

DRJ100

EVALUATION DATA

型式データ

INDEX

1. 測定方法	Evaluation Method	PAGE
1.1	測定回路 Circuit used for determination	
	測定回路1 Circuit 1 used for determination	4
	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	
	入力電流波形 Input current waveform	
	高調波成分 Input current harmonics	
	測定回路2 Circuit 2 used for determination	4
	過渡応答（負荷急変）特性 Dynamic load response characteristics	
	測定回路3 Circuit 3 used for determination	5
	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	5
	リーク電流特性 Leakage current characteristics	
	測定回路5 Circuit 5 used for determination	5
	出力リップル、ノイズ波形 Output ripple and noise waveform	
	測定構成 Configuration used for determination	6
	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	7
1.3	評価負荷条件 Load conditions	7

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 8

(2) リップルノイズ電圧対入力電圧

Ripple noise voltage vs. Input voltage..... 8

(3) 効率・力率対出力電流 Efficiency and Power factor vs. Output current 9

(4) 入力電力対出力電流 Input power vs. Output current 9

(5) 入力電流対出力電流 Input current vs. Output current 10

2.2 通電ドリフト特性 Warm up voltage drift characteristics 10

2.3 出力保持時間特性 Hold up time characteristics 10

2.4 出力立ち上がり特性 Output rise characteristics 11

2.5 出力立ち下がり特性 Output fall characteristics 11

2.6 過電流保護特性 Over current protection (OCP) characteristics 12

2.7 過電圧保護特性 Over voltage protection (OVP) characteristics 12

2.8 過渡応答（負荷急変）特性 Dynamic load response characteristics 13

2.9 入力電圧瞬停特性 Response to brown out characteristics 13

2.10 入力サージ電流（突入電流）波形 Inrush current waveform 14

2.11 高調波成分 Input current harmonics 15

2.12 入力電流波形 Input current waveform 15

2.13 リーク電流特性 Leakage current characteristics 16

2.14 出力リップル、ノイズ波形 Output ripple and noise waveform 16

2.15 EMI特性 Electro-Magnetic Interference characteristics 17～18

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

※ 当社測定条件における結果であり、参考値としてお考え願います。

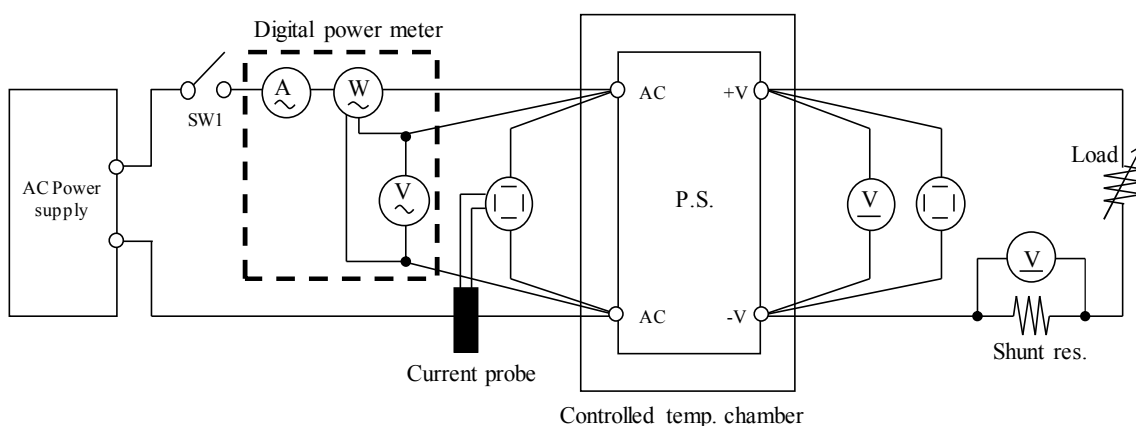
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

1.1 測定回路 Circuit used for determination

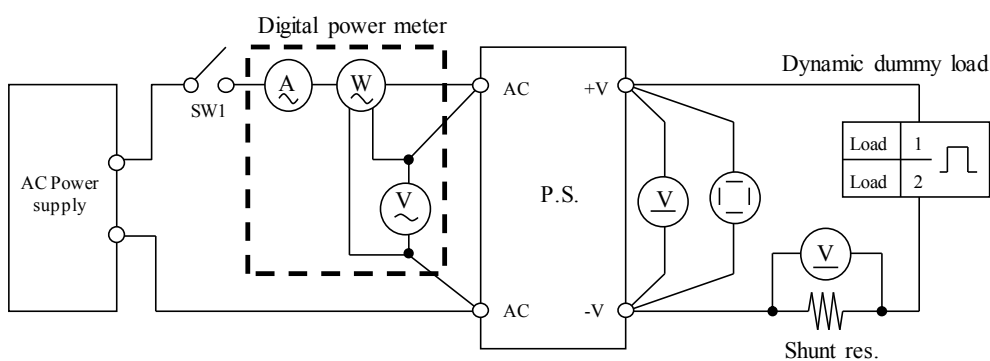
測定回路1 Circuit 1 used for determination

- 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
- 入力電流波形 Input current waveform
- 高調波成分 Input current harmonics

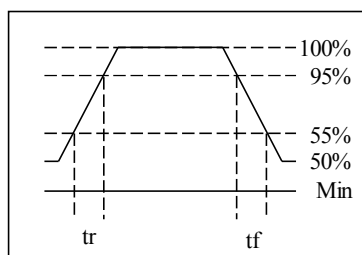


測定回路2 Circuit 2 used for determination

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

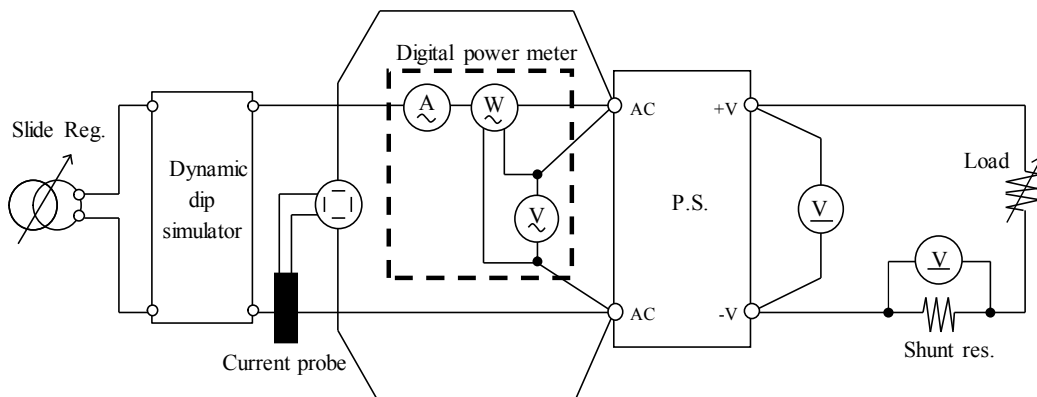


Output current waveform
Iout 50% \longleftrightarrow 100%



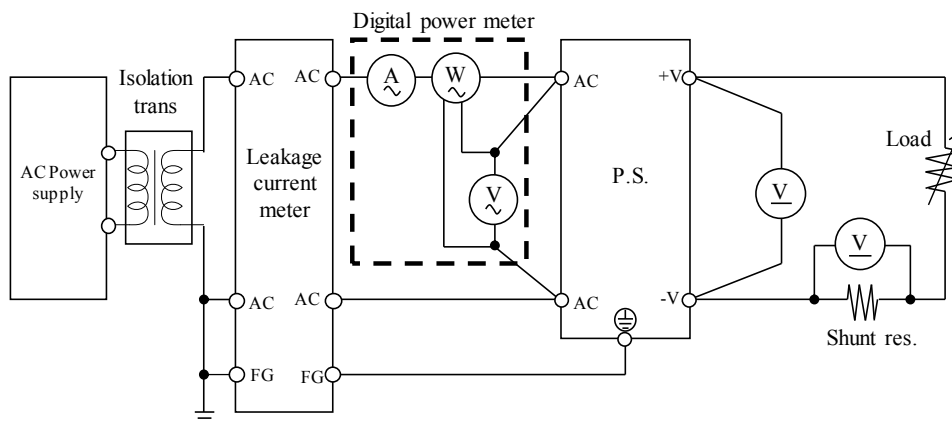
測定回路3 Circuit 3 used for determination

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



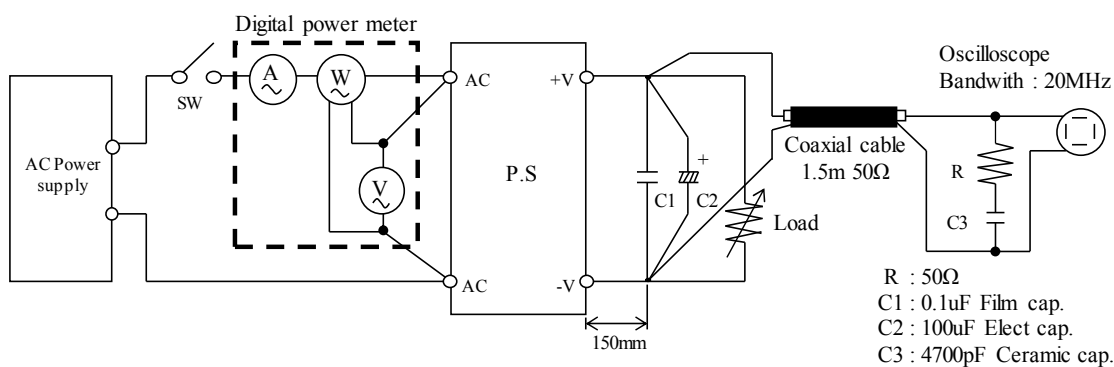
測定回路4 Circuit 4 used for determination

・リーク電流特性 Leakage current characteristics



測定回路5 Circuit 5 used for determination

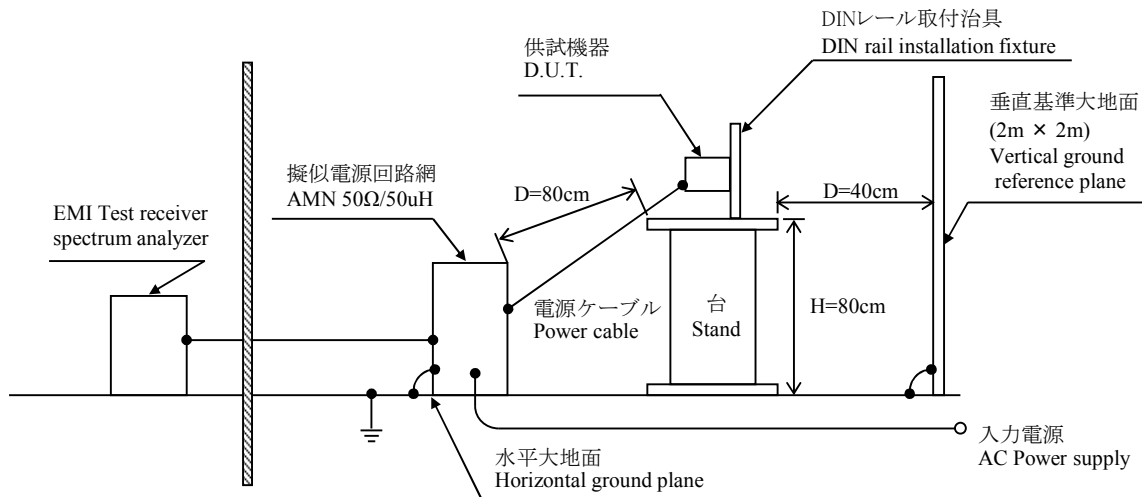
・出力リップル、ノイズ波形 Output ripple and noise waveform



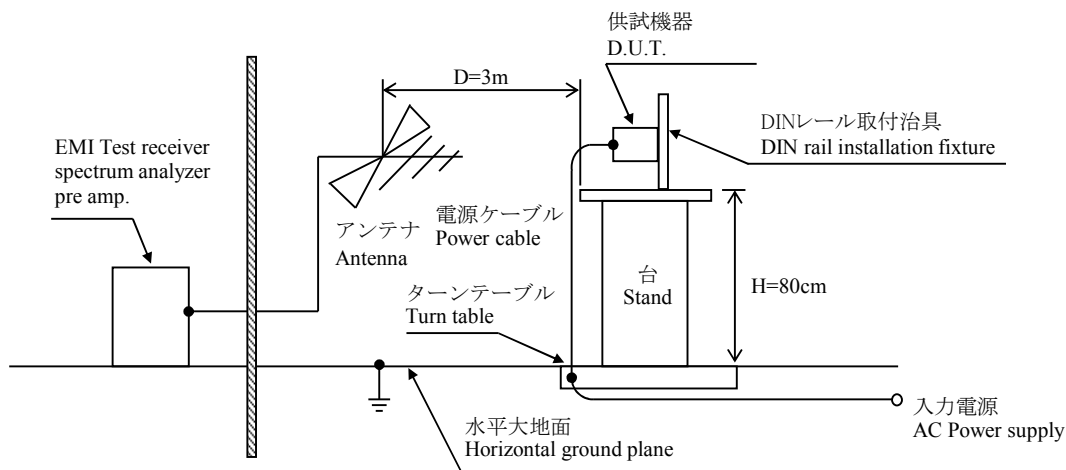
測定構成 Configuration used for determination

・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 / DL1740EL
2	DIGITAL MULTIMETER	AGILENT	34970A
3	DIGITAL POWER METER	YOKOGAWA ELECT.	WT210
4	CURRENT PROBE	YOKOGAWA ELECT.	701928 / 701930
5	DYNAMIC DUMMY LOAD	TAKASAGO	FK-200L / FK-400L
6	DYNAMIC DUMMY LOAD	KIKUSUI	PLZ150U
7	DUMMY LOAD	PCN	PHF250 SERIES
8	ISOLATION TRANS	MATSUNAGA	3WTC-50K
9	CVCF	TAKASAGO	AA2000XG
10	CVCF	KIKUSUI	PCR4000L
11	CVCF	NF	ES10000S
12	LEAKAGE CURRENT METER	HIOKI	3156
13	DYNAMIC DIP SIMULATOR	TAKAMISAWA	PSA-210
14	CONTROLLED TEMP. CHAMBER	ESPEC	PL-1KP / SH-240
15	EMI TEST RECEIVER / SPECTRUM ANALYZER	ROHDE & SCHWARZ	ESCI
16	PRE AMP.	SONOMA	310N
17	AMN	SCHWARZBECK	NNLK8121
18	ANTENNA	SCHWARZBECK	CBL6111D
19	HARMONIC / FLICKER ANALYZER	KIKUSUI	KHA1000
20	SINGLE-PHASE MASTER	NF	4420
21	REFERENCE IMPEDANCE NETWORK 20A	NF	4150
22	MULTI OUTLET UNIT	KIKUSUI	OT01-KHA

1.3 評価負荷条件 Load conditions

*入力電圧が90VAC未満の場合、下記のとおり出力デレーティングが必要です。
Output derating is needed when input voltage is less than 90VAC.

Output voltage : 24V

Vin	Iout : Full load	24V
90 - 265VAC	100%	4.2A
85VAC	80%	3.36A

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

24V

1. Regulation - line and load

Condition Ta : 25 °C

Iout \ Vin	90VAC	100VAC	230VAC	265VAC	line regulation	
0%	24.103V	24.104V	24.103V	24.104V	1mV	0.004%
50%	24.060V	24.060V	24.060V	24.060V	0mV	0.000%
100%	24.020V	24.020V	24.020V	24.019V	1mV	0.004%
load regulation	83mV	84mV	83mV	85mV		
	0.346%	0.350%	0.346%	0.354%		

2. Temperature drift

Conditions Vin : 100 VAC

Iout : 100 %

Ta	-10°C	+25°C	+55°C	temperature stability	
Vout	23.977V	24.020V	24.037V	60mV	0.250%

3. Start up voltage and Drop out voltage

Conditions Ta : 25 °C

Iout : 100 %

Start up voltage (Vin)	76VAC
Drop out voltage (Vin)	67VAC

(2) リップルノイズ電圧対入力電圧

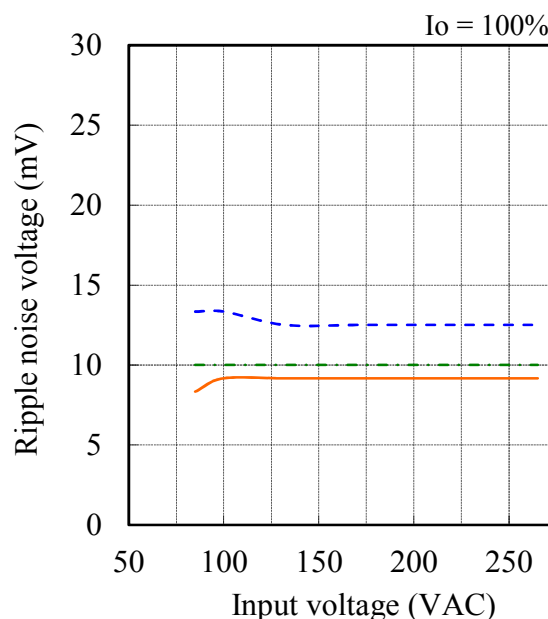
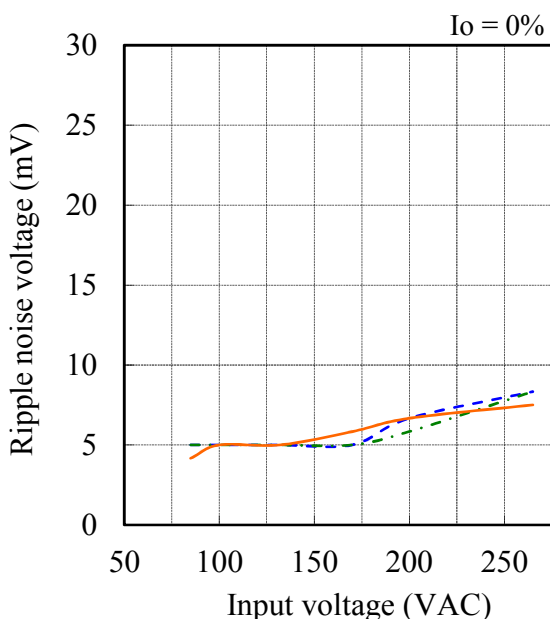
Ripple noise voltage vs. Input voltage

Conditions Ta : -10 °C

25 °C

55 °C

24V

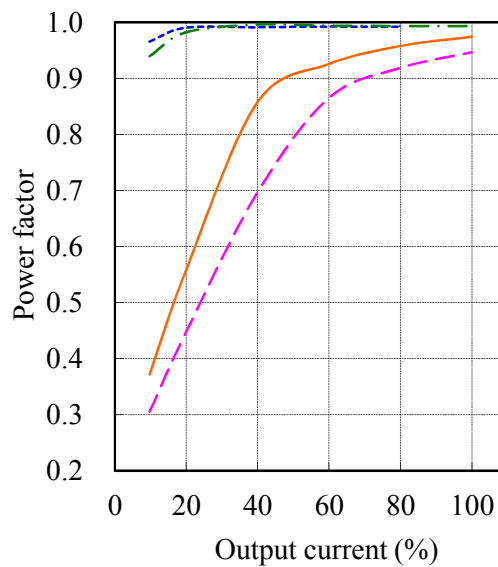
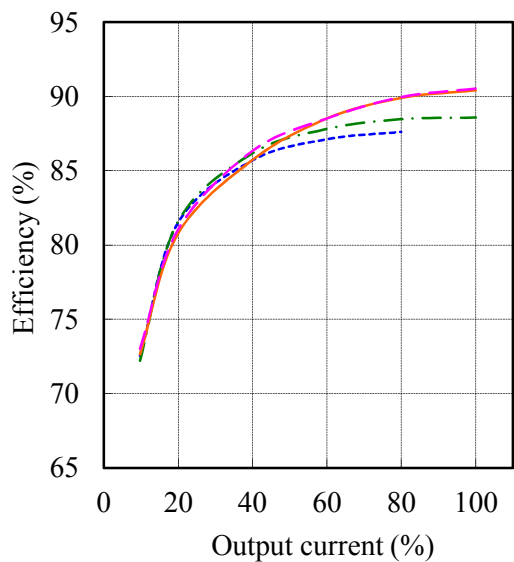


(3) 効率・力率対出力電流

Efficiency and Power factor vs. Output current

Conditions Vin : 85 VAC ---
 100 VAC - - -
 230 VAC ———
 265 VAC - · - · -
 Ta : 25 °C

24V



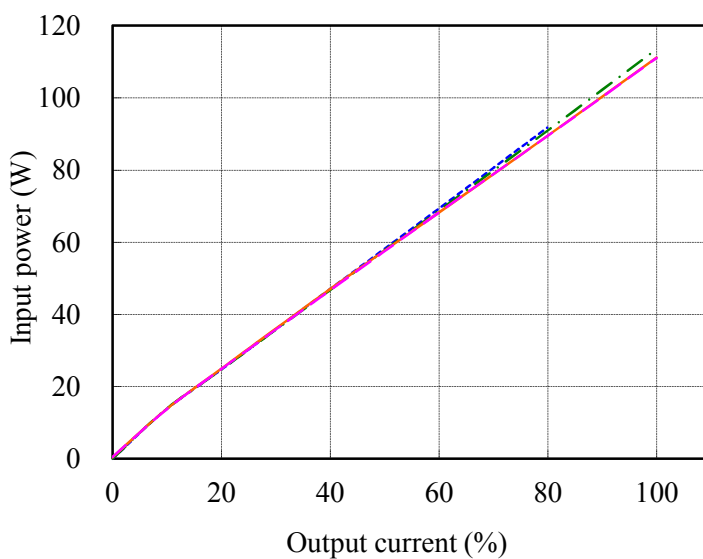
(4) 入力電力対出力電流

Input power vs. Output current

Conditions Vin : 85 VAC ---
 100 VAC - - -
 230 VAC ———
 265 VAC - · - · -
 Ta : 25 °C

24V

Vin	Input power
	Iout : 0%
85VAC	0.31W
100VAC	0.32W
230VAC	0.43W
265VAC	0.49W

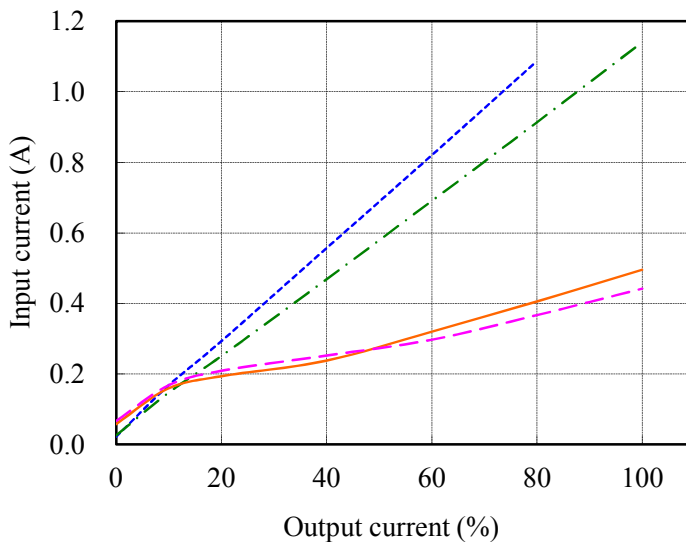


(5) 入力電流対出力電流
Input current vs. Output current

Conditions Vin : 85 VAC ---
100 VAC - - -
230 VAC ———
265 VAC - - - -
Ta : 25 °C

24V

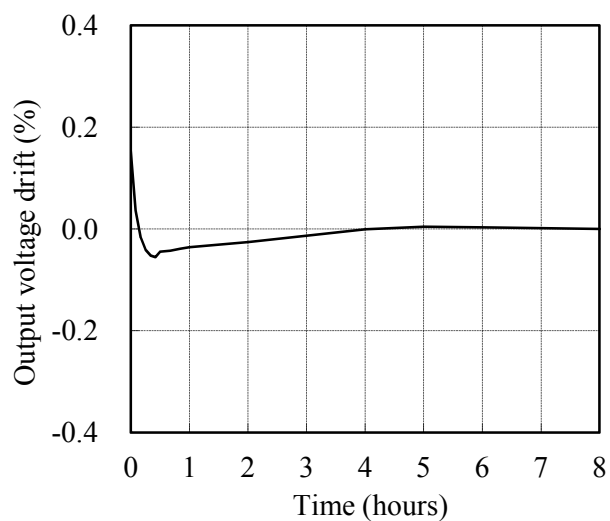
Vin	Input current
	Iout : 0%
85VAC	0.024A
100VAC	0.027A
230VAC	0.056A
265VAC	0.065A



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

Conditions Vin : 100 VAC
Iout : 100 %
Ta : 25 °C

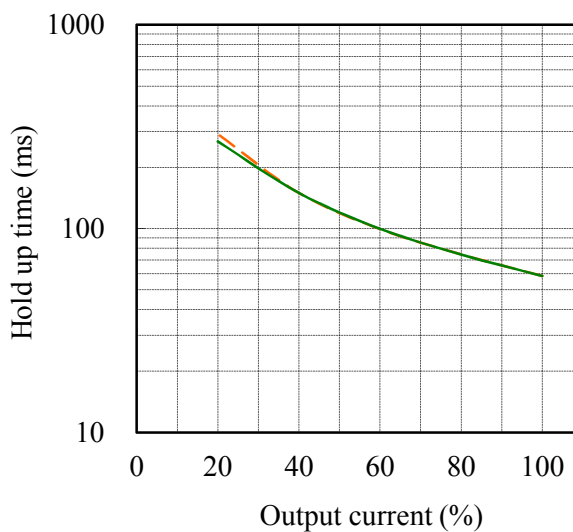
24V



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

Conditions Vin : 100 VAC ———
230 VAC - - - -
Ta : 25 °C

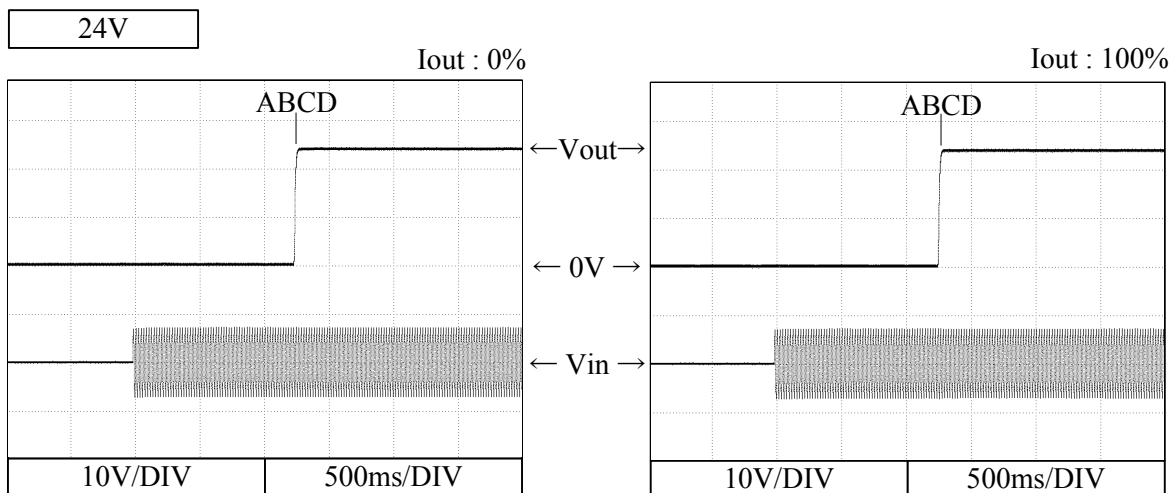
24V



2.4 出力立ち上がり特性

Output rise characteristics

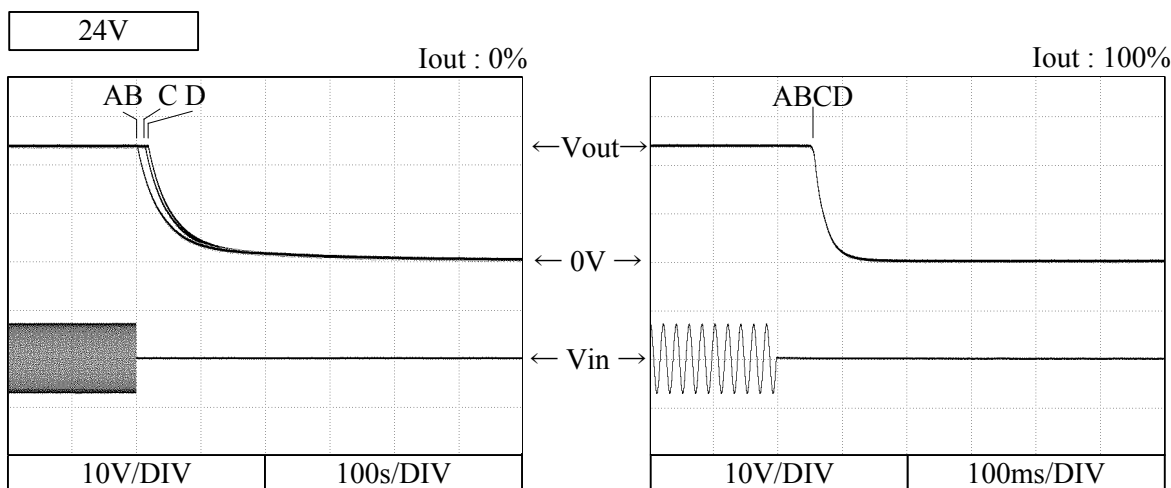
Conditions Vin : 90 VAC (A)
 100 VAC (B)
 230 VAC (C)
 265 VAC (D)
 Ta : 25 °C



2.5 出力立ち下がり特性

Output fall characteristics

Conditions Vin : 90 VAC (A)
 100 VAC (B)
 230 VAC (C)
 265 VAC (D)
 Ta : 25 °C



2.6 過電流保護特性

Over current protection (OCP) characteristics

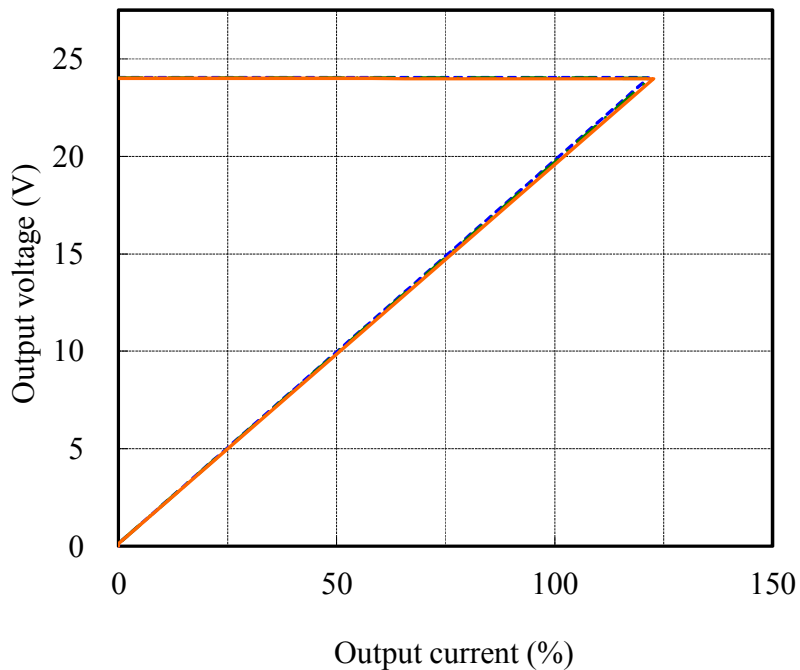
Conditions Vin : 100 VAC

Ta : -10 °C -----

25 °C - - - - -

55 °C ————

24V



2.7 過電壓保護特性

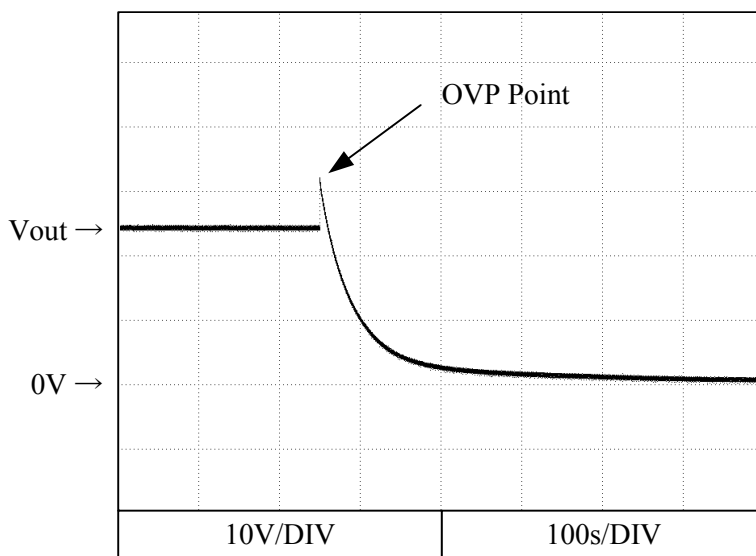
Over voltage protection (OVP) characteristics

Conditions Vin : 100 VAC

Iout : 0 %

Ta : 25 °C

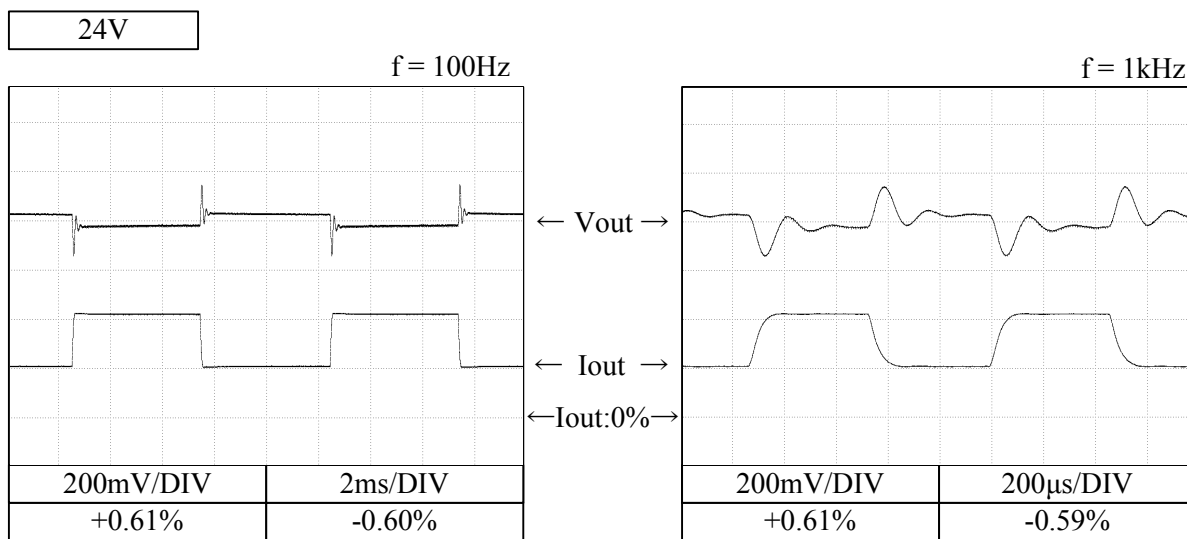
24V



2.8 過渡応答 (負荷急変) 特性

Dynamic load response characteristics

Conditions Vin : 100 VAC
 Iout : 50 % ↔ 100%
 (tr = tf = 50us)
 Ta : 25°C



2.9 入力電圧瞬停特性

Response to brown out characteristics

Conditions Iout : 100 %
 Ta : 25 °C

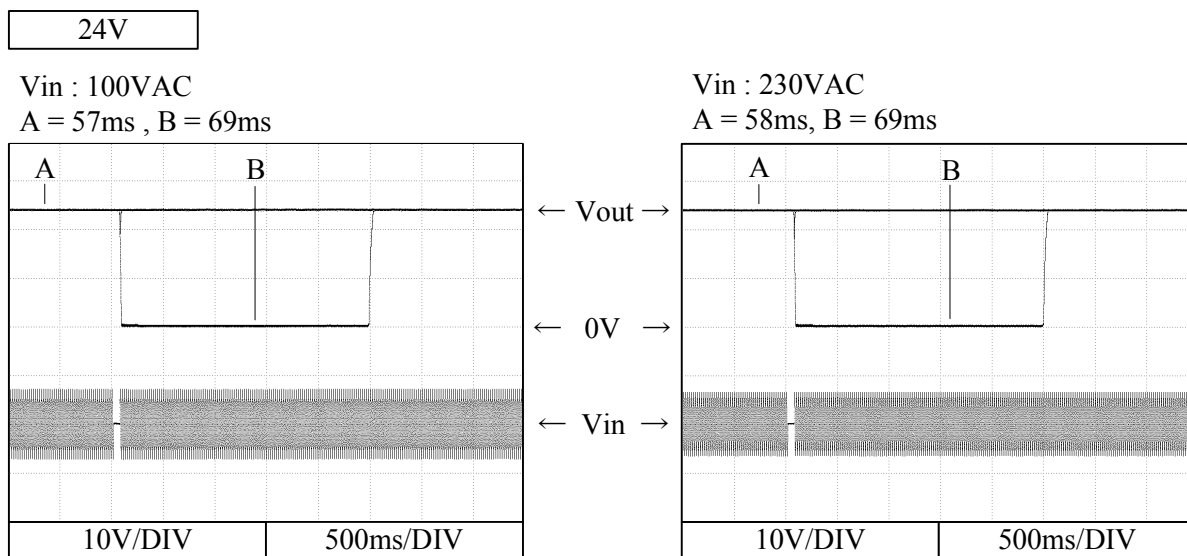
瞬停時間 Interruption time

A : 出力電圧が低下なし

Output voltage does not drop.

B : 出力電圧が0Vまで低下

Output voltage drops until 0V.

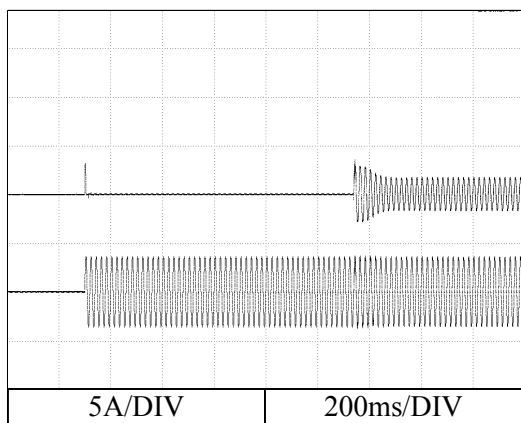


2.10 入力サージ電流(突入電流)波形
Inrush current waveform

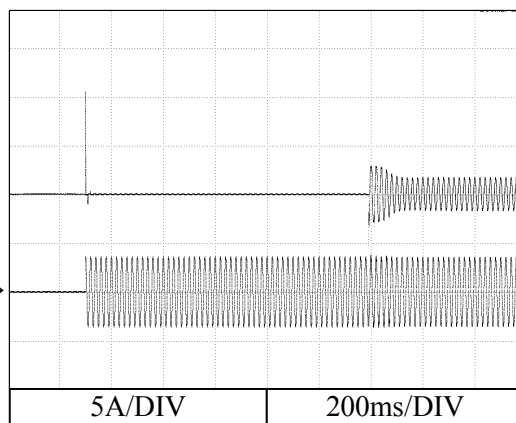
24V

Conditions V_{in} : 100 VAC
 I_{out} : 100 %
 T_a : 25 °C

Switch on phase angle of input AC voltage
 $\phi = 0^\circ$

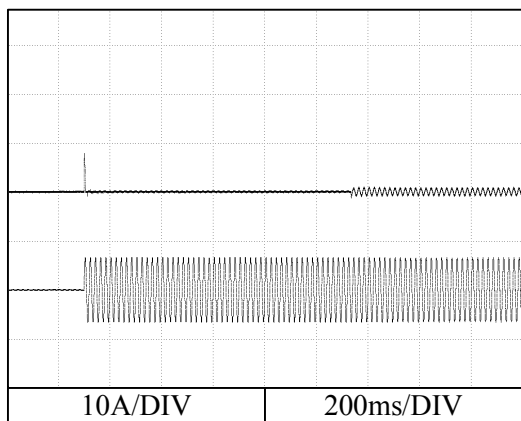


Switch on phase angle of input AC voltage
 $\phi = 90^\circ$

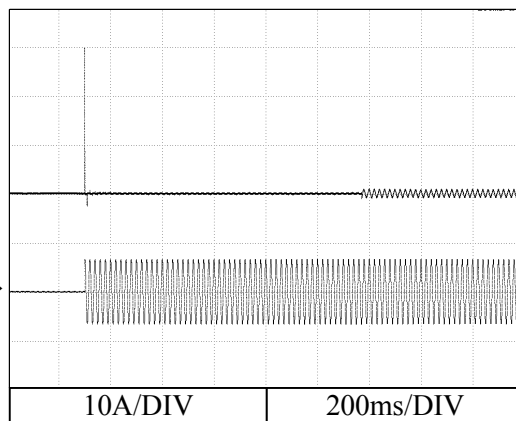


Conditions V_{in} : 230 VAC
 I_{out} : 100 %
 T_a : 25 °C

Switch on phase angle of input AC voltage
 $\phi = 0^\circ$



Switch on phase angle of input AC voltage
 $\phi = 90^\circ$



2.11 高調波成分

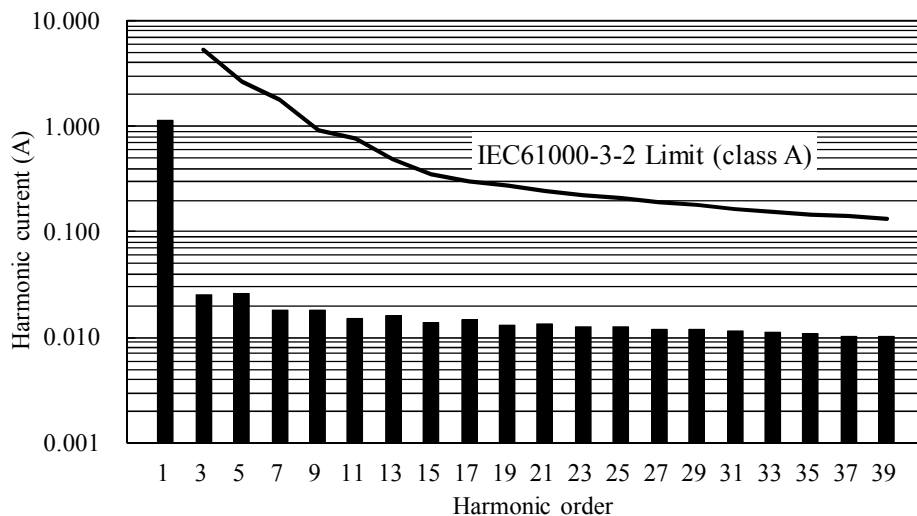
Input current harmonics

Conditions Iout : 100 %

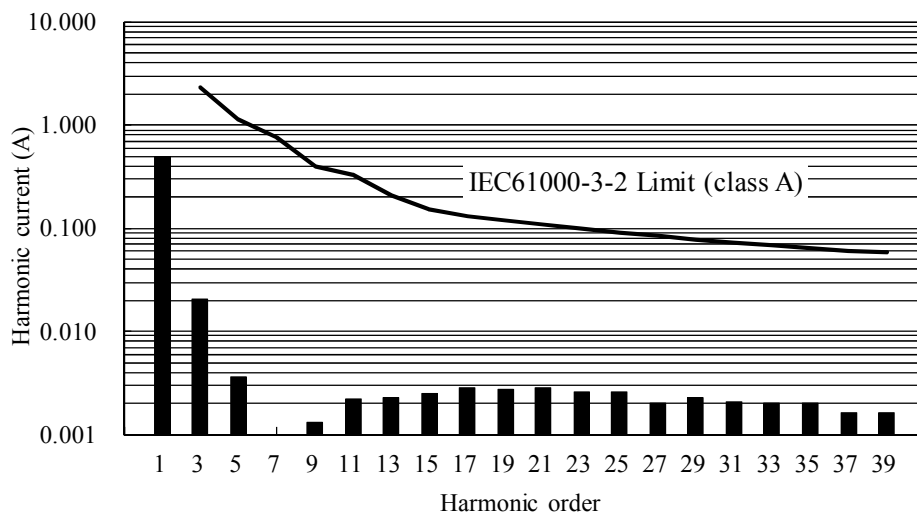
Ta : 25 °C

24V

Vin : 100 VAC



Vin : 230 VAC



2.12 入力電流波形

Input current waveform

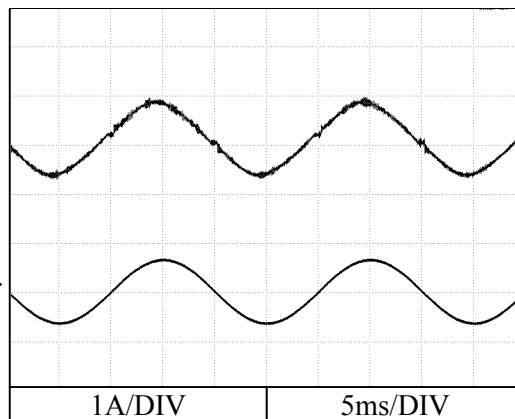
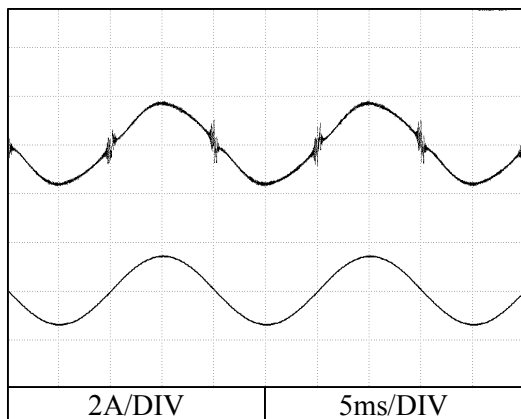
Conditions Iout : 100 %

Ta : 25 °C

24V

Vin : 100VAC

Vin : 230VAC

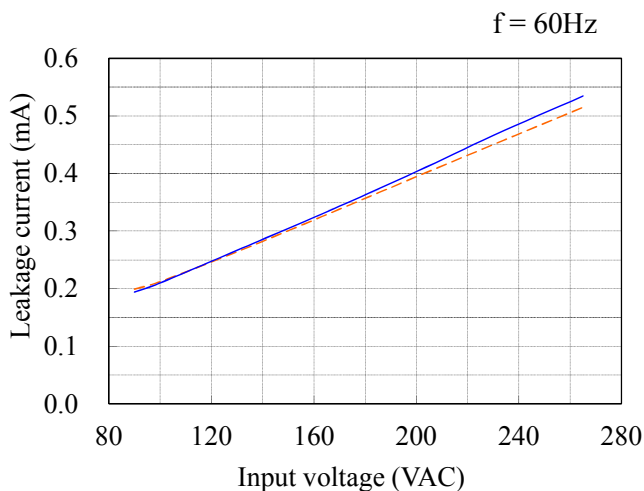
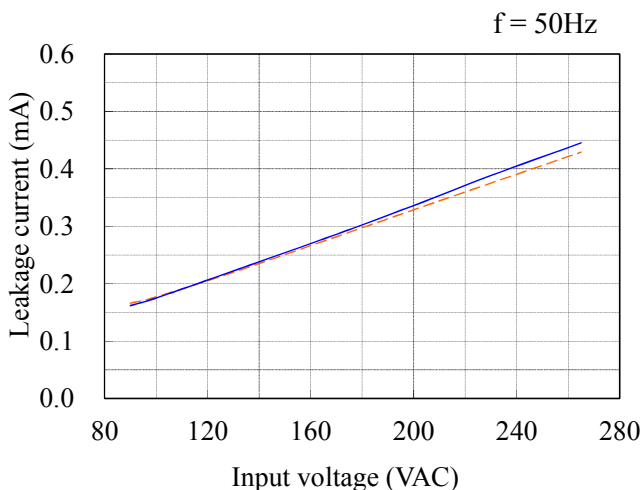


2.13 リーク電流特性

Leakage current characteristics

Conditions Iout : 0% ———
 100% - - - - -
 Ta : 25 °C
 Equipment used : 3156(HIOKI)

24V

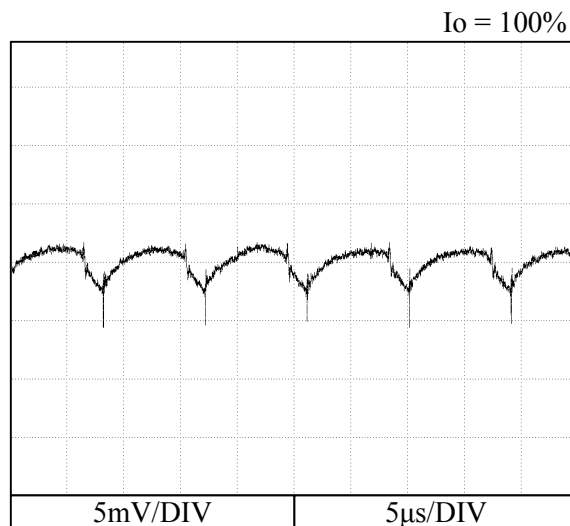
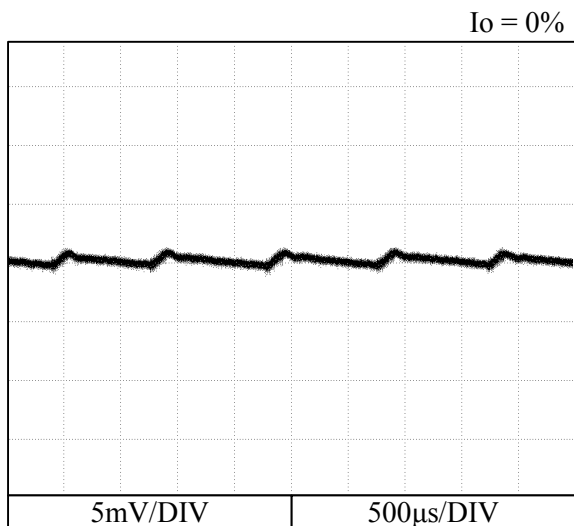


2.14 出力リップル、ノイズ波形

Output ripple and noise waveform

Conditions Vin : 100 VAC
 Ta : 25 °C

24V



2.15 EMI特性

Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC

Iout : 100 %

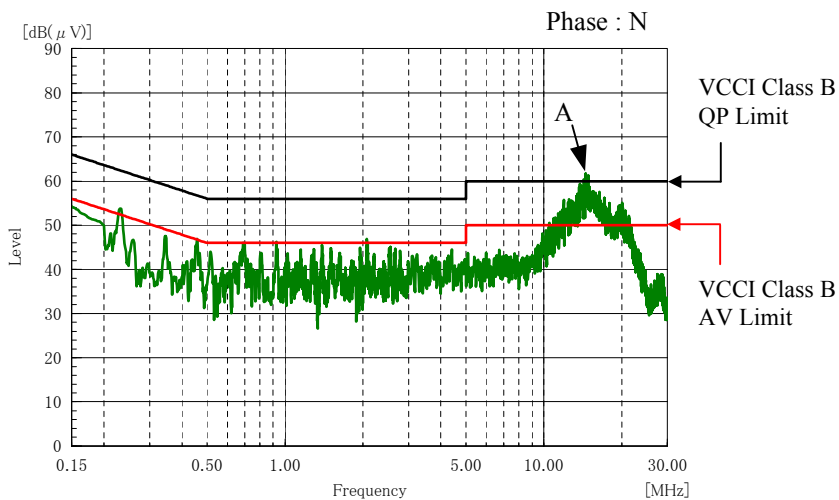
Ta : 25 °C

雑音端子電圧

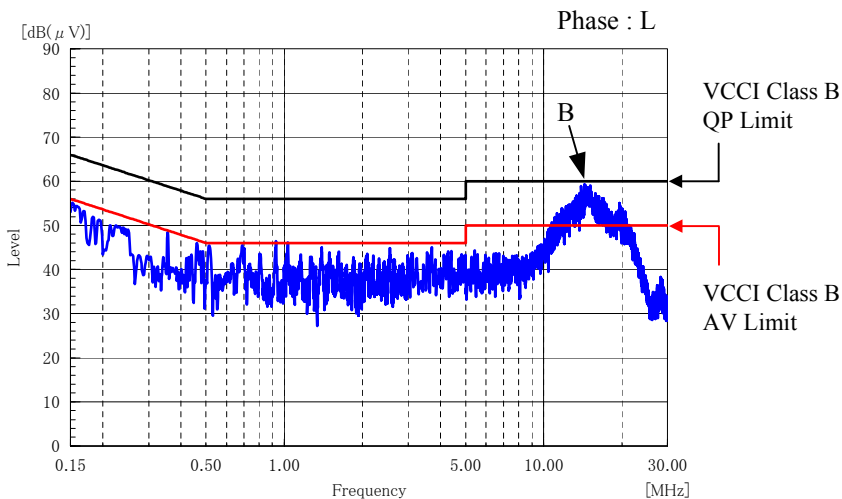
Conducted Emission

24V

Point A (14MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	54.9
AV	50.0	46.5



Point B (14MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	54.7
AV	50.0	46.4



雑音電界強度
Radiated Emission

Conditions Vin : 230 VAC
Iout : 100 %
Ta : 25 °C

24V

