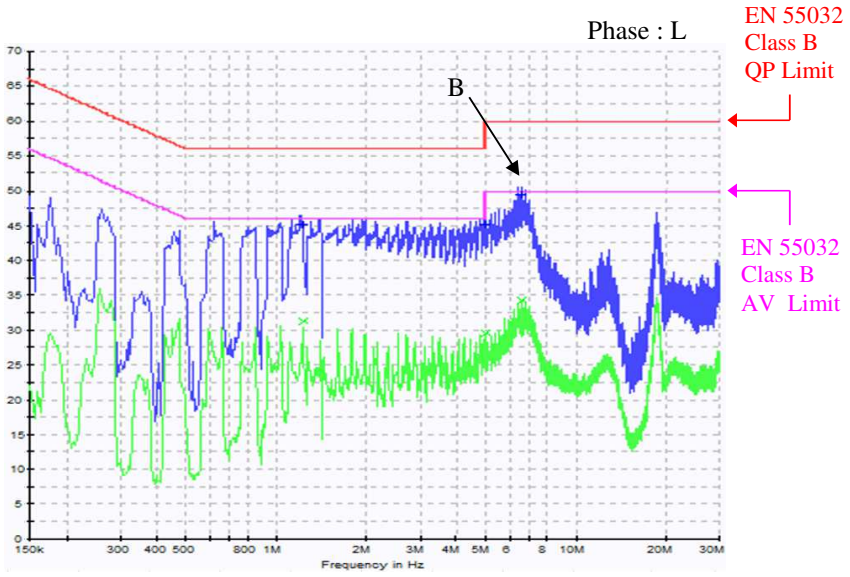
雑音端子電圧
Conducted Emission

12V

Ref. Data	Point A (4.99MHz) Limit (dBuV)	Measure (dBuV)
QP	56.0	50.0
AV	46.0	35.2



Ref. Data	Point B (6.60MHz) Limit (dBuV)	Measure (dBuV)
QP	56.0	49.3
AV	46.0	34.3



EN55011-B,FCC-Class Bの限界値はEN55032-Bの限界値と同じ
Limit of EN55011-B,FCC-Class B are same as its EN55032-B.

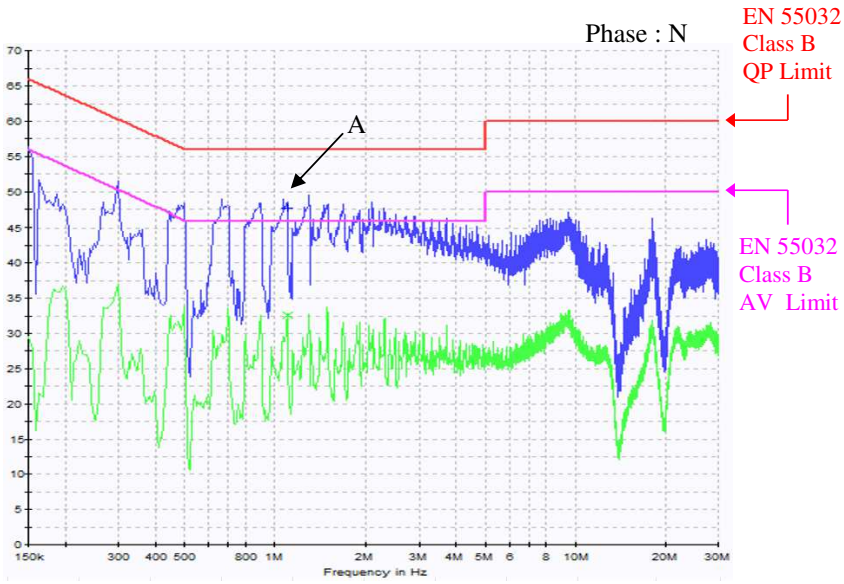
2.13 ＥＭＩ特性
Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Iout : Full load
Ta : 25 ℃

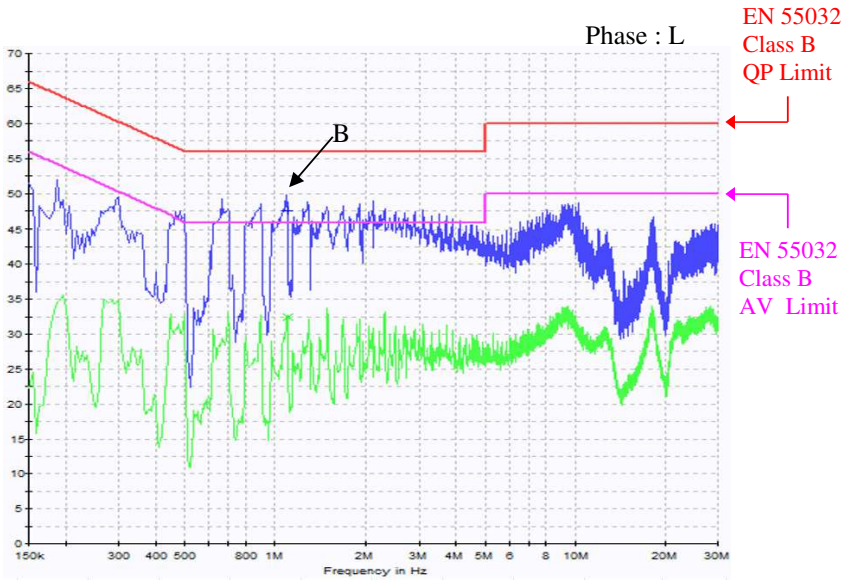
雑音端子電圧
Conducted Emission

24V

Ref. Data	Point A (1.10MHz) Limit (dBuV)	Measure (dBuV)
QP	56.0	47.6
AV	46.0	32.6



Ref. Data	Point B (1.10MHz) Limit (dBuV)	Measure (dBuV)
QP	56.0	47.5
AV	46.0	32.4



EN55011-B,FCC-Class Bの限界値はEN55032-Bの限界値と同じ
Limit of EN55011-B,FCC-Class B are same as its EN55032-B.

2.13 ＥＭＩ特性

Electro-Magnetic Interference characteristics

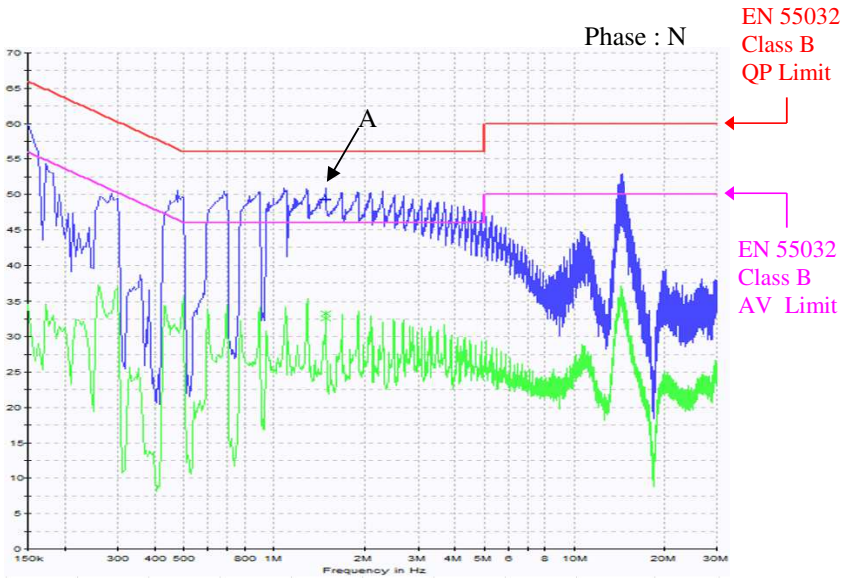
Conditions Vin : 230 VAC
Iout : Full load
Ta : 25 ℃

雑音端子電圧

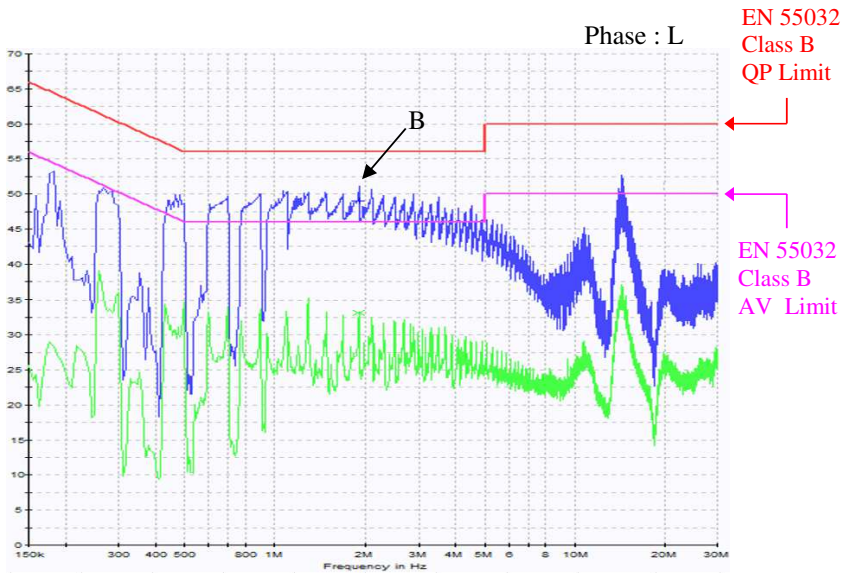
Conducted Emission

48V

Ref. Data	Point A (1.50MHz) Limit (dBuV)	Measure (dBuV)
QP	56.0	49.2
AV	46.0	32.6



Ref. Data	Point B (1.90MHz) Limit (dBuV)	Measure (dBuV)
QP	56.0	49.0
AV	46.0	33.2



EN55011-B,FCC-Class Bの限界値はEN55032-Bの限界値と同じ
Limit of EN55011-B,FCC-Class B are same as its EN55032-B.

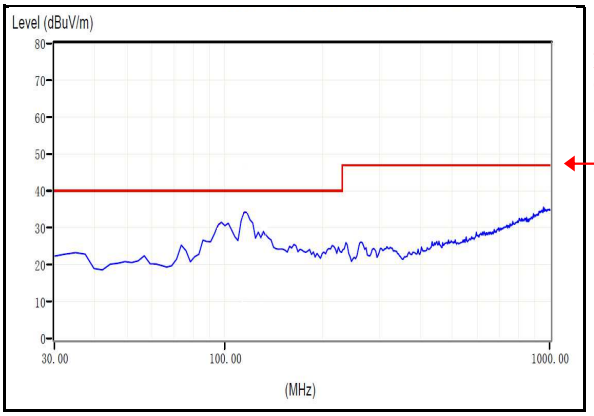
2.13 ＥＭＩ特性
Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Io : Full load
Ta : 25 ℃

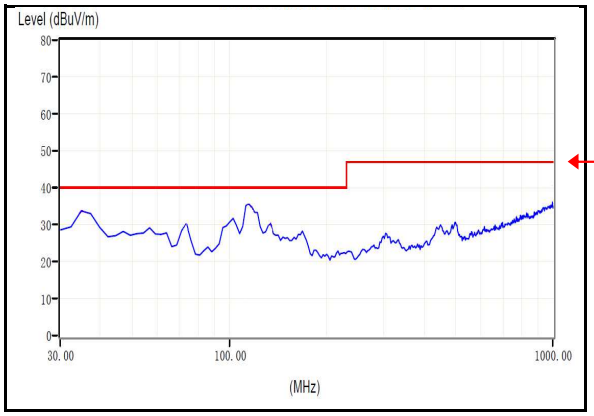
雑音電界強度
Radiated Emission

12V

HORIZONTAL

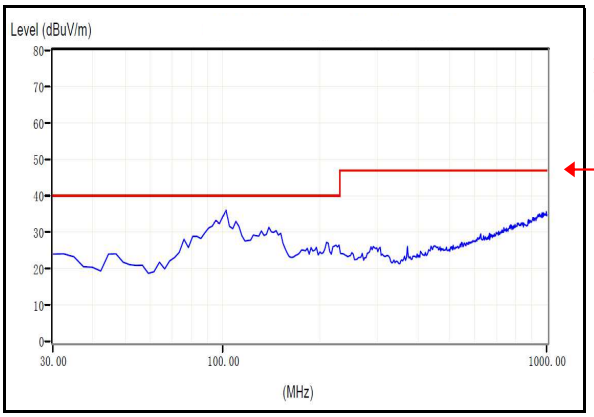


VERTICAL

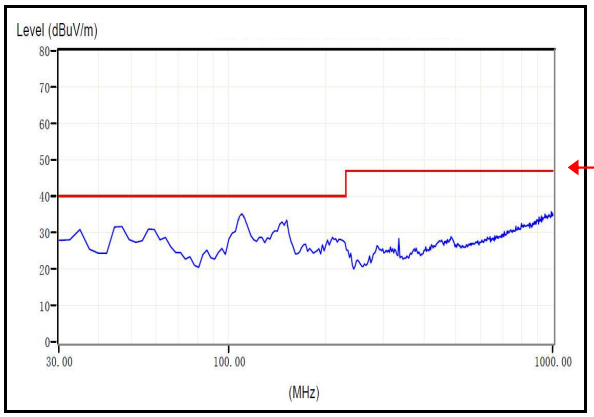


24V

HORIZONTAL

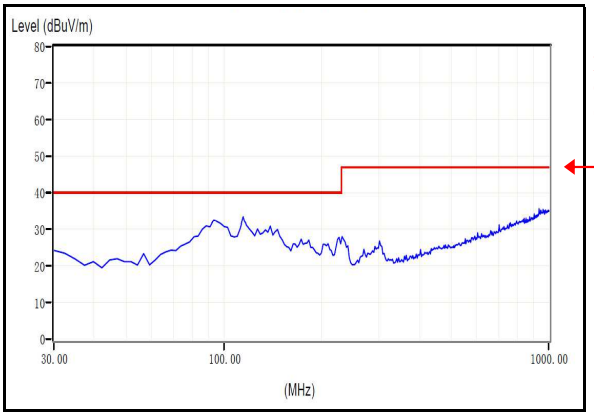


VERTICAL

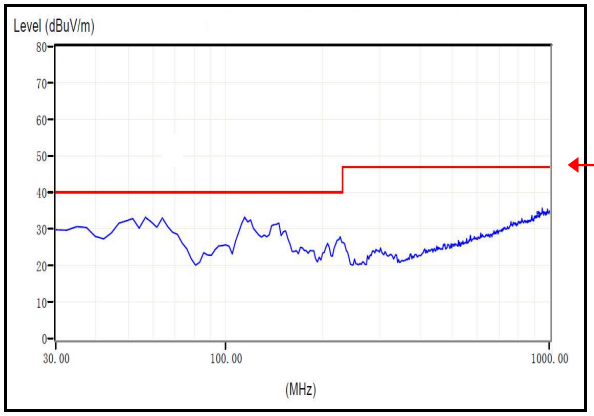


48V

HORIZONTAL



VERTICAL



EN55011-Bの限界値はEN55032-Bの限界値と同じ
Limit of EN55011-B are same as its EN55032-B.

表示はピーク値
Indication is peak values.