DRJ15

EVALUATION DATA

型式データ

INDEX

2. 特性データ　Characteristics

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。

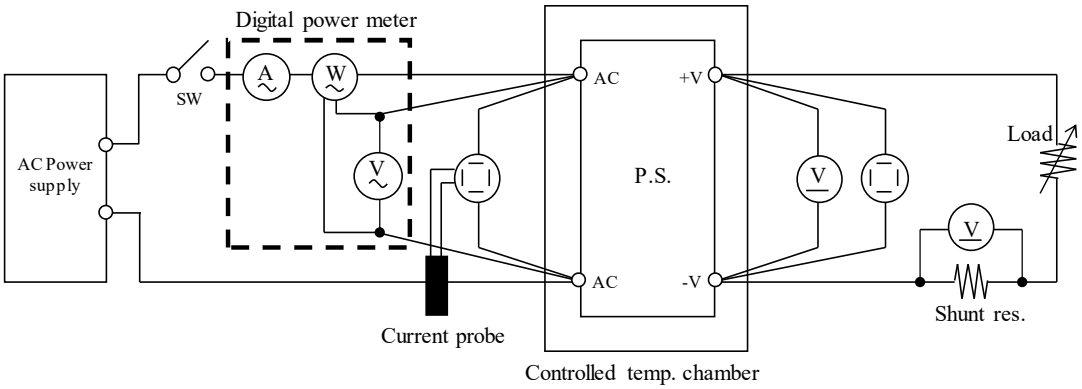
Test results are reference data based on our measurement condition.

1. 測定方法　Evaluation Method

1.1　測定回路　Circuit used for determination

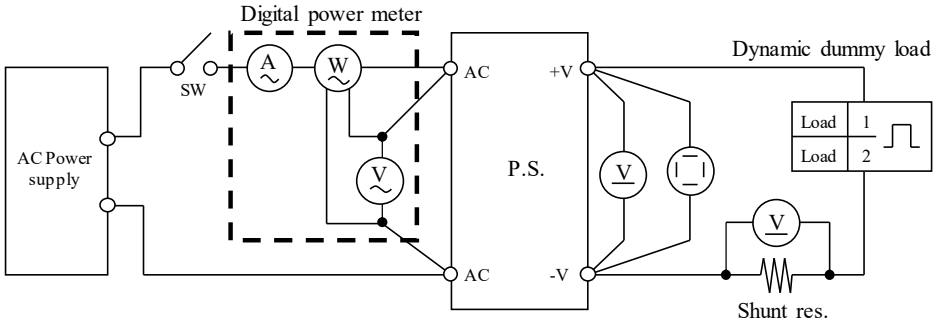
測定回路1 Circuit 1 used for determination

・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

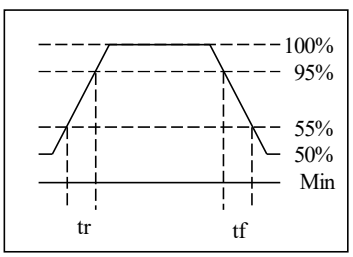


測定回路2 Circuit 2 used for determination

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

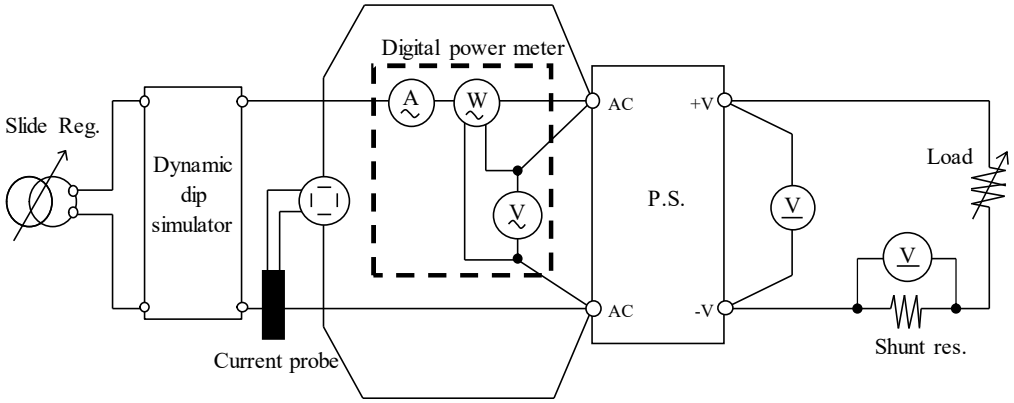


Output current waveform
Iout 50% <==> 100%



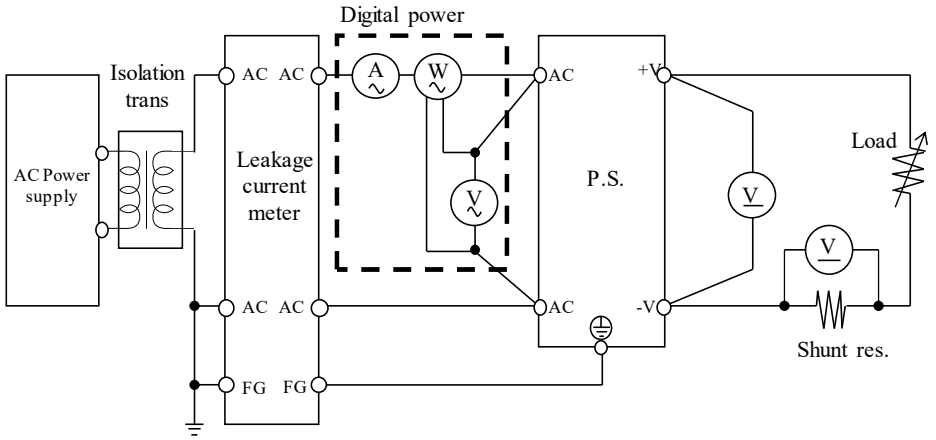
測定回路3 Circuit 3 used for determination

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



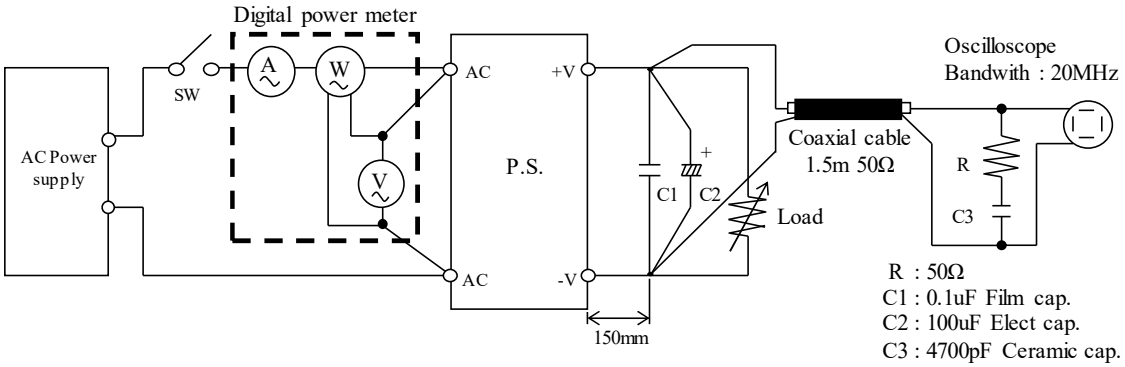
測定回路4 Circuit 4 used for determination

・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

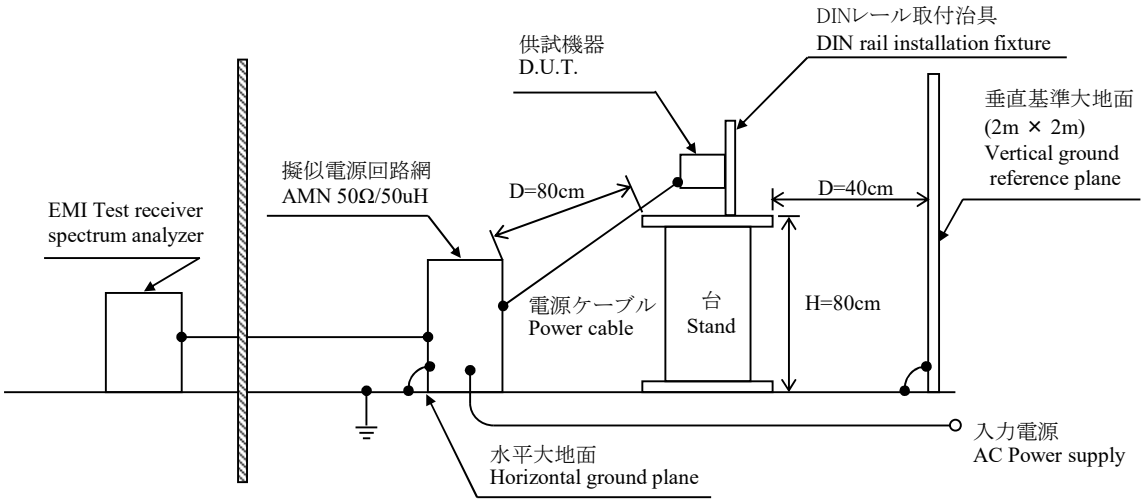


測定構成　Configuration used for determination

・EMI特性　　Electro-Magnetic Interference characteristics

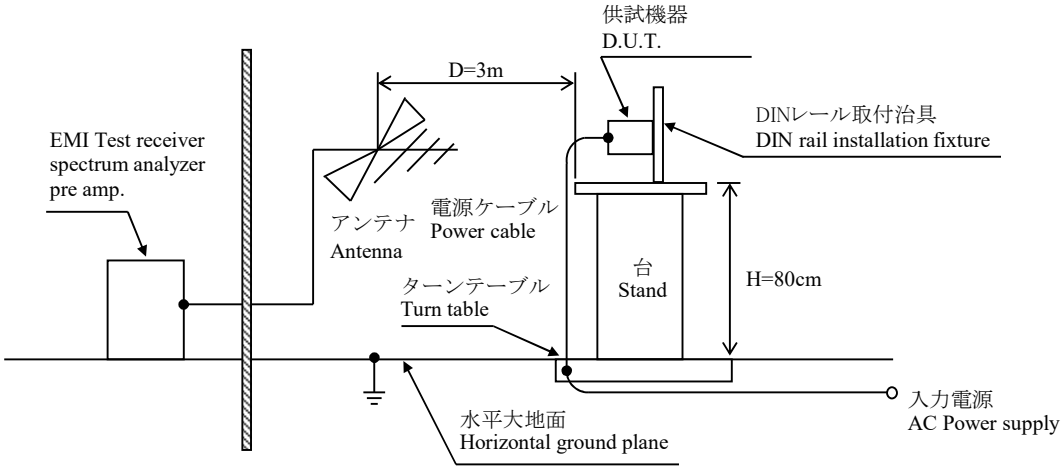
(a) 雑音端子電圧 (帰還ノイズ)

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ィ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%	0.63A
85VAC	80%	0.50A

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 ℃

Iout \ Vin	90VAC	100VAC	230VAC	265VAC	line regulation	
0%	24.012V	24.011V	24.010V	24.009V	3mV	0.013%
50%	24.018V	24.017V	24.017V	24.017V	1mV	0.004%
100%	24.015V	24.015V	24.014V	24.014V	1mV	0.004%
load regulation	6mV	6mV	7mV	8mV		
	0.025%	0.025%	0.029%	0.033%		

2. Temperature drift　　Conditions　Vin : 100 VAC
Iout : 100 %

Ta	-10℃	+25℃	+55℃	temperature stability	
Vout	23.986V	24.015V	24.014V	29mV	0.121%

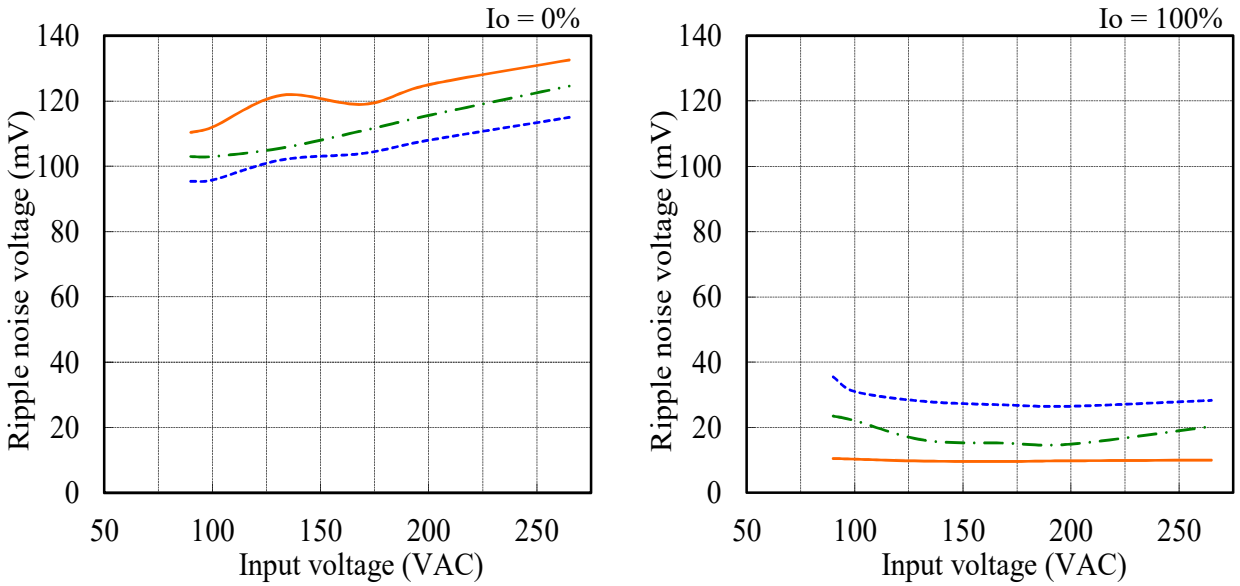
3. Start up voltage and Drop out voltage　　Conditions　Ta :　25 ℃
Iout : 100 %

Start up voltage (Vin)	41VAC
Drop out voltage (Vin)	36VAC

(2) リップルノイズ電圧対入力電圧
Ripple noise voltage vs. Input voltage

Conditions　Ta :　-10 ℃
25 ℃
55 ℃

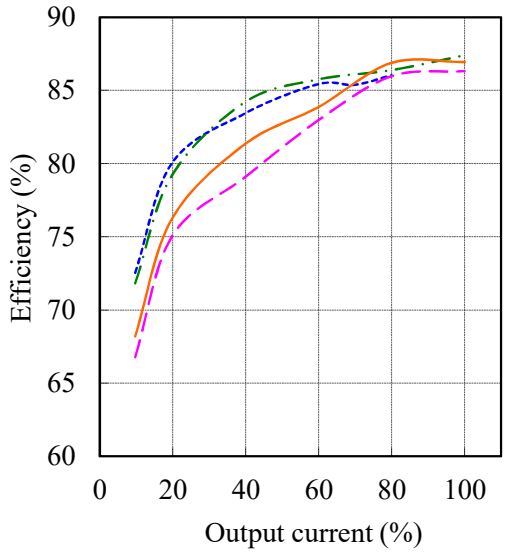
24V

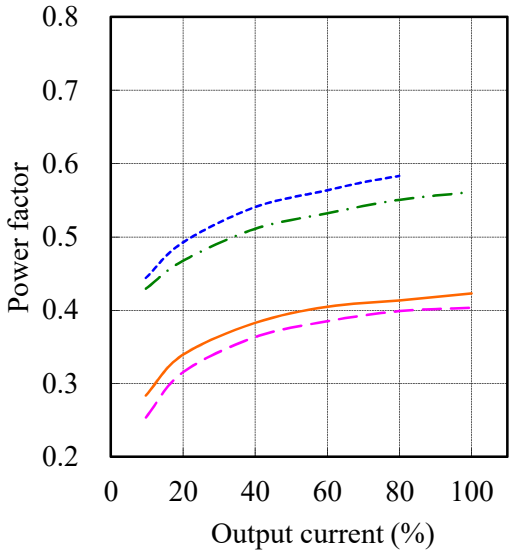


(3) 効率・力率対出力電流
Efficiency and Power factor vs. Output current

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

24V



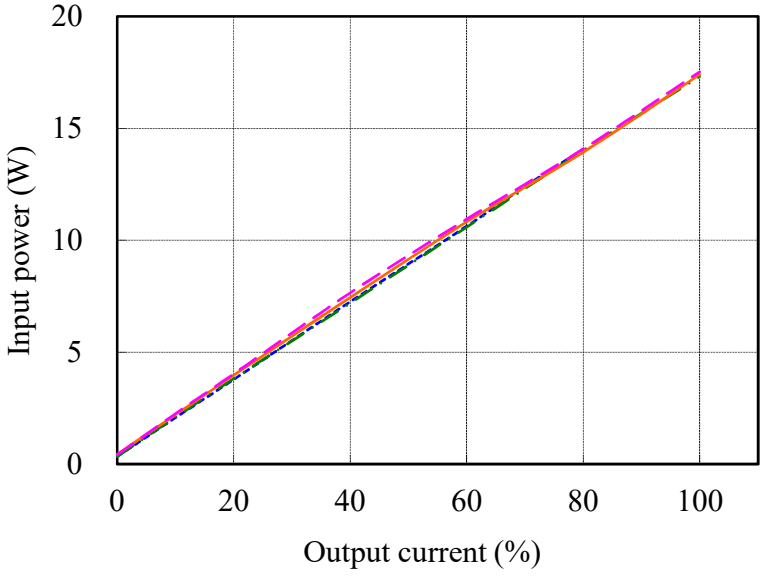


(4) 入力電力対出力電流
Input power vs. Output current

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

24V

Vin	Input power
	Iout : 0%
85VAC	0.33W
100VAC	0.33W
230VAC	0.42W
265VAC	0.41W

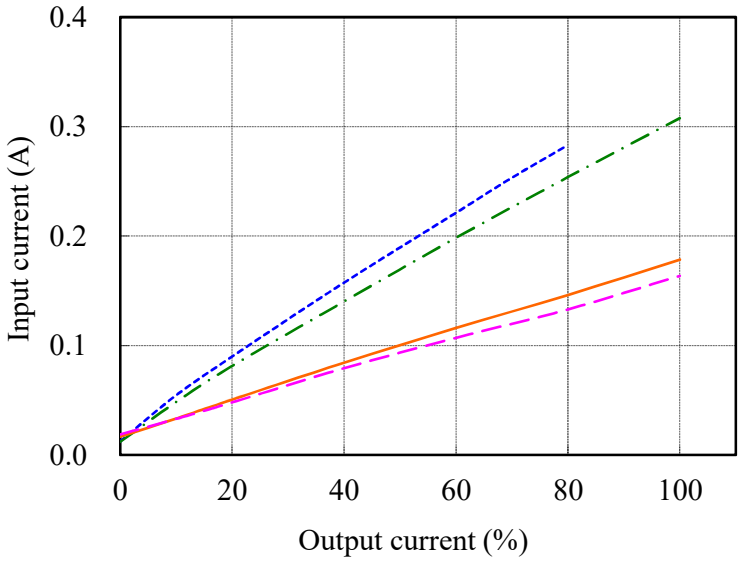


(5) 入力電流対出力電流
Input current vs. Output current

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

24V

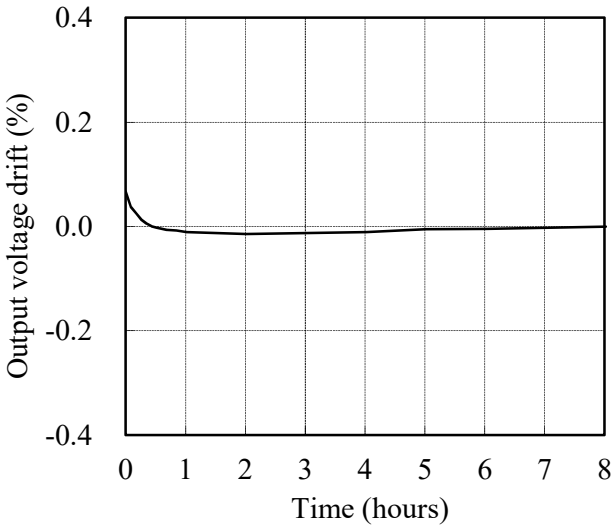
Vin	Input current
	Iout : 0%
85VAC	0.013A
100VAC	0.012A
230VAC	0.017A
265VAC	0.019A



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

Conditions Vin : 100 VAC
Iout : 100 %
Ta : 25 ℃

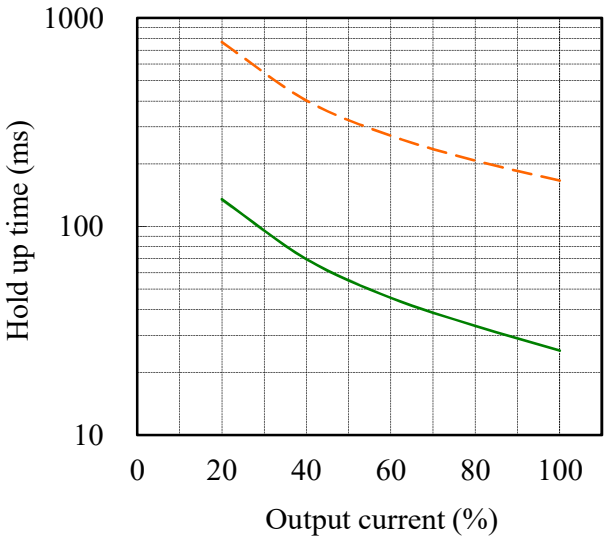
24V



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

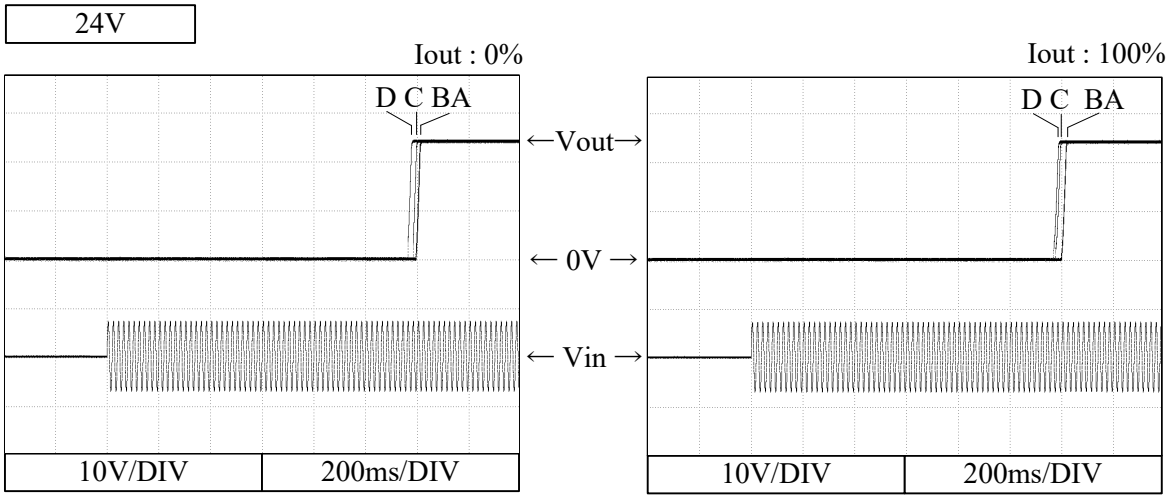
Conditions Vin : 100 VAC
230 VAC
Ta : 25 ℃

24V



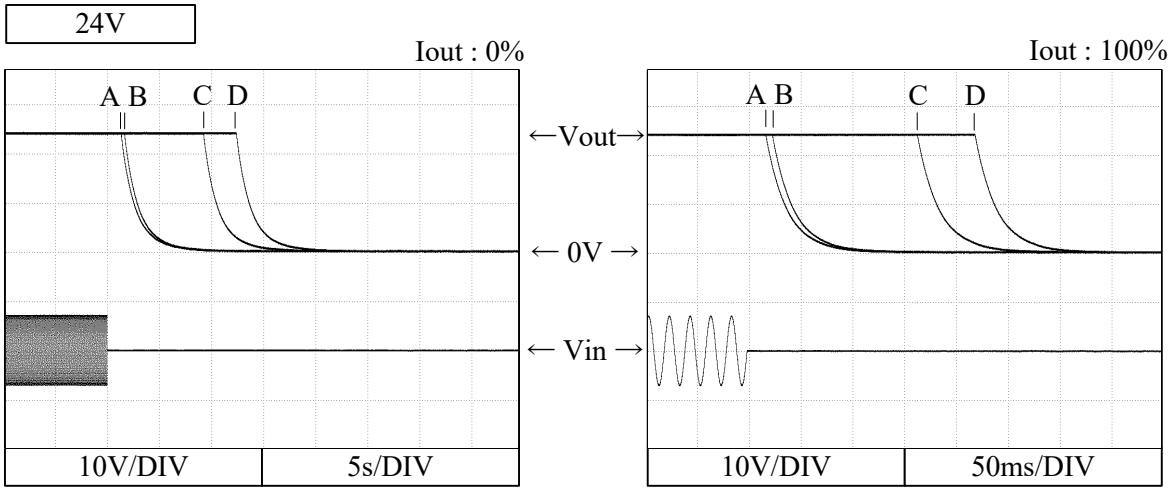
2.4 出力立ち上がり特性
Output rise characteristics

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



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

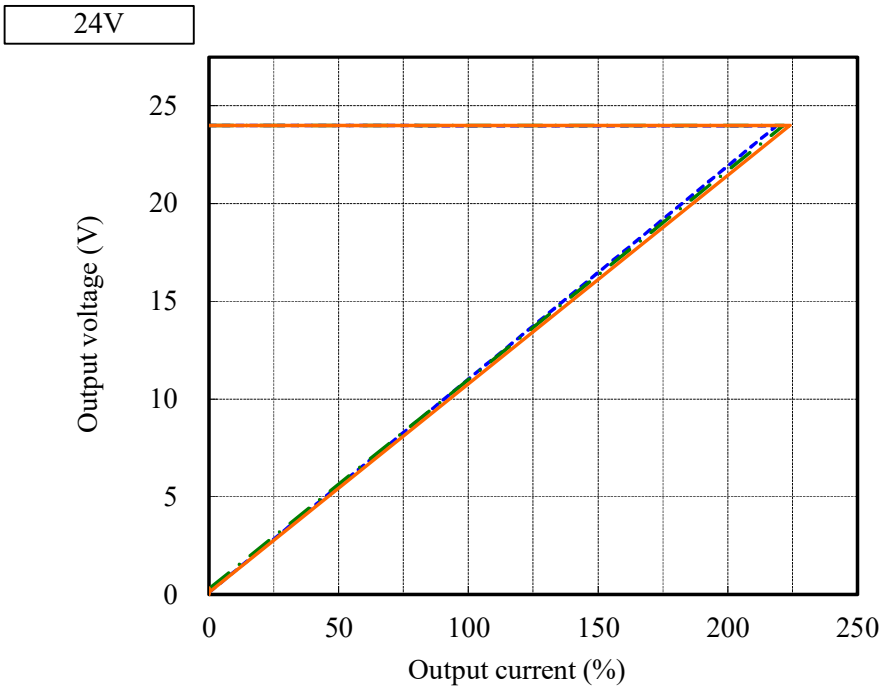
Conditions Vin : 90 VAC (A)
100 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃



2.6 過電流保護特性

Over current protection (OCP) characteristics

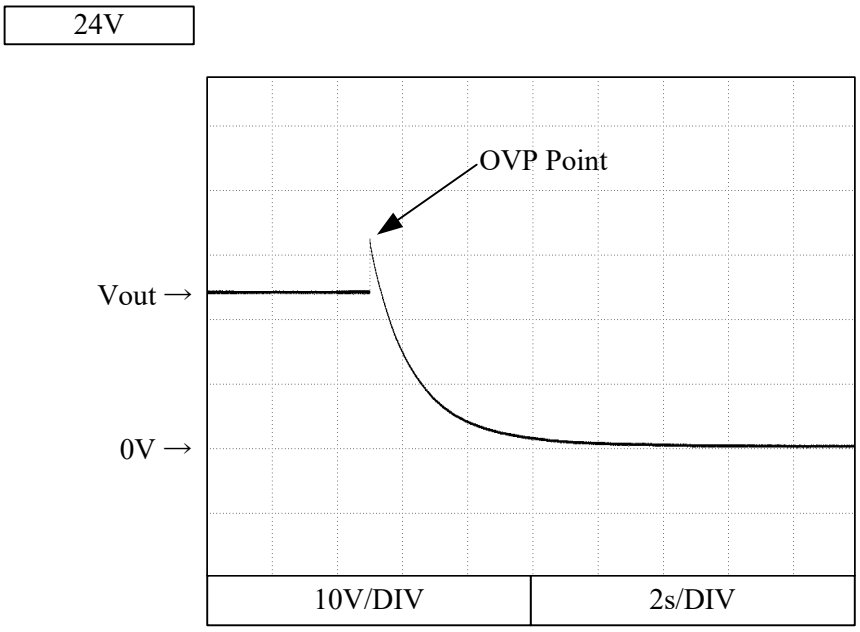
Conditions Vin : 100 VAC
Ta : -10 ℃
25 ℃
55 ℃



2.7 過電圧保護特性

Over voltage protection (OVP) characteristics

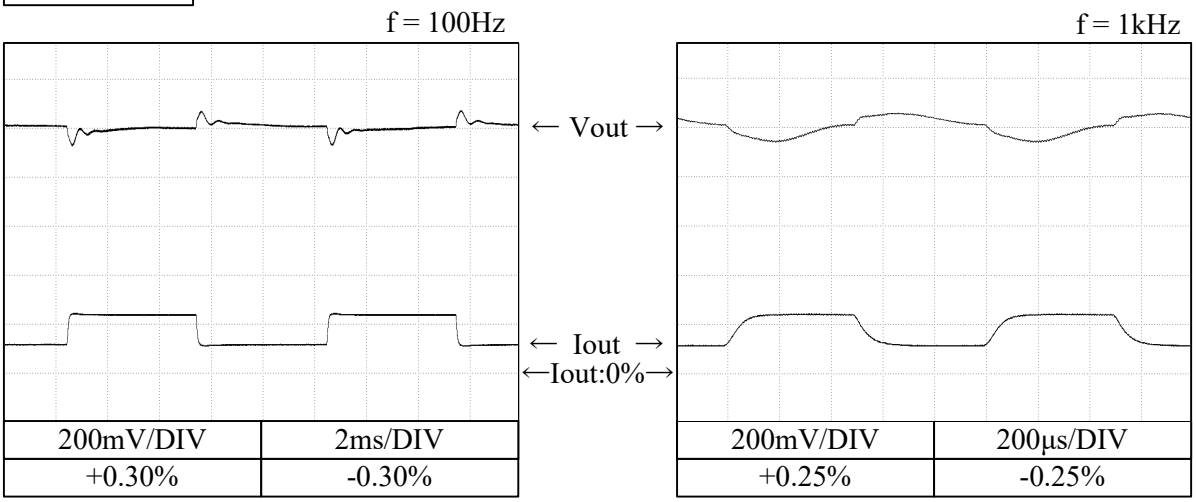
Conditions Vin : 100 VAC
Iout : 0 %
Ta : 25 ℃



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℃

24V



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

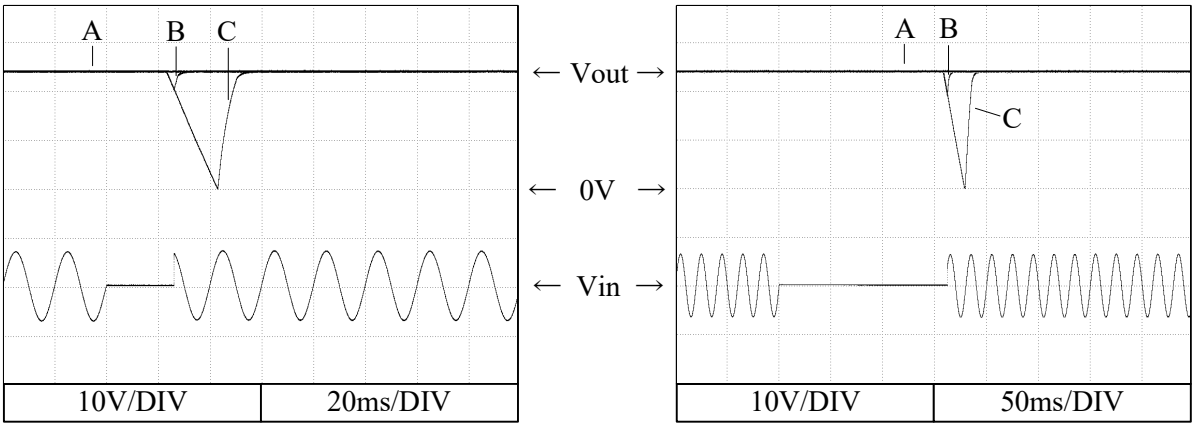
Conditions Vin : 100 VAC
Ta : 25 ℃

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まで低下しない Output voltage drops down not reaching 0V.
C : 出力電圧が0Vまで低下 Output voltage drops until 0V.

24V

Vin : 100VAC
A = 23ms , B = 26ms , C = 43ms

Vin : 230VAC
A = 158ms, B = 162ms , C = 179ms

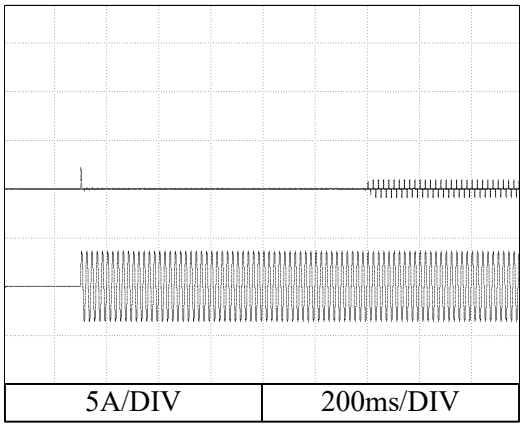


2.10 入力サージ電流（突入電流）波形
Inrush current waveform

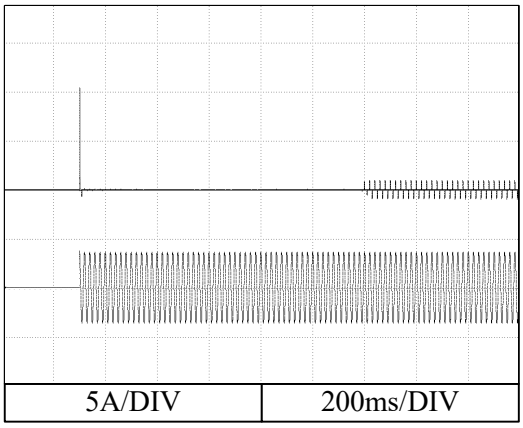
24V

Conditions Vin : 100 VAC
Iout : 100 %
Ta : 25 ℃

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

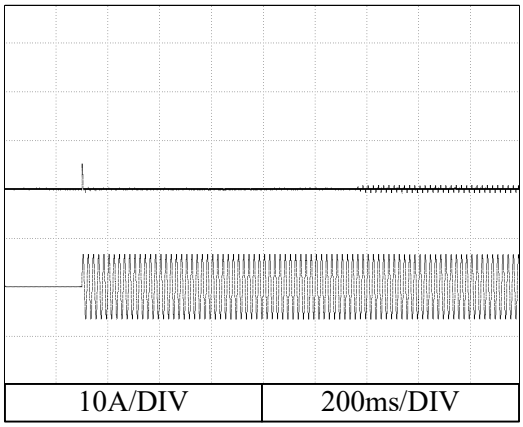


Switch on phase angle of input AC voltage
ϕ = 90°

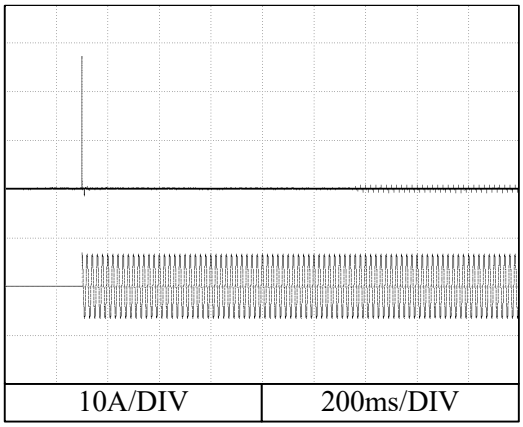


Conditions Vin : 230 VAC
Iout : 100 %
Ta : 25 ℃

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



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



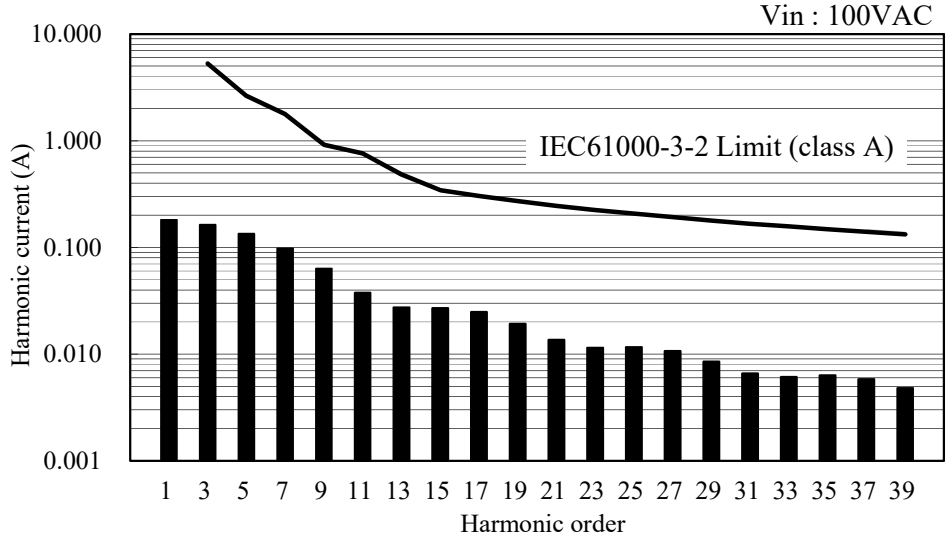
2.11 高調波成分

Input current harmonics

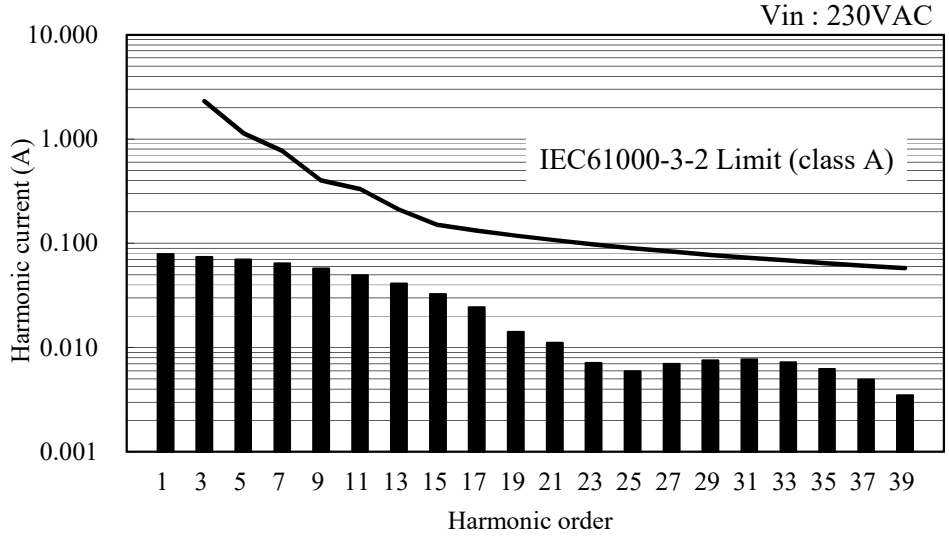
Conditions Iout : 100 %
Ta : 25 ℃

24V

Vin : 100VAC



Vin : 230VAC



2.12 入力電流波形

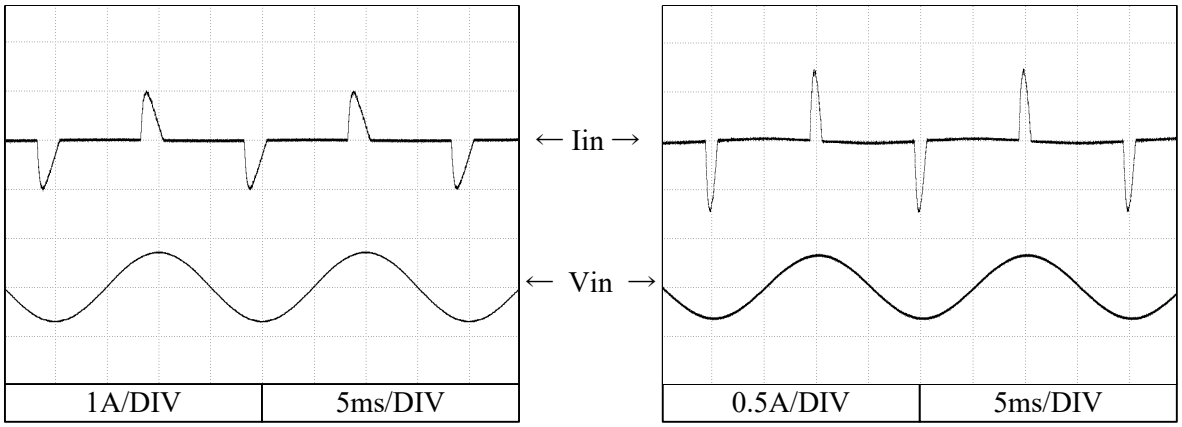
Input current waveform

Conditions Iout : 100 %
Ta : 25 ℃

24V

Vin : 100VAC

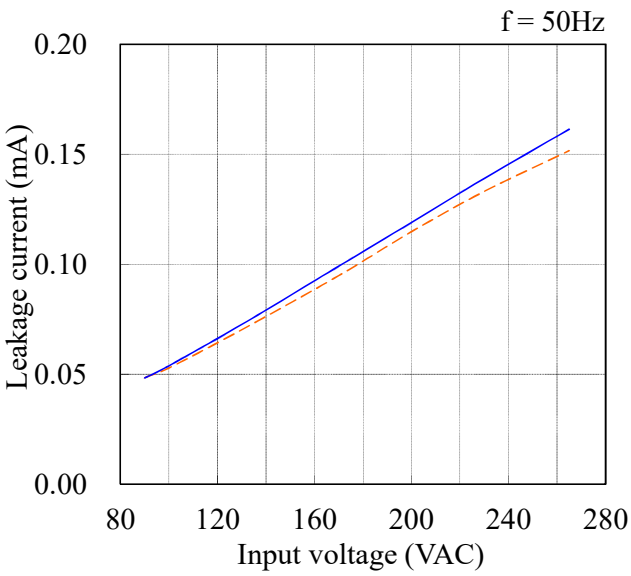
Vin : 230VAC

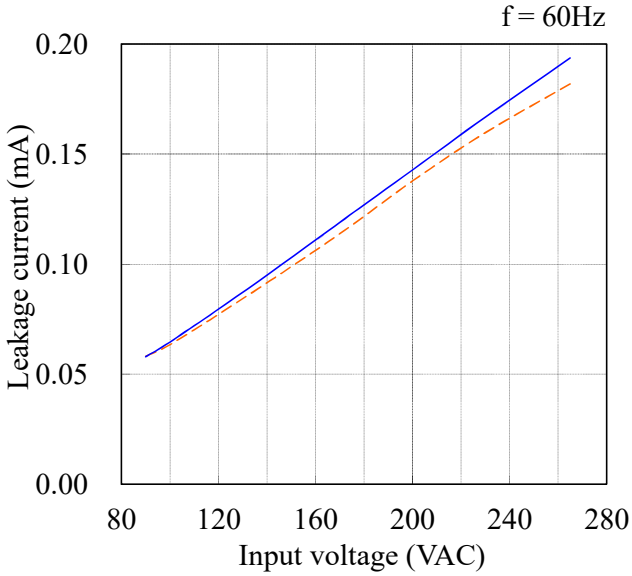


2.13 リーク電流特性
Leakage current characteristics

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

24V

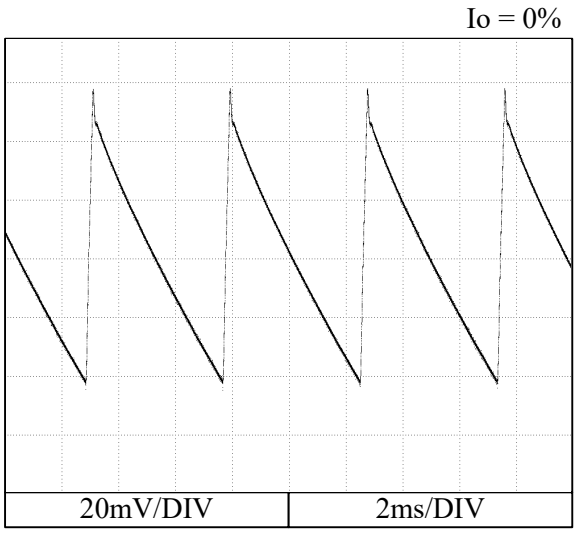


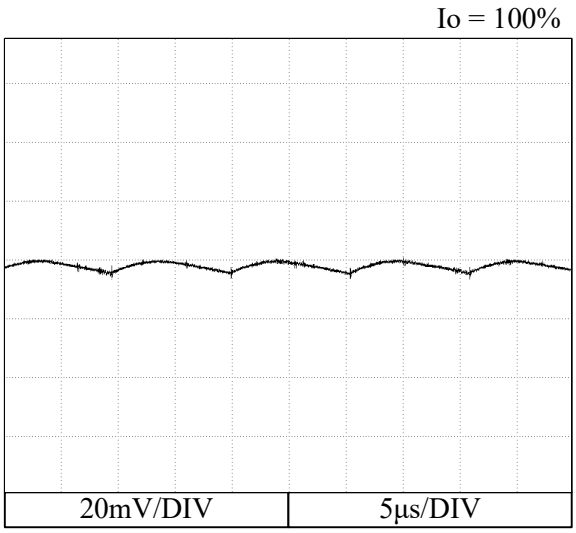


2.14 出力リップル、ノイズ波形
Output ripple and noise waveform

Conditions Vin : 100 VAC
Ta : 25 ℃

24V





2.15 EMI特性
Electro-Magnetic Interference characteristics

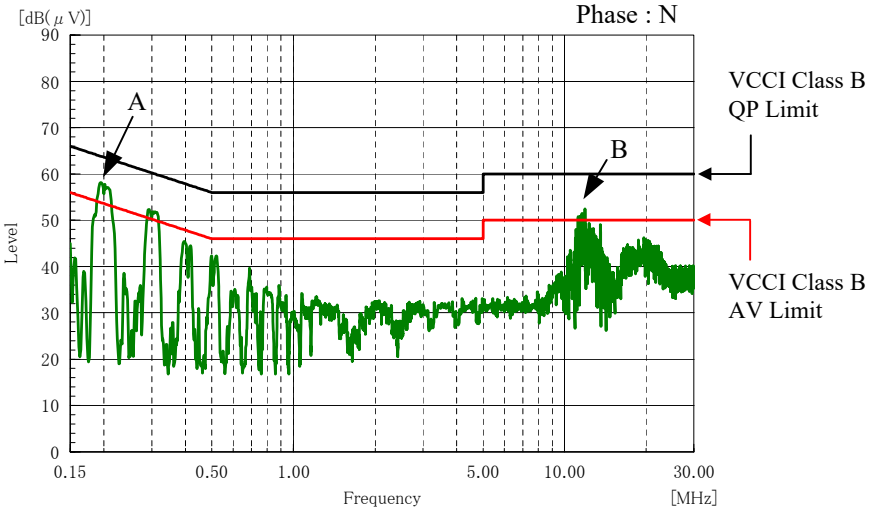
Conditions Vin : 230 VAC
Iout : 100 %
Ta : 25 ℃

雑音端子電圧
Conducted Emission

24V

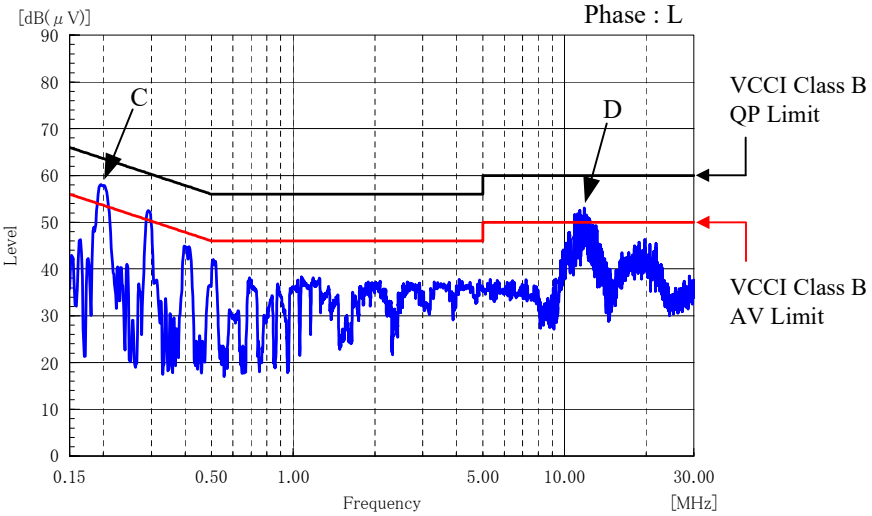
Ref. Data	Point A (199kHz) Limit (dB)	Measure (dB)
QP	63.6	54.5
AV	53.6	34.8

Ref. Data	Point B (11MHz) Limit (dB)	Measure (dB)
QP	60.0	42.8
AV	50.0	29.3



Ref. Data	Point C (196kHz) Limit (dB)	Measure (dB)
QP	63.7	54.8
AV	53.7	35.1

Ref. Data	Point D (12MHz) Limit (dB)	Measure (dB)
QP	60.0	45.2
AV	50.0	34.3



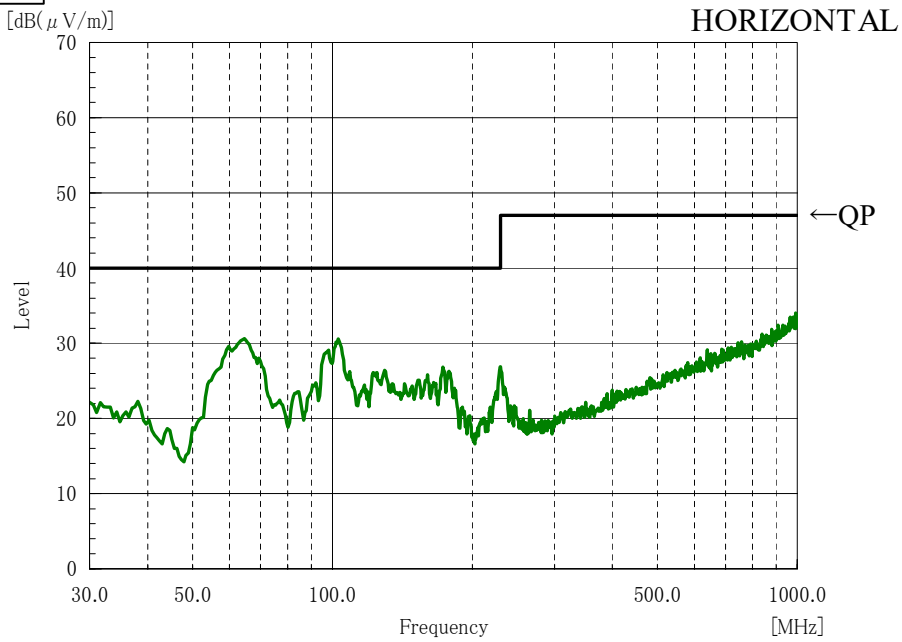
EN55011-B,EN55032-B,FCC-Bの限界値はVCCI classB の限界値と同じ
Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

雑音電界強度
Radiated Emission

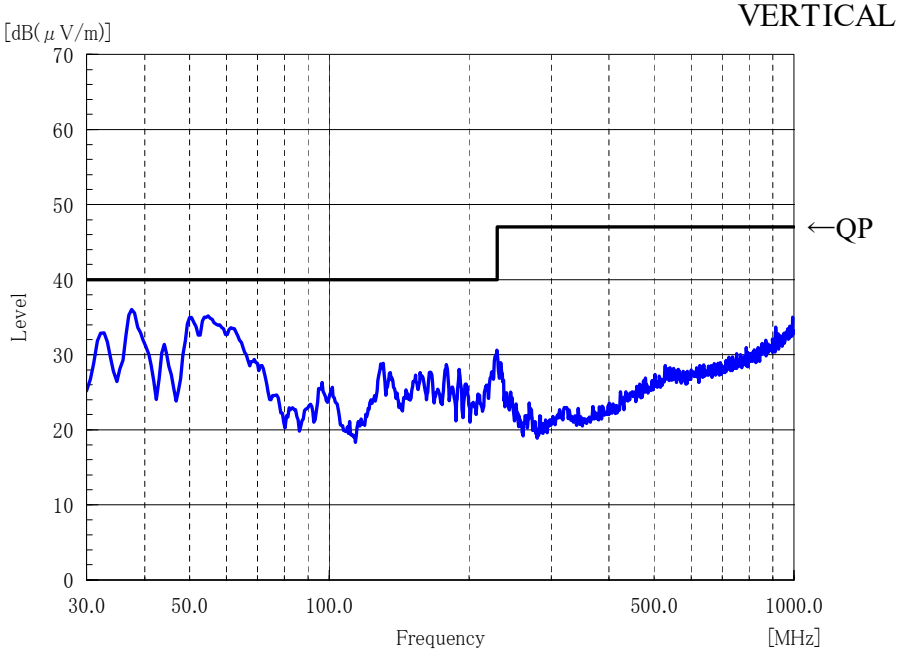
Conditions Vin : 230 VAC
Iout : 100 %
Ta : 25 ℃

24V

HORIZONTAL



VERTICAL



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

表示はピーク値
Indication is peak values.