HZJB-330T

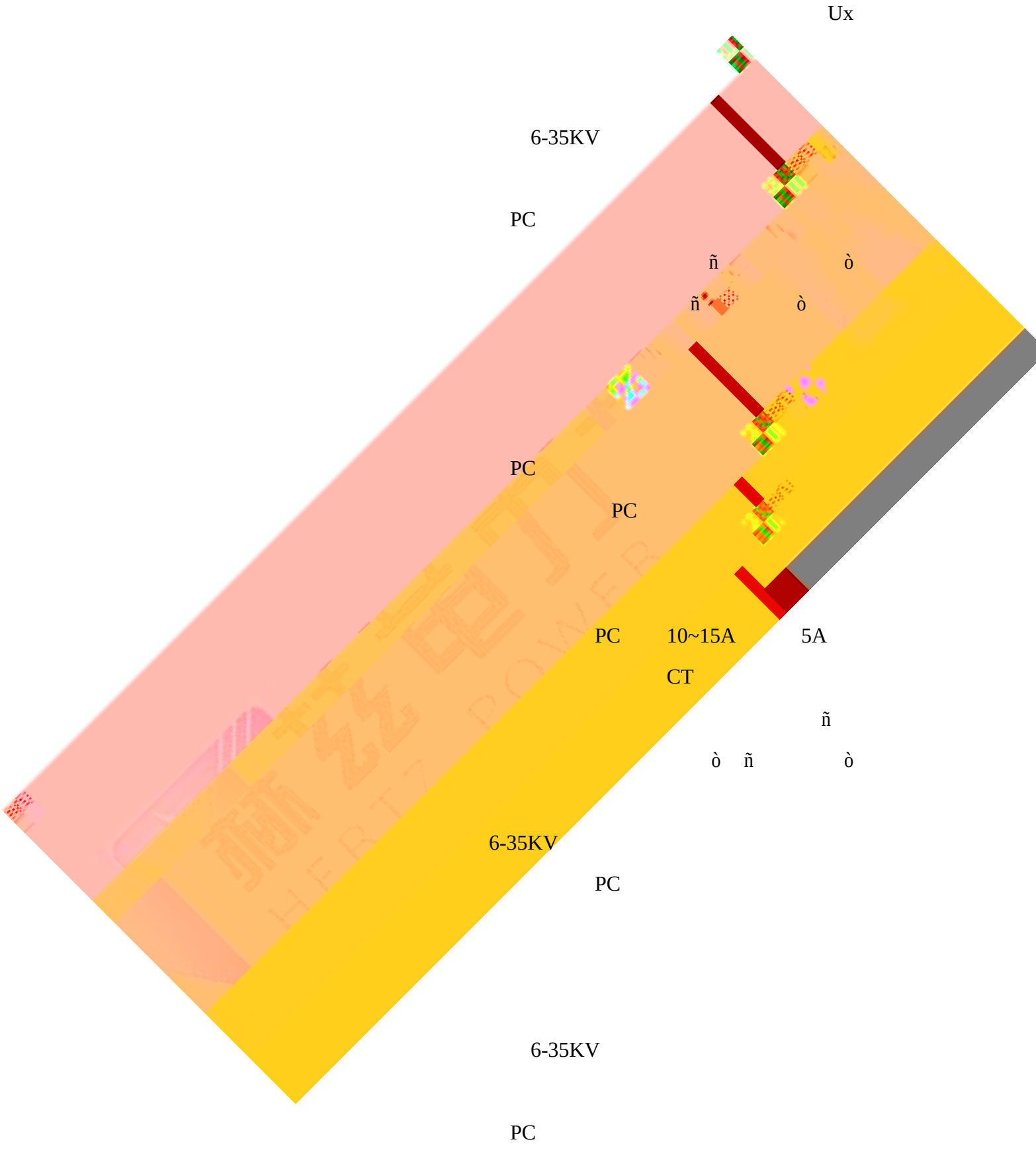
“ ”

“ ” “ PC ” Windows

PC

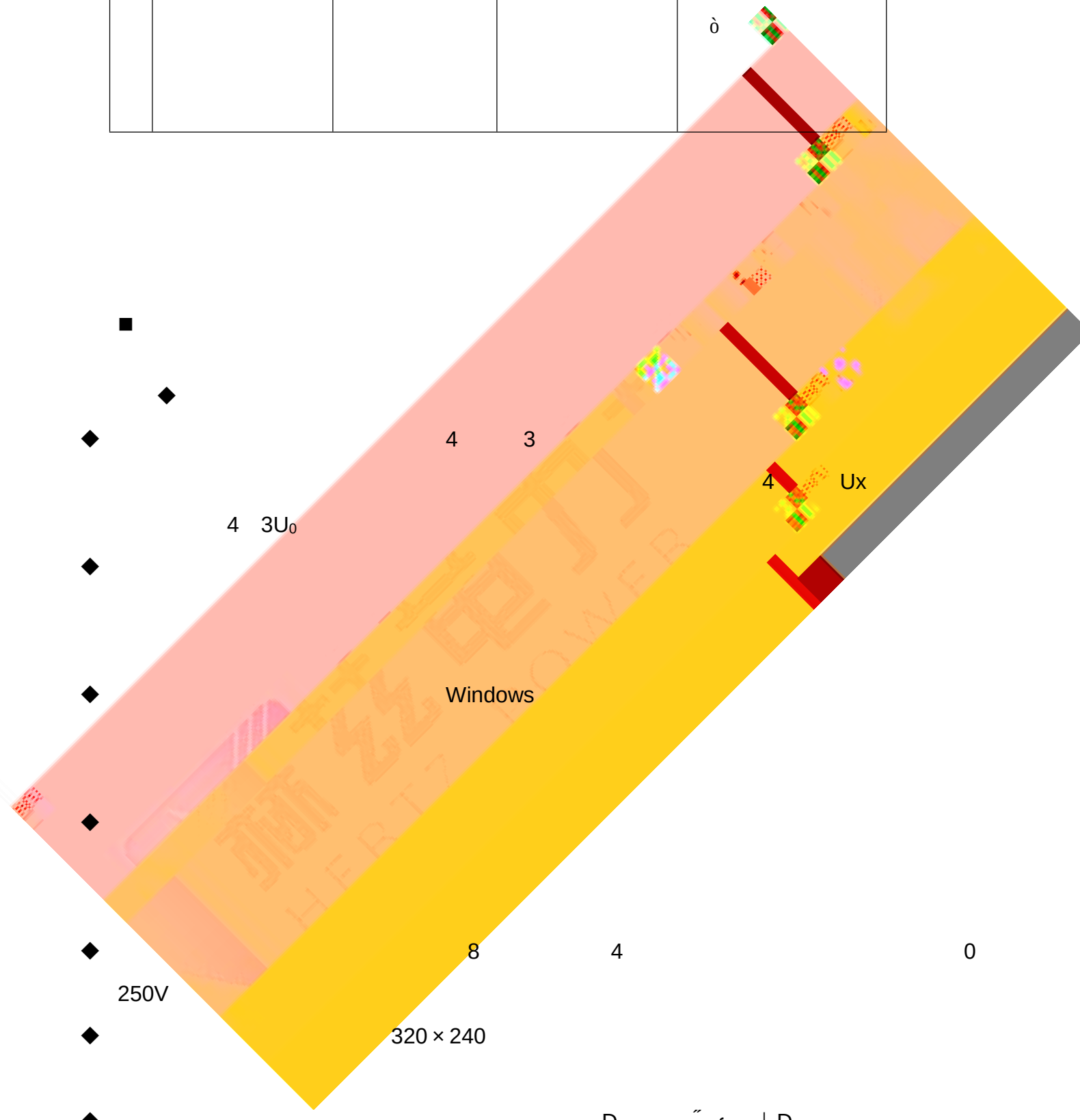
(

			ñ ò
			ñ ò ñI t ò PC
			ñ ò
		PC	


Ux
6-35KV
PC
ñ
ò
ñ
ò
PC
PC
PC
10~15A
5A
CT
ñ
ò
ñ
ò
6-35KV
PC
6-35KV
PC

			PC	ñ ò Y/Y
			PC	1 ñ ò
			ñ ò	ñ ò
			PC	
			PC	
				ñ ò BP-2B RCS-915

				ñ ò



■

◆ 4 3

4 Ux

4 $3U_0$

◆

◆ Windows

◆

◆ 8 4 0

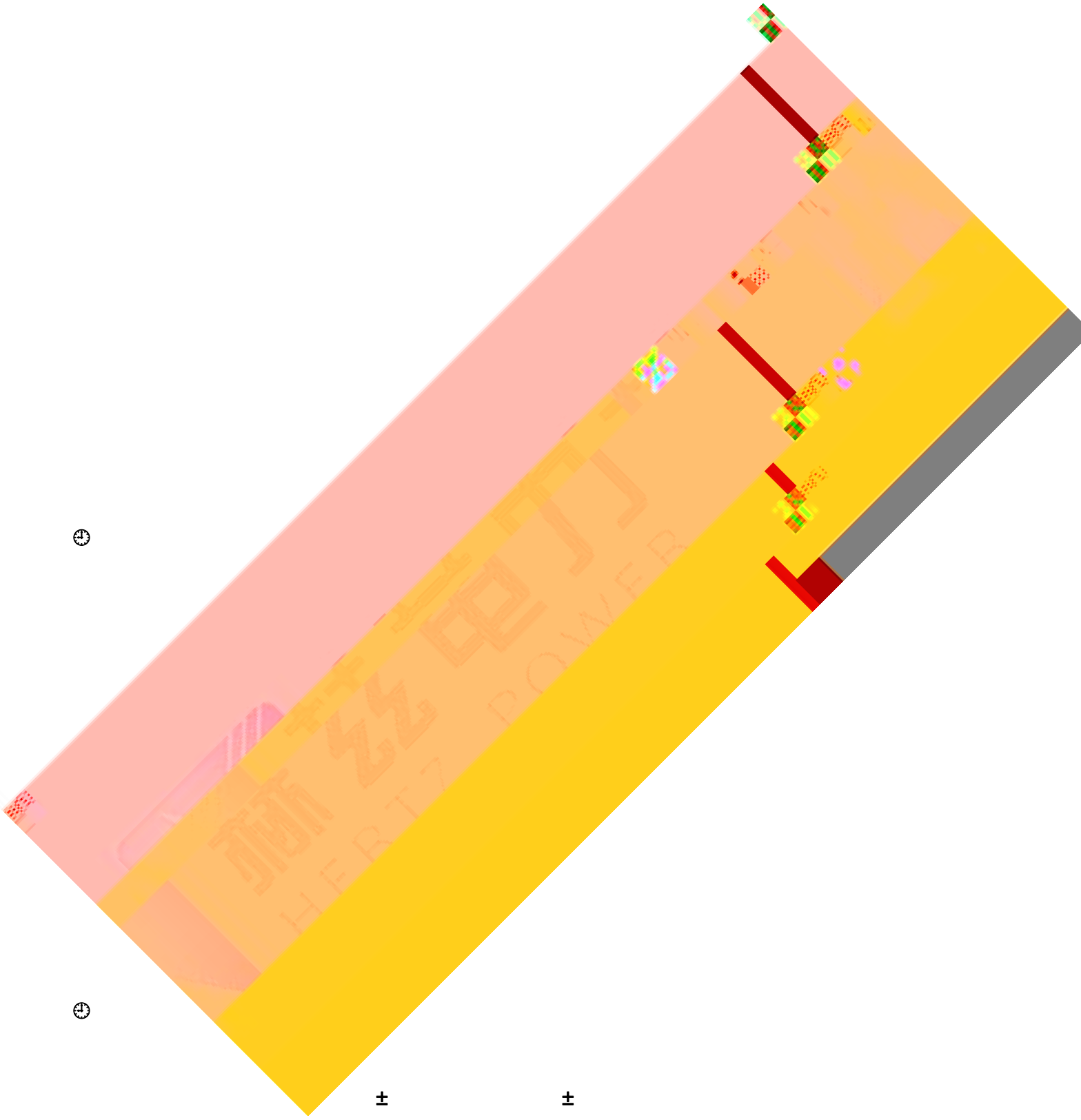
250V

◆ 320 × 240

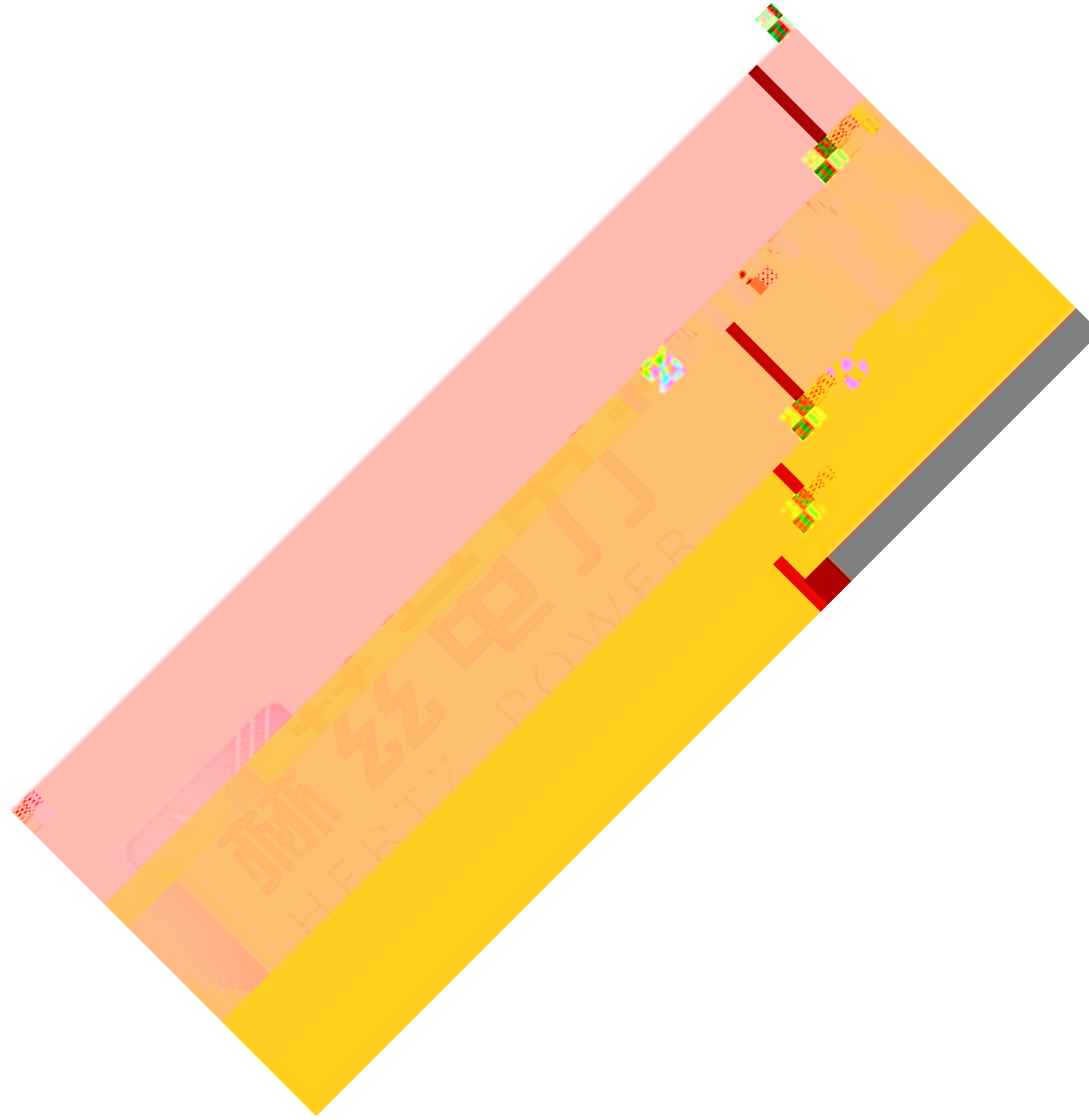
◆ Đ ˝ عم طى Đ

◆ 110V 220V

◆

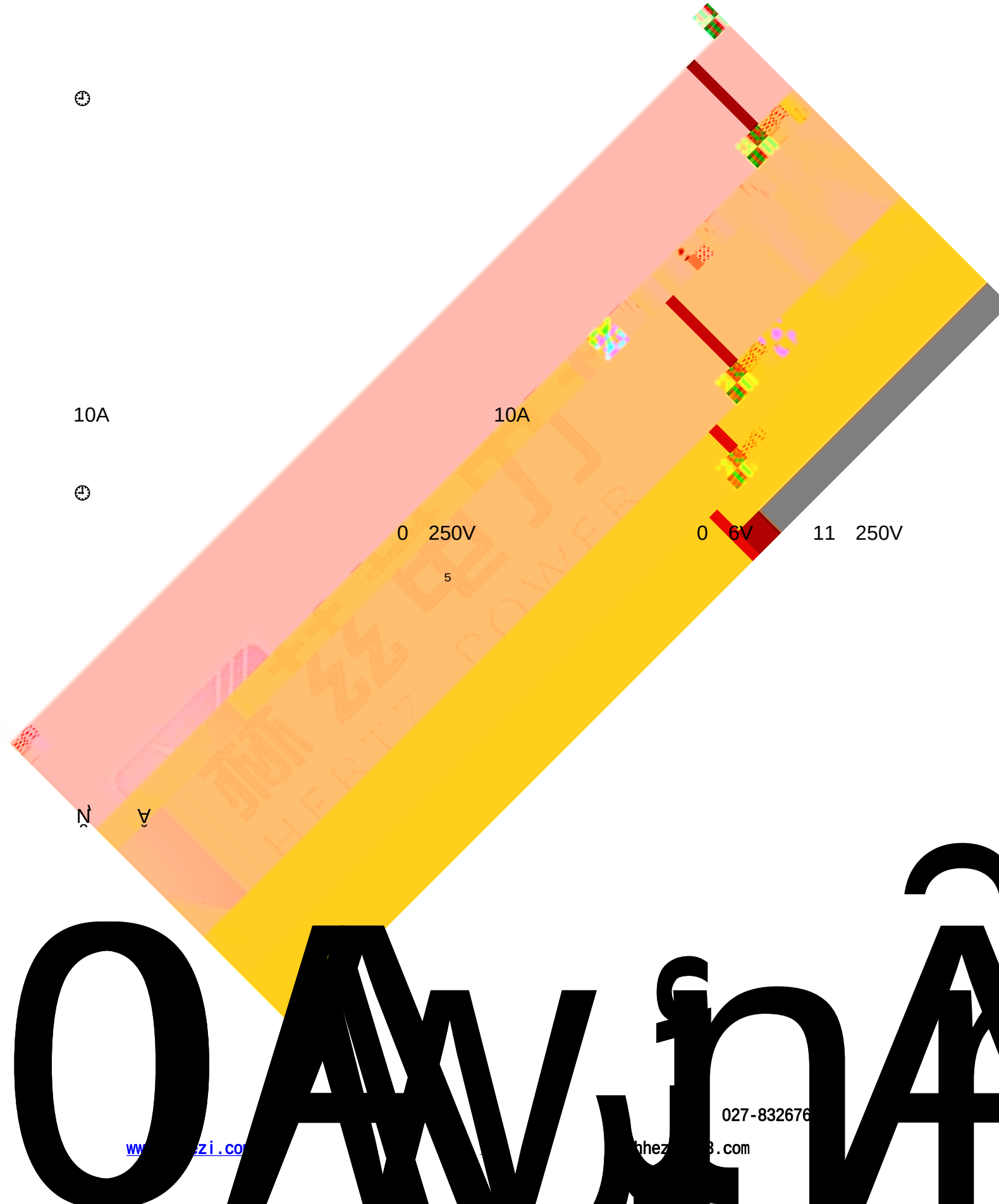


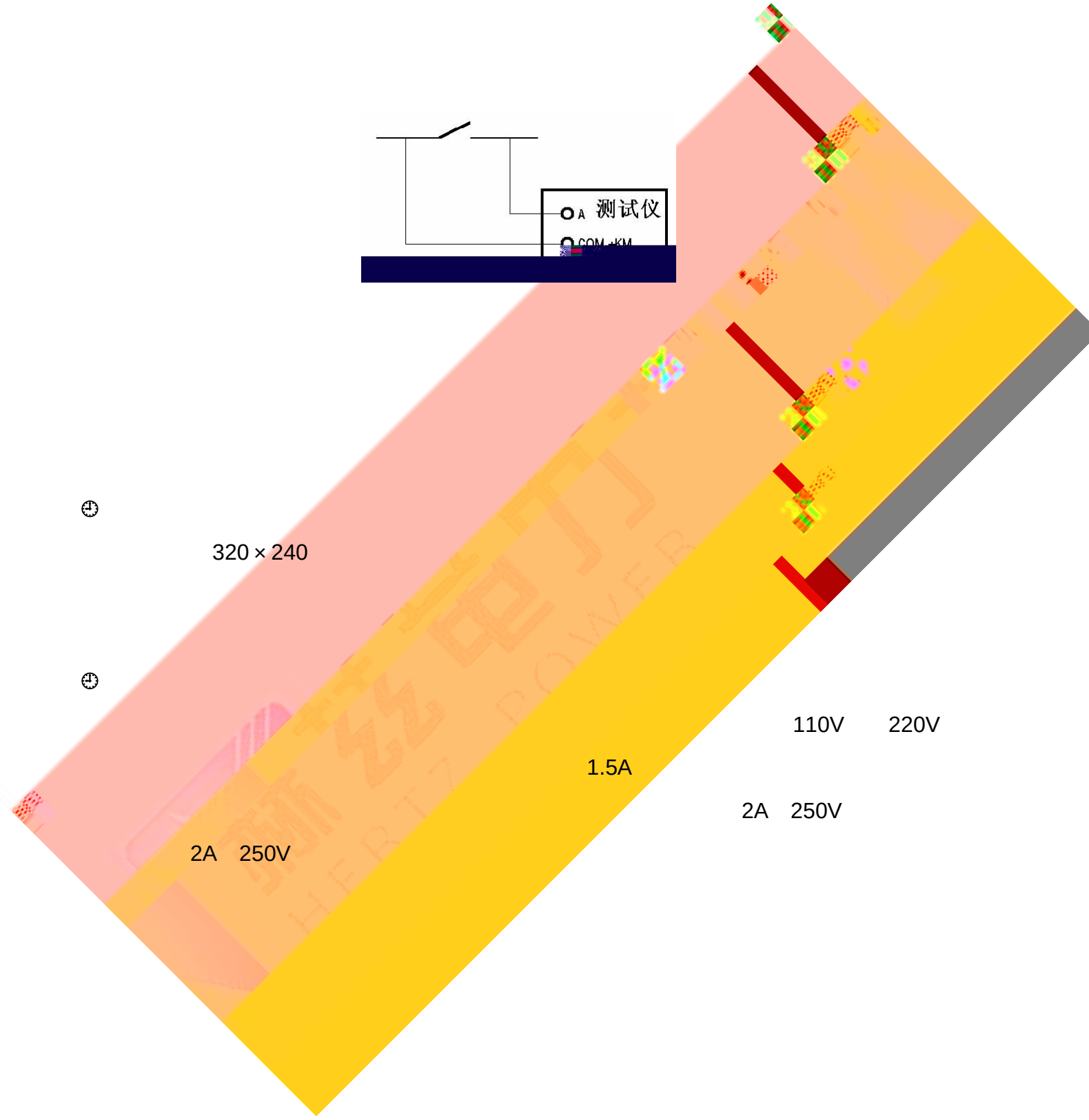
± ±



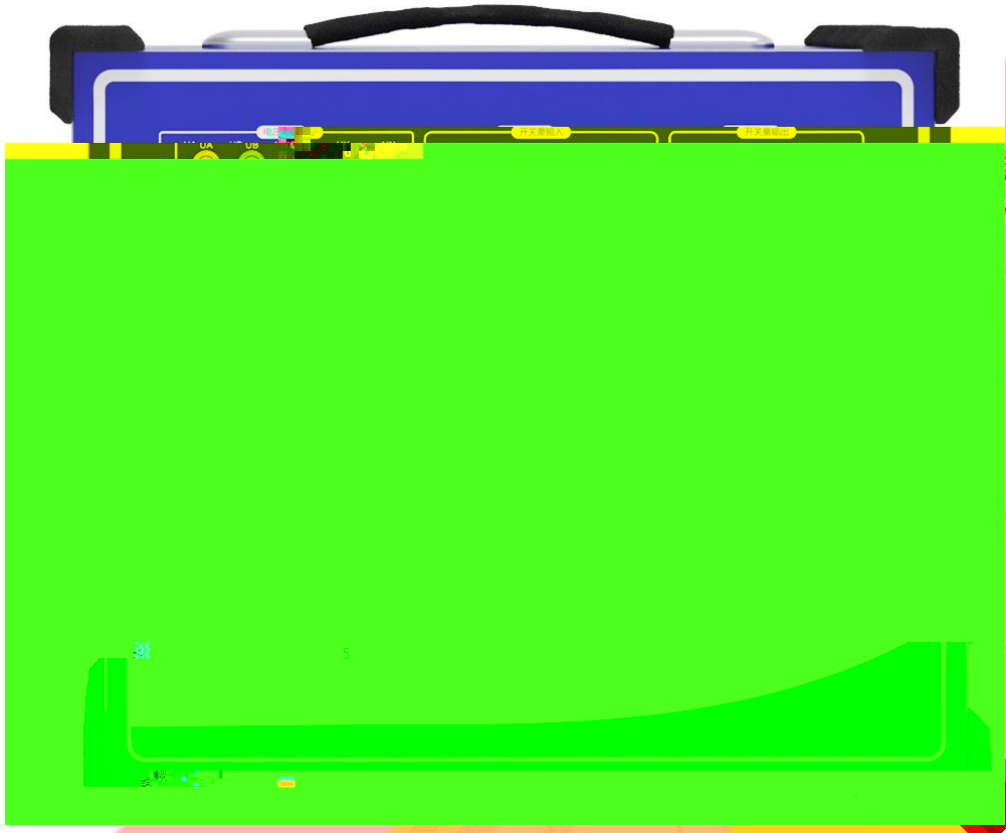
D/A

D/A

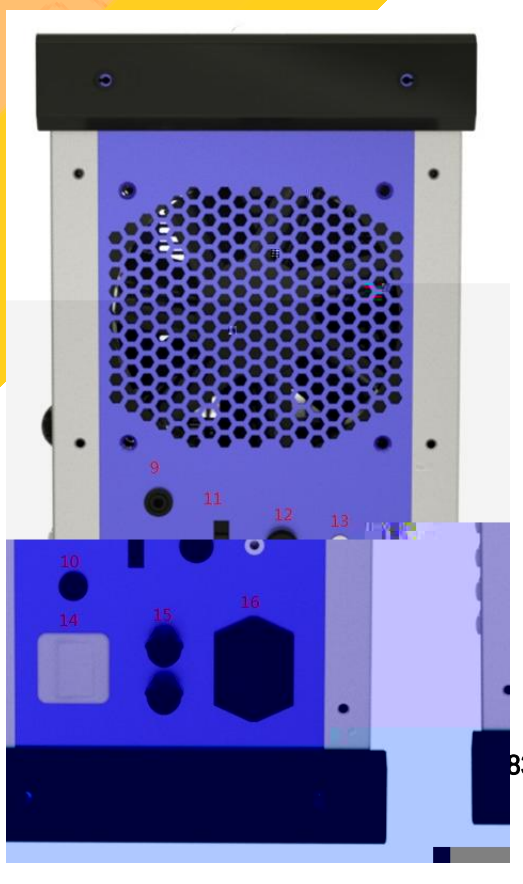



测试仪
A
COM
KM
320 × 240
110V 220V
1.5A
2A 250V
2A 250V

◆






9
11
12
13
10
14
15
16

.

5

GPS

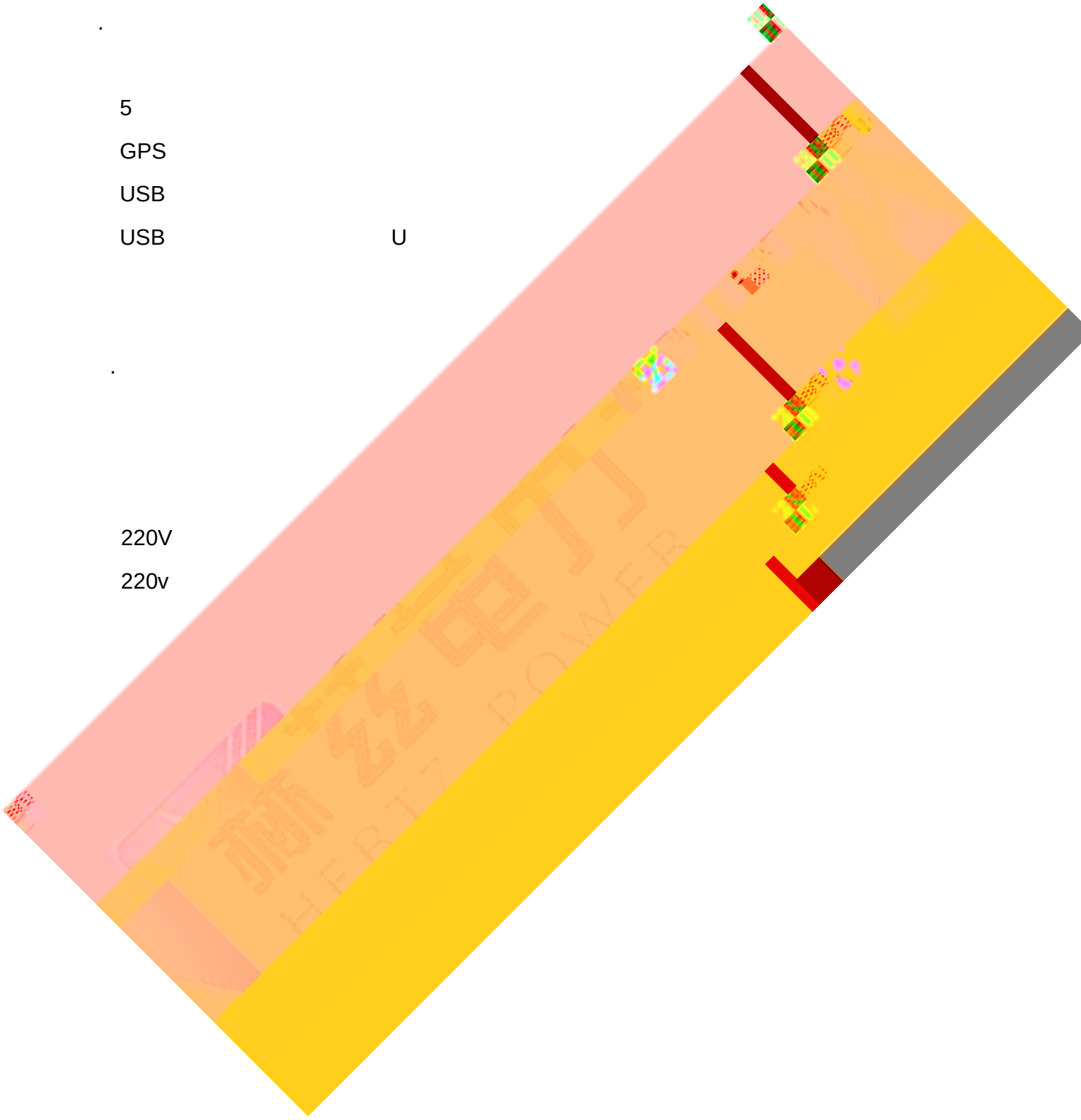
USB

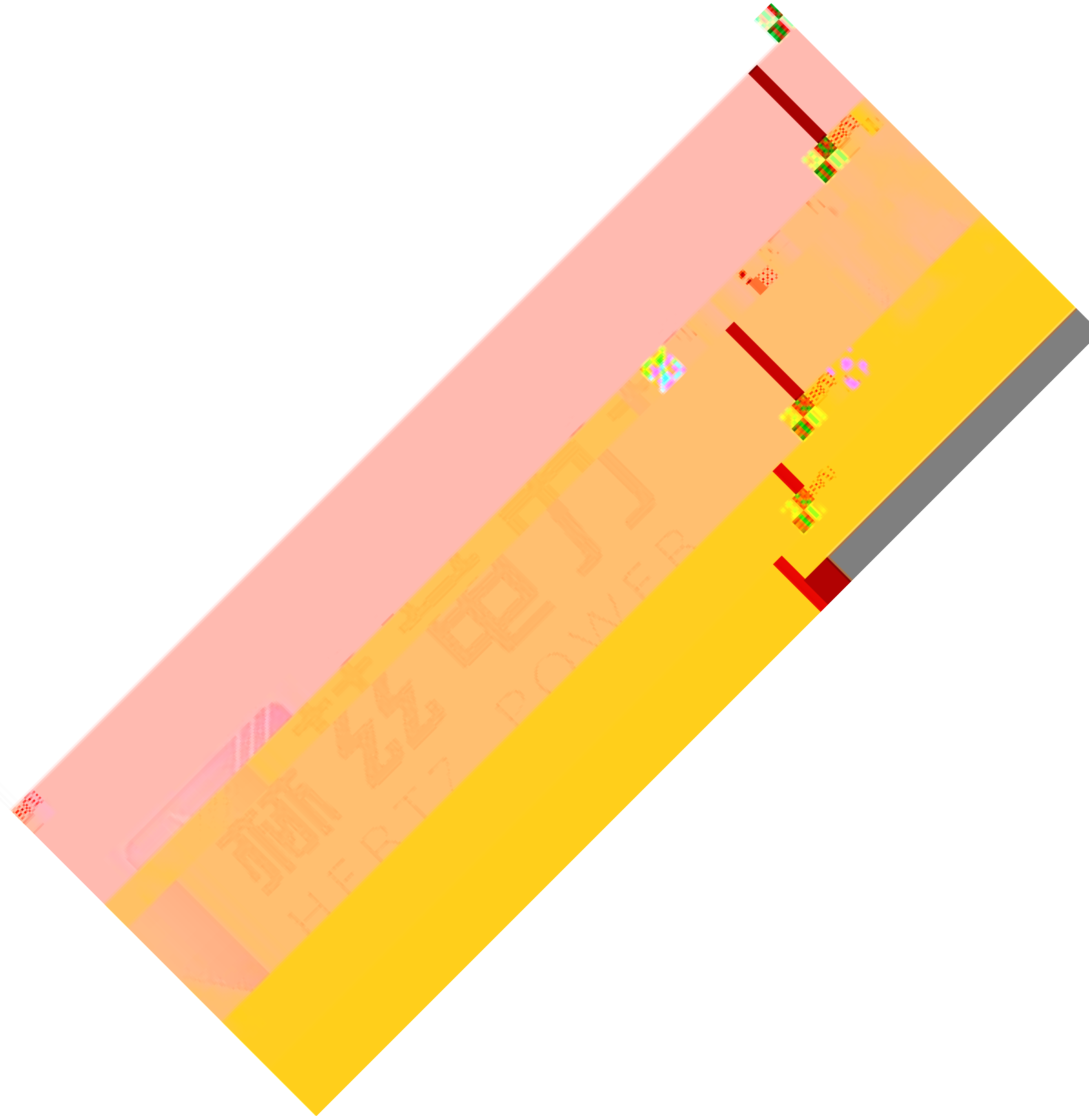
USB U

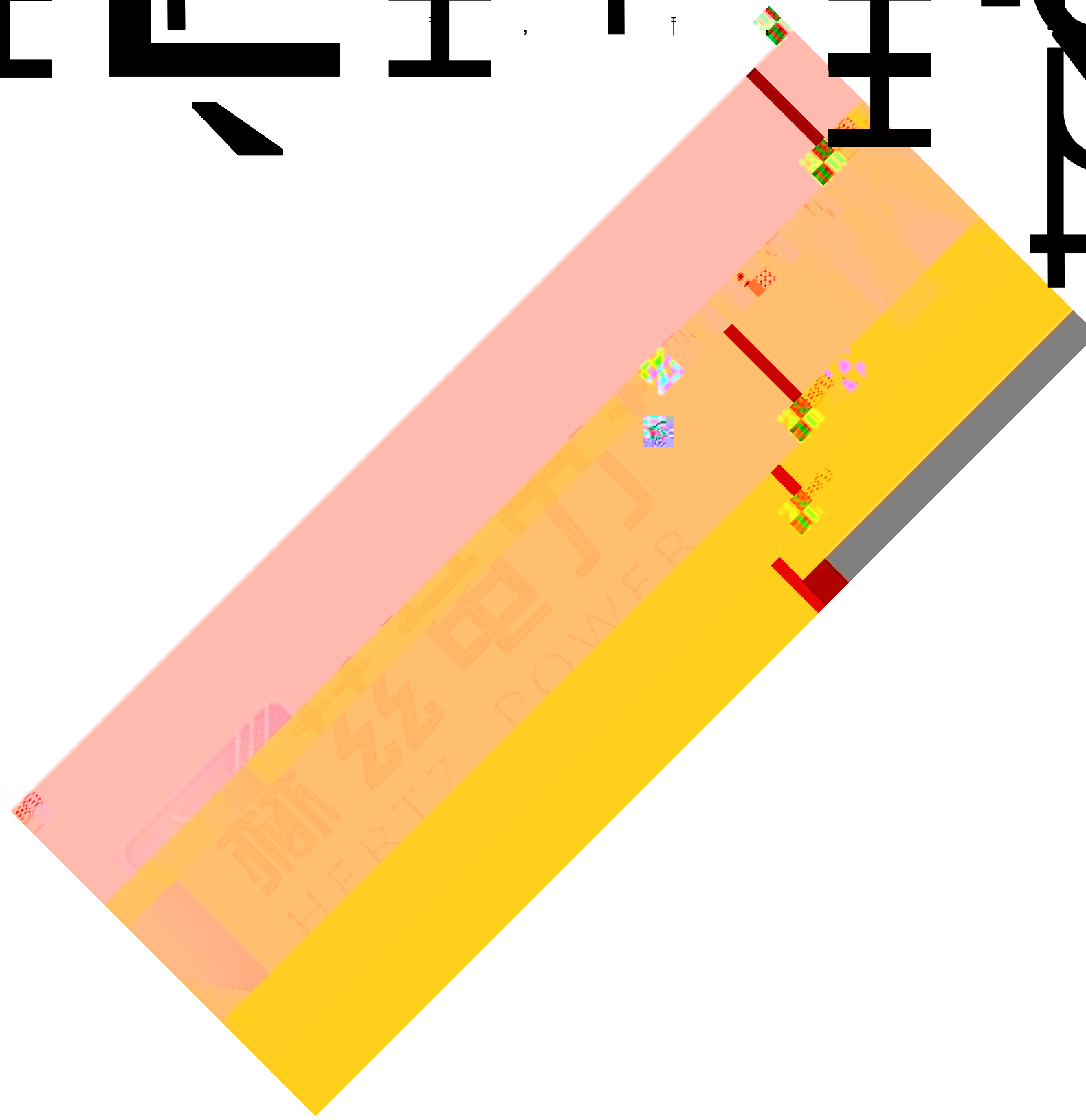
.

220V

220v







，　　，

●

Ua　　Ub

Uab

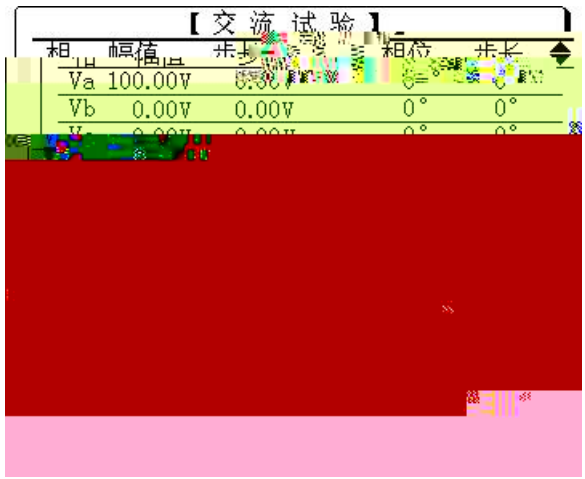
IA　IN

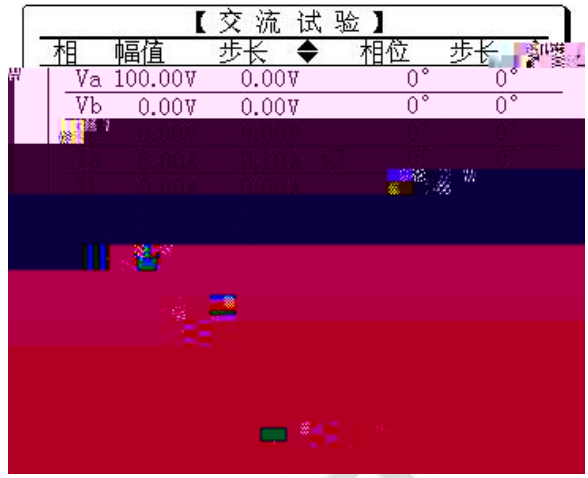
A　COM　A　　8A

0.1A

赫兹电力 HERTZ POWER

1 [illegible]


【交流试验】
相 幅值 步长 相位 步长
Va 100.00V 0.00V 0° 0°
Vb 0.00V 0.00V 0° 0°


【交流试验】
相 幅值 步长 相位 步长
Va 100.00V 0.00V 0° 0°
Vb 0.00V 0.00V 0° 0°

◆



“ ” “
”

“ ▲ ” “ ▼ ”

Ua Ub Uc Ia Ib Ic

“ ▲ ” “ ▼ ” “ ” “ ”

-
- “ ” “ ”

“▲” “▼”

“ ”

- ,

Ua Ub Uc Ia Ib Ic

-

Ua Ub Uab

◆

Ua Ub Uc Ia Ib Ic

/ Ua Ub Uc 0-120V

Ua Ub Uc

Ua Uc Ub Uc

Ua Ub Uc Ia Ib Ic

f/ t

“ ▲ ” “ ▼ ”

f/ t Hz

ñ ò ñ ò “ ▲ ”

“ ▼ ”

Ua Uc

“ ▼ ”

“ ▲ ” “ ▼ ”

●

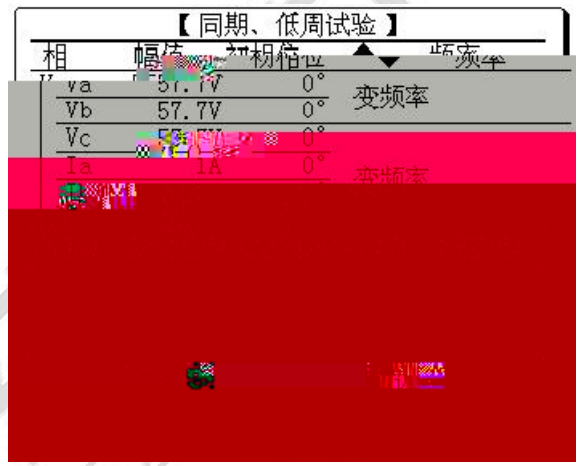
● “ ” “ ”

“▲” “▼”

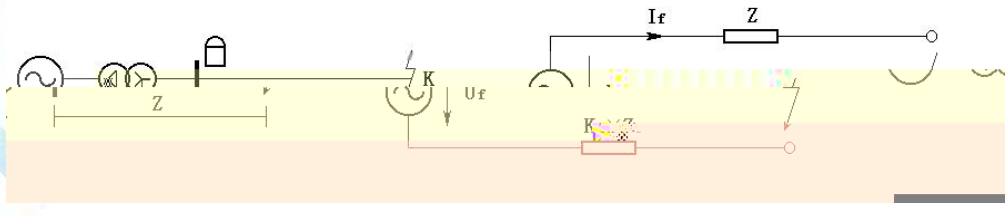
“ ”

●

Ua Uc


【同期、低周试验】
相
va 57.7V 0°
Vb 57.7V 0°
Vc
Ia 1A 0°
变频率


【同期、低周试验】
相
va 57.7V 0°
Vb 57.7V 0°
Vc
变频率


If
Z
K
Uf
Z

“ ”

“ ”

57.7V 0A “ ” c

“ ”

- A B C R c
-

1

35kv

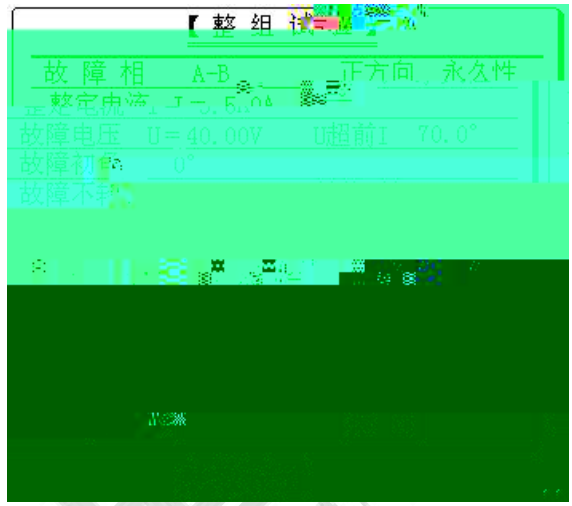
5A 40V

A B C

A C

A R

COM

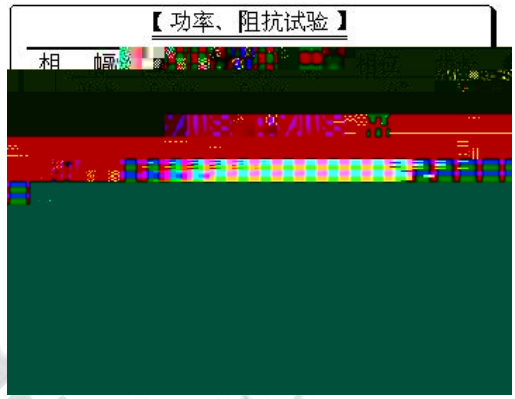


◆

90°

3 57.7V 90°

57.7V



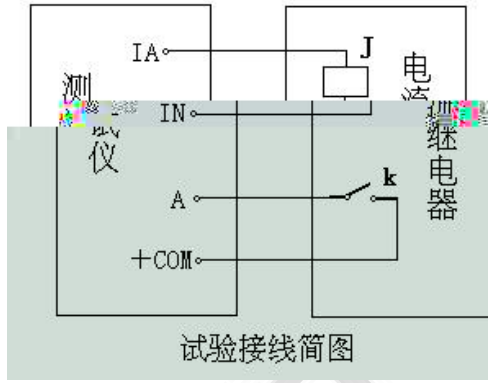
-
- “ ” “ ”
  “▲” “▼”
  “ ”
- ,
  “ ” “ ”

UA UB UC UN

IC IN UAB 100V IC

5A IC 180 °

1 ° 1 °



◆

Ia Ib Idz

Izd

Idz Izd 6 Idz Izd

Idz Izd

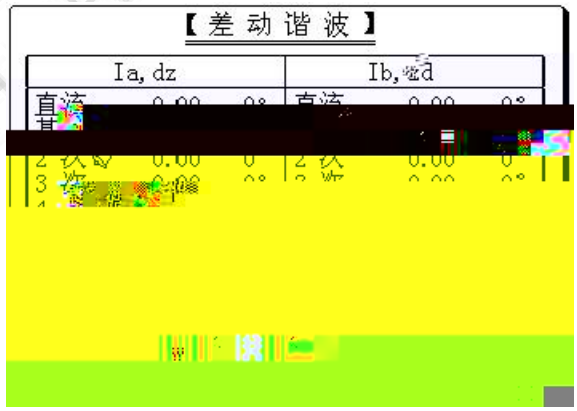
●

● “ ” “ ”

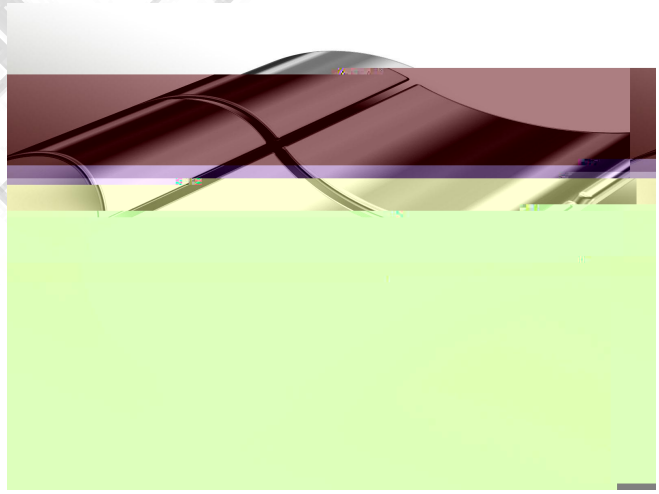
“▲” “▼” “ ”

“ ”

“ ”



赫兹电力 HERTZ POWER



■

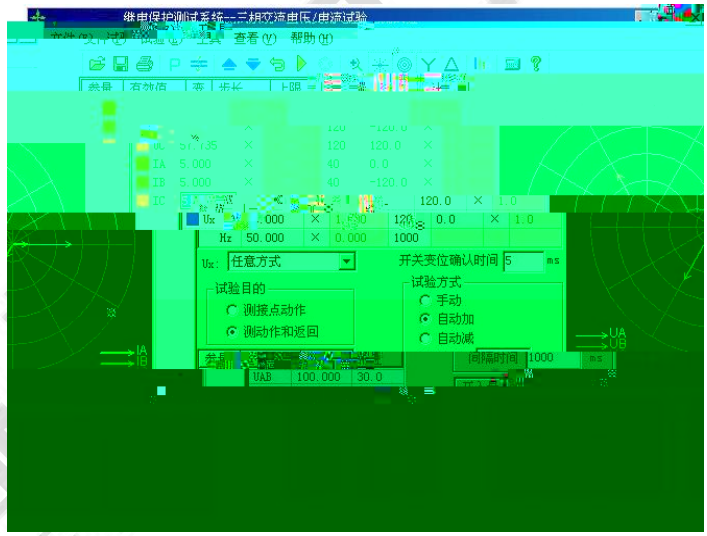
V2.0

“ ” “ ” “ ” “ ”

“ I ” “ II ”

◆

ñ ò



(Ctrl+O

E:\ \Para\ \

ŏ Ctrl+S

ñ ò

ŏ Ctrl+R

E:\ \

\ \

ŏ Ctrl+X

ŏ

ŏ ESC



“ ” “ para ”



1 “ ”

2 “ ” “ — ”

■

“ ” 4 3

3P

“ ” “

” “ ”

“ ”

“ ”

● 4 3

◆

◆ o

“ ”

A

-180~360°

“ -181° ” “ 179° ”

120V

Ua 120V 0° Ub 120V 180° Uab

240V

40A

“ ”

“ ” “ √ ” ,

“ ” “ ” 0.001

0.1

“ ”

“ ”

“ ”

◆ o

Ux

- +3U0 -3U0 $+\sqrt{3}\times3U_0$ $-\sqrt{3}\times3U_0$ UX UA UB UC 3U0 UA UB UC
- UA Ux
- “ ” Ux

赫兹电力
HERTZ POWER

◆ o

“ ”

20ms 5ms

◆ o

“ ” “ ’

“ ”



◆ o

“ ”

“ ”



0A

“ ” “

”

57.735V

“ Z / Φ ” “ R / X ”

“U ”

◆

◆ o

ñ ò

ß

ñ ò

ñ ò ñ ò

ñ ò ñ ò 1.732

ñ ò 0Á 120Á

120Á ñ ò 0Á 120Á 120Á

ß

90Á ñUAB ICò ñUBC IAò ñUCA IBò 0Á ñUAB

IAò ñUBC IBò ñUCA ICò

60 ñ ò

UA UB 0Á U 60V 0Á

IC ڬ ɓ

IC UAB 0Á

45Á 45Á 135Á

ؠ ؽ

ŏ

◆ o

57.735V 0A

ñTV ò

ñ ò Ở ủ Ố õ

Ţ I ₱ ò

ñ ò 。 ڍ

“ ” “ ” “ ”

“ ”

- “ ” 20ms

ñ ò

-

1.2

0.8 ,

- 0.95

赫兹电力
HERTZ POWER

赫兹电力
HERTZ POWER

“ ”

◆ o

110V 220V

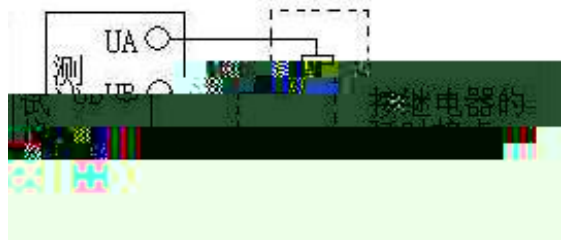
110V 220V

◆

◆ o

UA=110V UB= 110V

UA UB



225

220V

“ ”

UA UB

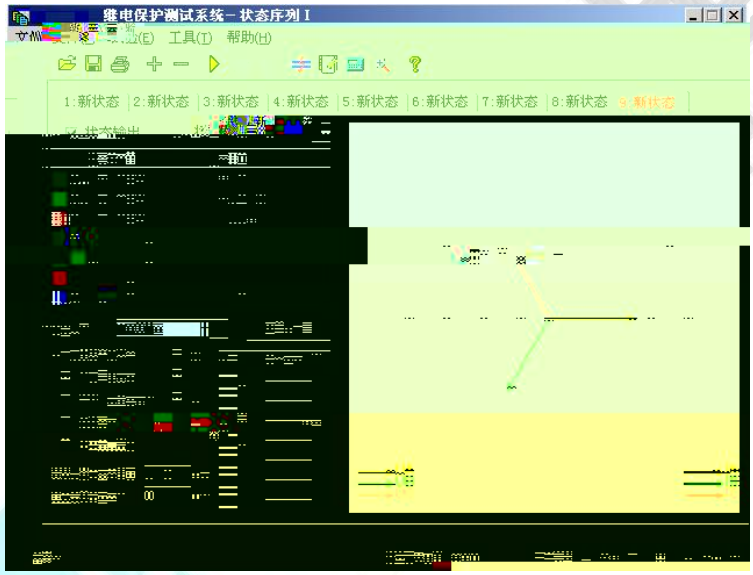
■

“ ” 4 3 “ - ”

9

，

- 9 4 3
-
- Ux
-


继电保护测试系统－状态序列 I
工具(T) 帮助(H)
1:新状态 2:新状态 3:新状态 4:新状态 5:新状态 6:新状态 7:新状态 8:新状态

◆

◆ o

“ ” “ ”


插入状态
请选择新状态位置
当前状态之前
当前状态之后
指定位置 第 1 状态
确定
取消

ñ ò ñ ò

ñ ò

ñ ò

10ms

ñ ò

ñ ò

ñ ò ñ ò

ñ ò

(

A B C R a b c ñ ò

ñãò

ñ ò

ñ ò ñ ò

(

ñ ò

ñTabò

(GPS

GPS GPS 3 È Î)é J[illegible]@ F,%[illegible]YHA27°

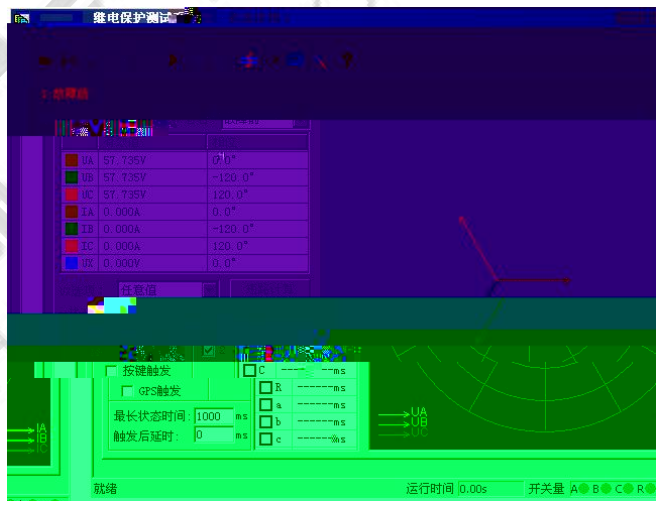
◆

9 9

2

“ ”

“ ”


继电保护测试
UA 57.735V 0.0°
UB 57.735V -120.0°
UC 57.735V 120.0°
IA 0.000A 0.0°
IB 0.000A -120.0°
IC 0.000A 120.0°
UX 0.000V 0.0°
任意值
按键触发
GPS触发
最长状态时间 1000 ms
触发后延时 0 ms
就绪
运行时间 0.00s
开关量 A B C R

“ ”

“ ”

IA

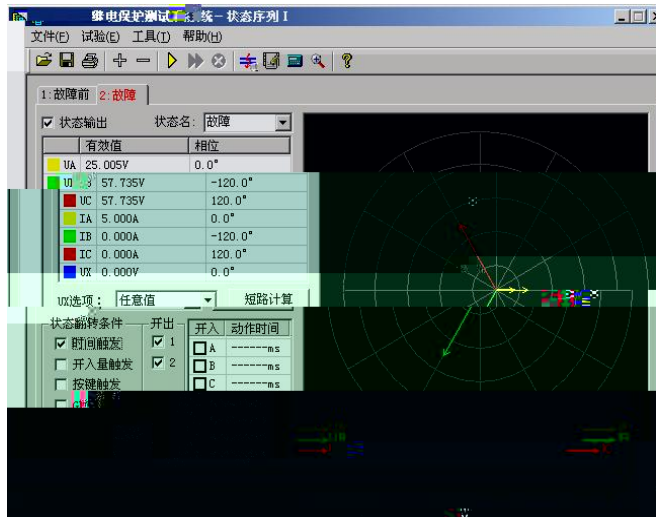
“ ”

A

“ ”

“

”


文件(F) 试验(E) 工具(T) 帮助(H)
1:故障前 2:故障
状态输出 状态名: 故障
有效值 相位
UA 25.005V 0.0°
UB 57.735V -120.0°
UC 57.735V 120.0°
IA 5.000A 0.0°
IB 0.000A -120.0°
IC 0.000A 120.0°
UX 0.000V 0.0°
UX选项： 任意值
短路计算
状态翻转条件
时间触发
开入量触发
按键触发
开出
1
2
开入 动作时间
A
B
C

“ ”

R

0

“ ”

“ ” ”

赫兹电力 HERTZ POWER

■

“ ”

- UA UB UC IA IB IC 2 20
-
-
-

◆

◆ o

0

ש

“ ”

刷新

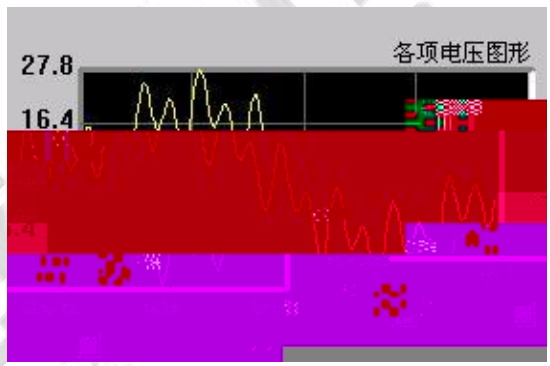
“ ”

清零 2~20

A “ 0° ” B “ 120° ”

C “ 120° ”

3



A

-160~160V

0~120V

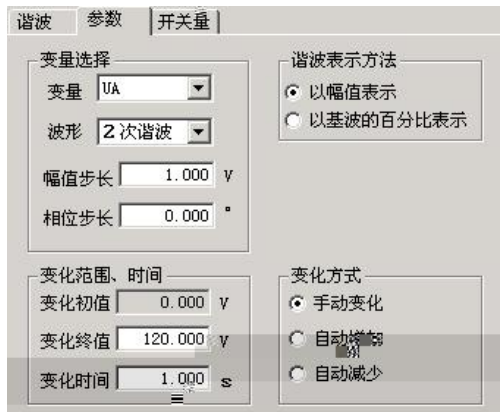
-10~10A 0~40A

120V 40A/30A

120V

40A/30A

◆ O



A

20

“ ”

“ ”

A V “ ”

ᘐ

ᘐ

“ ” “ ”

“ ” “ ”

“ ” 2

2V 10V “ ” 2 20

◆ O

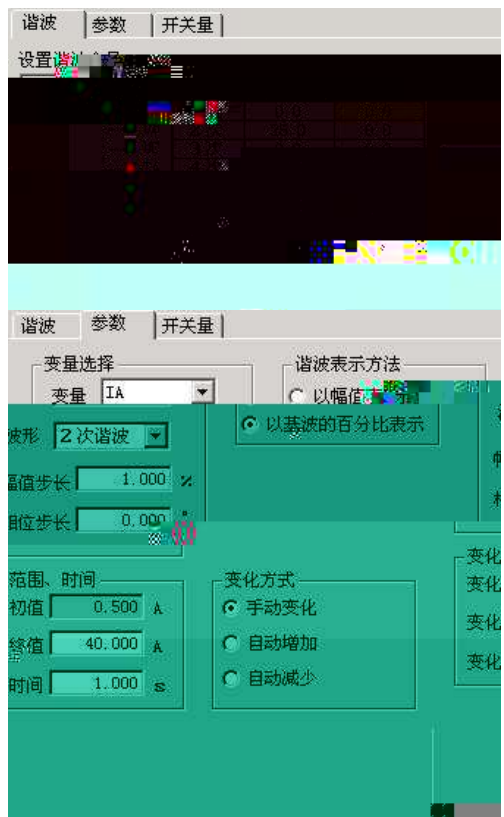
A B C R a b c

“ √ ”

ᘐ 5ms

◆

O



IA

A IB a

IN

IA

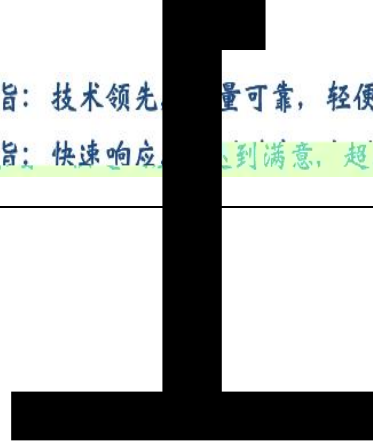
A IN

20%

“ ” “ ”

225

“ ” IA



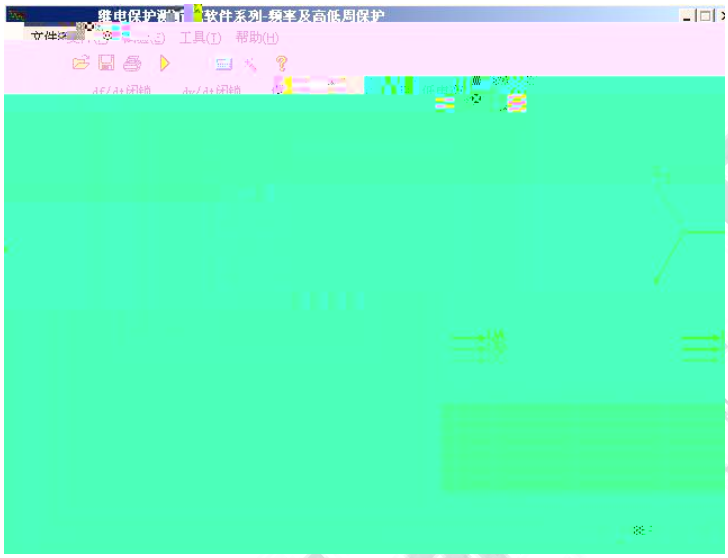
赫兹电力 HERTZ POWER

■

“ ”

●

●

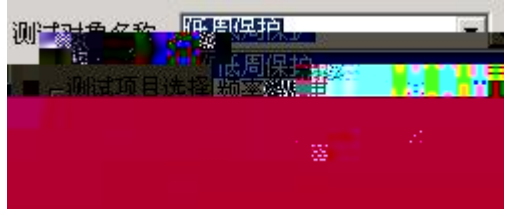


◆

◆ o

“ ” “ ” “ df/dt ” “ dv/dt ” “ ” “ ”

“ ” “ ” “ ”



“ ”

赫兹电力 HERTZ POWER

“

◆ o

ꕥ

“ df/dt ”

df/d

df/dt

df/dt

赫兹电力 HERTZ POWER



ᘐ

“ ” “ ” “

” 0.05Hz

ᘐ

df/dt

ᘐ

“ ”

ᘐ

0.2

◆ o

“ Hz ”

“ ”

“ ” “ ”

50Hz —— df/dt “

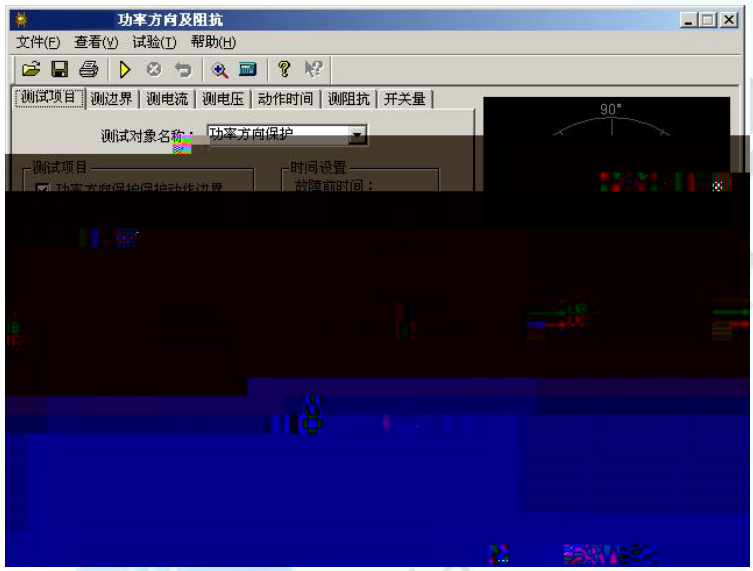
” —— “ ” “ ” 0.2

■

“ ”

“ ”

- ●
- ● “ ”
- ●
- ●


功率方向及阻抗
文件(F) 查看(V) 试验(T) 帮助(H)
测试项目 测边界 测电流 测电压 动作时间 测阻抗 开关量
测试对象名称：
功率方向保护
测试项目
时间设置
故障前时间：
90°



Φ U I

90 °

UAB IC

0

Φ U I “ ”

“ ” “ ”

“ ”

“ ”“ U0 I0 ” “ U2 I2 ”

“ ”

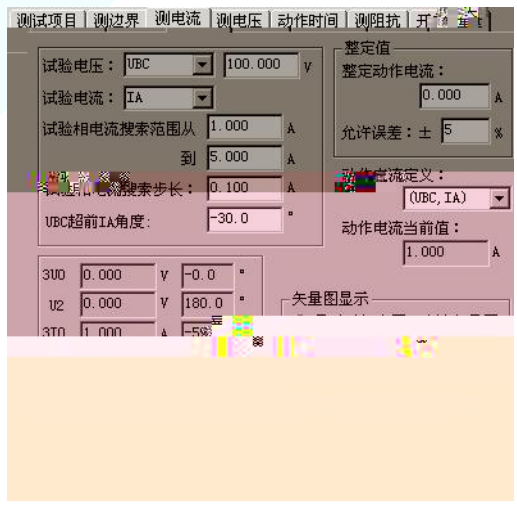
U0 I0 U2 I2

“ ”

“ ”

U2 I2

U2 I2



Φ U I

Ö

◆ o

Φ U I



-
- o

■

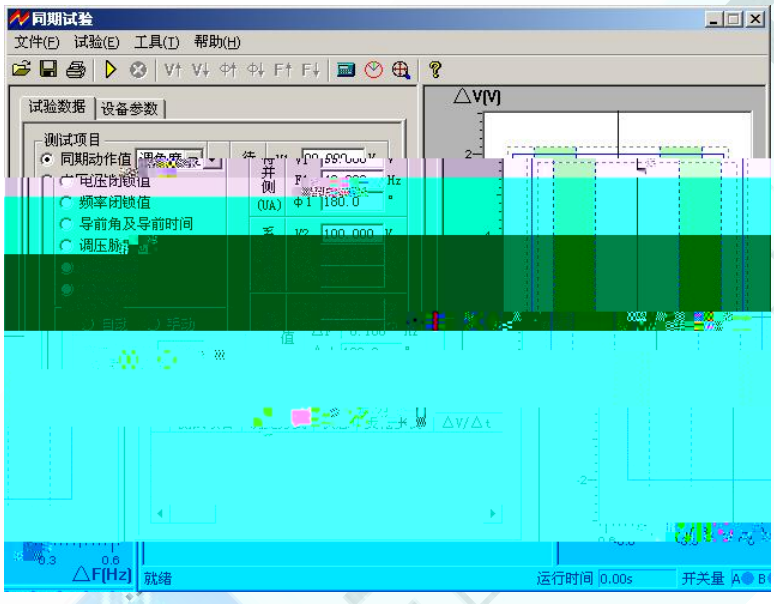
●

●

●

●

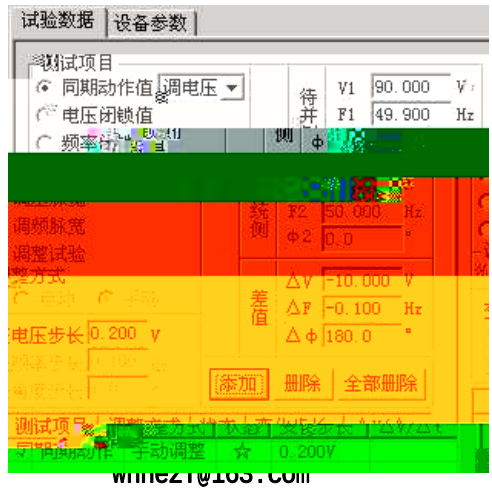
●


同期试验
文件(F) 试验(E) 工具(T) 帮助(H)
试验数据
设备参数
测试项目
同期动作值
电压闭锁值
频率闭锁值
导前角及导前时间
调压脉冲
△V(V)
△F(Hz)
就绪
运行时间 0.00s
开关量

◆

◆ o

ꕥ


试验数据
设备参数
测试项目
同期动作值
调电压
电压闭锁值
频率
V1 90.000 V
F1 49.900 Hz
F2 50.000 Hz
Φ2 0.0
△V -10.000 V
△F -0.100 Hz
△Φ 180.0
电压步长 0.200 V
添加
删除
全部删除
0.200V

“ ” “ ” “ ”

“

”

“ ” V1 90V F1 Φ1

49.9Hz 50Hz

0° “ ” “ ”

▲ ▼

“ ” “ ”

“ ”

▲

ϕ = t / Tw•360º Tw = 1 / |f1-f2|

ϕ t

f1 f2



Y/

5ms

20

◆

◆ o

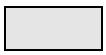
ŏ

U1 UA U2 UC UN UN

ŏ

“ ” “ ” “ ” “ ” A a B

b R





Ko = (Z0 / Z1 ï 1) / 3

ū(Z1) ū(Z0) Ko Kor Kox

Kor = (R0 / R1 ï 1) / 3 Kox = (X0 / X1 ï 1)

(901) Ko ū ū(Z1) ū(Z0) PS1=PS0 Ko

Kor Kox Ko

-

-

ñ ò ñ ò ñ ò ñ ò

ñ ò

ñ ò ñ ò ñ

ò ñ ò

ñ ò

-

Я







-
- o



◆

◆ o

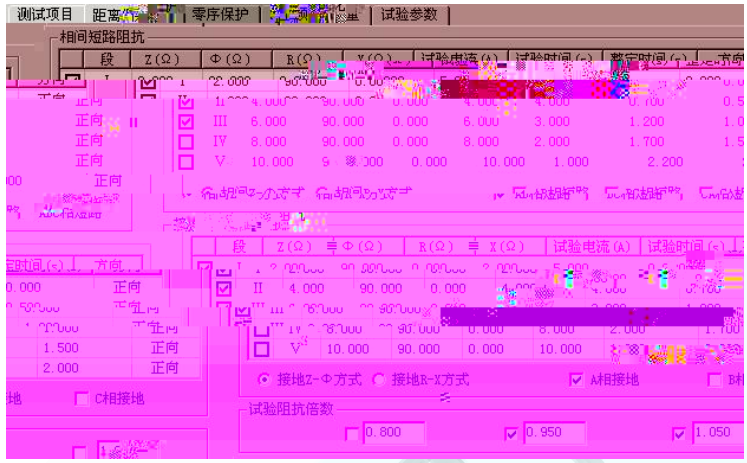
“ ”“ ” “ ”

ꝏ

KL Kr/Kx Z0/Z1 “ ”

◆ o

“ ”



ꕥ

1 “ √ ”

2 Z-Φ R-X

3

20 40V 57V 20 30V

57V

4 “ ” I 0s

II 0.5s III 1.0s I II III

0.2s 0.7s 1.2s 0.95

1.05

0.95 1.05

5 “ ”

6 “ ” “ ” “ ”

7

ꕥ

0.8 0.95 1.05 1.2



“ ”

◆ o

“ ”

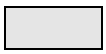
AC BC

C C

A B C A

“

”0.2s

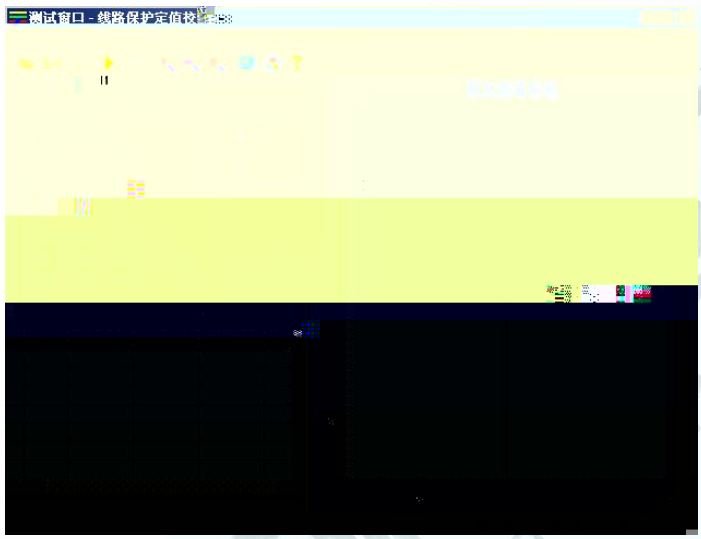


■

z/t

●

●



◆

◆ o

“ ”

“ ”

“ ”

“ ”

“ R-X ” “ Z-T ”

◆ o

Kr Z0/Z1 ”

”

“ c ” “ GP

57.735V 0A ñ ò

ñ ò

ñ ò

ñ c ò c ñGPS ò ñ

ò

PT PT “ ”

PT “

“

”　“　　”

100V

0 °

◆ o

“　　”　A B C R　“　　”

A B C R　A B C　“　”　A

B C　R

◆ o



R　X

“　R X　”

0.95　1.05　0.95

1.05　0.8　1.2

=　×

“　”



“ ” “ ”

B

0.95 1.05 “ ” “
”

“ ” “ ”

◆ o



M 0.9 1.1

M=0.9 M=1.1

M=1.2 “ ”

“ ” 10 20A

“ ”

“ ” “ ”

◆ o

“ ”



◆

◆ o

“ ”

“ ” “ ”

- “ ”
- “ II ”
-

0.2s

0.2s

0.2s

3 s

■

“ ” “

”

●

●

◆

◆ o

“ ” “Z ” “Z V ”

ŏ

ŏ “ ” “ ” “ ”

“

”

ŏ “ ” “ ” “ ”

“ ”



80%

ŏ

ŏ

◆ O

“ ”

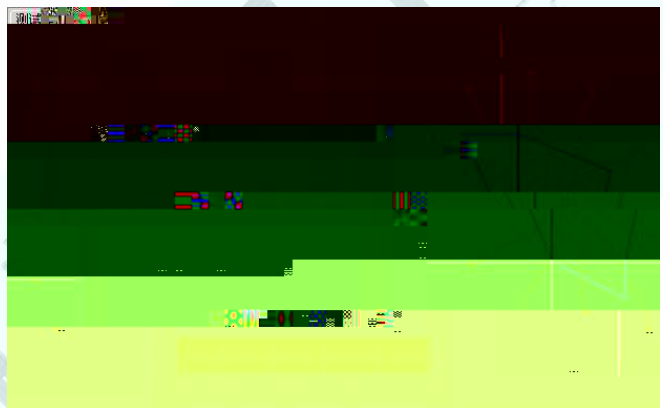
“ ”

“ R-X ” “ Z-Φ ”

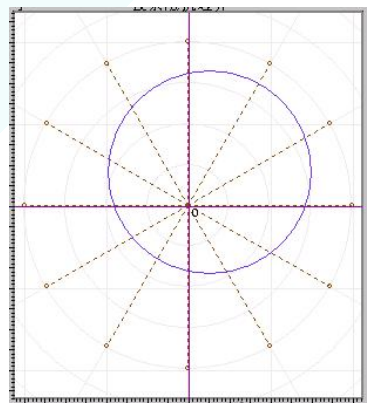
1

R1 X1 0 0

“ ”



R X



“ ”

“ ”

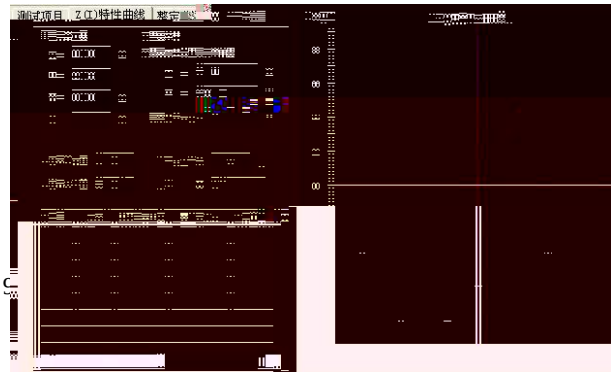
“ ” “ ” “ ”

“ ”

◆ O

“ ” “Z I

”



“Z I ”

“ ”

“ ” 0

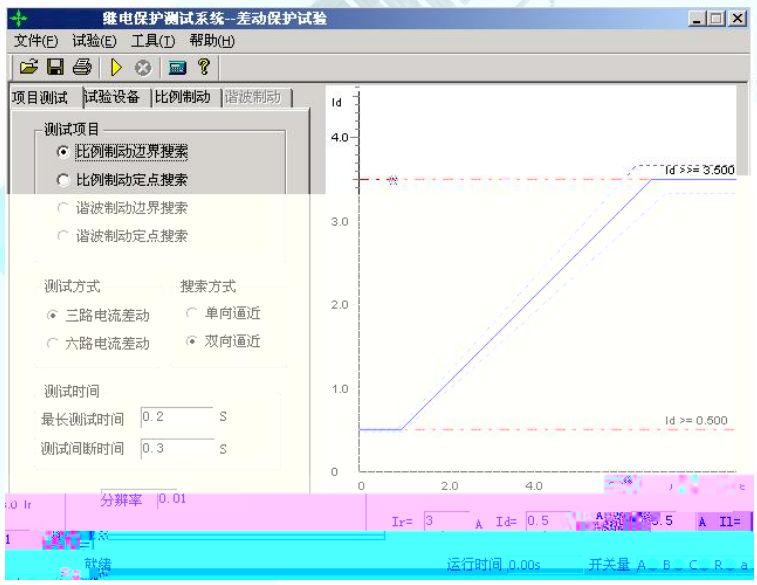
“Z V

” “Z I

■

“ ”

-
-
-
-
- TA “
”
- 2 7
-
-
- 3


继电保护测试系统--差动保护试验
文件(F) 试验(E) 工具(T) 帮助(H)
项目测试 试验设备 比例制动 谐波制动
测试项目
比例制动边界搜索
比例制动定点搜索
谐波制动边界搜索
谐波制动定点搜索
测试方式
三路电流差动
六路电流差动
搜索方式
单向逼近
双向逼近
测试时间
最长测试时间 0.2 S
测试间断时间 0.3 S
分辨率 0.01
Id
4.0
3.0
2.0
1.0
0
Id >= 3.500
Id >= 0.500
0
2.0
4.0
Ir= 3 A Id= 0.5
运行时间 0.00s
开关量 A B C R a

◆

◆ o

“ ” “ ” “ ” “

” “ ”

“ ”

“ ” “

”

℘

“ ” 3

℘

“ ” “ ”

“ ”

“ ” “ ”

℘

◆ o



Y Y0 -11 -1 Y Y0

“ ” “ ”

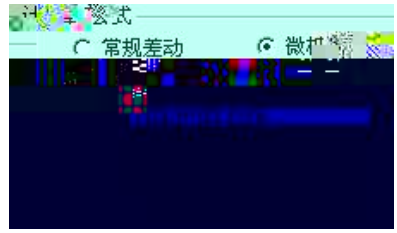
CT

2

1 Y/Y TA Y/Y

2 Y/ TA Y/Y

RCS-978 TA



1 “ ” IA IB Ir = Il Id = Ih Φ Id Ir

2 “ ” Id= Ih +Il Ir

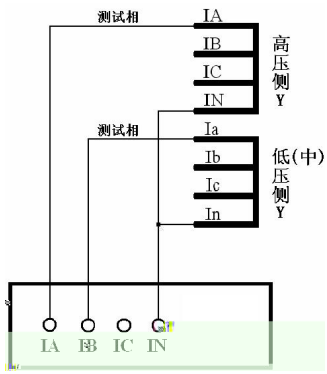
◆ o

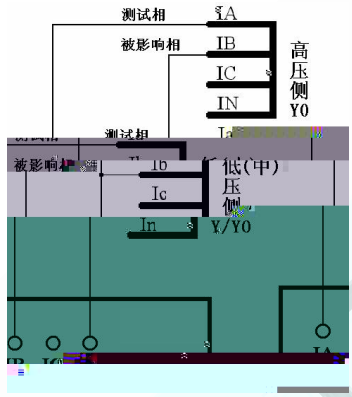
ꕥ

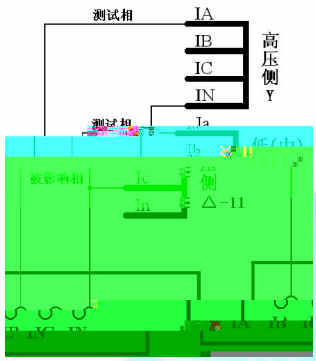


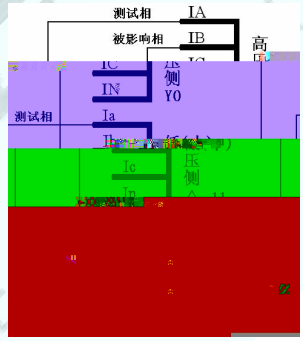
◆

◆ o









Y , , ,

IAô=IA-IB IBô=IB-IC ICô=IC-IA Iaô=Ia-Ic Ibô=Ib-Ia Icô=Ic-Ib

Y0 ,Y

◆ ○

ঌ 3 3 40A

3 “ ”

ঌ 2A A

0.3

“ ”

= ×

Ie1=Sn/ 1.732 U1n CT1

Ie2=Sn/ 1.732 U2n CT2

Ie1 Ie2 ð ð I II

Sn ð ð

U1n U2n ð ð I II

CT1 CT2 ð ð I II CT

Ie1 Ie2 1.732

Ie1 Ie1=Sn/ 1.732 U1n CT1

1.732

Y/Y/ -11 K1 K2 K3

K1=1/1.732=0.577

K2=U2n CT2/ 1.732 U1n CT1

K2=U3n CT3/ U1n CT1

1

K1=1

K2=U2n CT2/ U1n CT1

K2=1.732 U3n CT3/ U1n CT1

K1=1

K2=Ie1/Ie2

K2= Ie1/Ie3

K1 K2 K3 ð ð I II III

Ie1 Ie2 Ie3 ð ð I II III

U1n U2n U3n ð ð I II III

CT1 CT2 CT3 ð ð I II III CT

RCS-978

Kph=Kb*I2n-min/ I2n Kb=min I2n-max/I2n-min 4

I2n I2n-min

I2n-max

- CST-141B -200B

Y/ -11 Id=|I1+I2| Ir=|I1-I2|/2

K1=1 K2=Kpl

Y/Y/ -11 Id=|I1+I2+I3| Ir=Max{|I1| |I2| |I3|}

K1=1 K2=Kpm K3=Kpl

I1 I2 I3 ð ð

Kpm Kpl ð ð

- PST-641 Y/ -11

Id=|I1+I2|　Ir=|I1-I2|/2

K1=1.732　K2=Ie1/Ie2

Ie1　Ie2 ð ð

- PST-621/622　　Y/Y/　-11-12

Id=|I1+I2+I3|　Ir=Max{|I1|　|I2|　|I3|}

K1=1 732　K2=1.732　U2n　CT2/　U1n　CT1
K3= U3n　CT3/　U1n　CT1

-

Id=|I1+I2+I3|　Ir=Max{|I1|　|I2|　|I3|}

K1=1　K2=U2n　CT2/　U1n　CT1
K3= U3n　CT3/　U1n　CT1

-

Id=|I1+I2+I3|　Ir=||Id|—|I1|—|I2|—|I3||

K1=1 732　K2=1.732　d35　K3=d36

- RCS-9671　　Y/　-11

Id=|I1+I2|　Ir=|I1 ð I2|/2

K1=1　K2=U2n　CT2/　U1n　CT1

- RCS-978　985　　Y/　-11

■

“

”　　9

- “　　”
- 9
-
-
-

◆

o

0　　RS

IA IB

o

IA IB

IA IB

“ ”

“ ”

“ ”

“ ”

“ ”

o

“ ” “ ”

“ ” “

”20ms

“ ”

“ ”

“ ”20ms

o

7

“ ”



◆

o

IA IB

IA B

Y Y0 Y

1

1

2 = ƙ

Y Y0 1

Kh Kl Id0

Kxb



■

6　35KV

“　　”

●　　ｉ



“ ” IA

IA

◆ O

“ ”

15 25

“ ”

“ ”

“ ” 0.2s

15 25s

◆ O

1

2 “ ” “ ”

3

4 2

◆ o

“ ”

UAB

A B C UAB

UAB UBC UCA

“ ”



“ ” “ ”

“ ”

◆ o



“

”

“ ” “ ” “ ”

100V

“ ” “ ”

“ ” “ ” “ ”

50Hz

0.5Hz

45Hz

df/dt “ 0.1Hz ”

“ 0.01Hz / ”

“ ” “ 0.2s ”

◆ o

df/dt df/dt

“ ” 5s

47Hz

“ ”

◆ o

“ ”

“ ” “ ”

◆ o



—45 ° 45 ° 45 °

“ ” 0

0 “ ”

____ “ ” ____ “

” ____ “ ” ____

“ ” ____ “ ”

90 ° A IA

0 UB UC 0 IA

“ ” UBC “ 90 ° ”

“ ”

1 °

■

“ ”

RS232 COM1

COM1

COM1

USB RS232

“ USB→ ” Windows 2000

USB

ᘓ “ USB→ ” Ɛ







Uab Ia

3

Uab

20 Ia

4

Ia 0.5 Uab 100V

◆

1

Ia 5A(1A) Uab 0.7

, φ1 φ2 φLM ½ φ1 φ2

φLM UDZ ZSET UDZ ZSET

2

φLM Iab Uab Z=f(I)

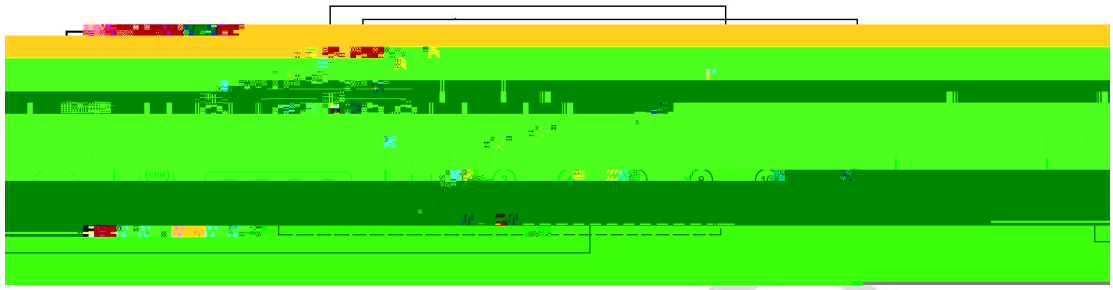
3

Uab

◆

◆

1 PC

Ia 

Uab 220V Ua 110V Ub 110V Uc 110V

“ ” “ ” 220V

15 25 Uc 110V

Uc 110 7

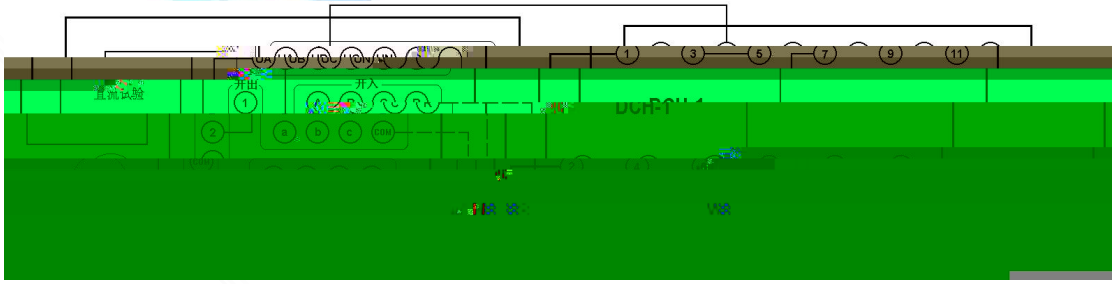
2

IA UAB 220V UA

110V UB 110V “ ” “ ”

220V 15 25 “ ▲ ”

“ ▼ ” 2 UB 2 7 -110V



◆

1

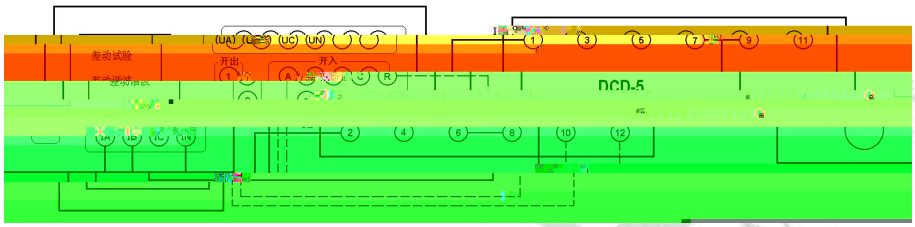
Izd Izd

Idz IDZ

2

Izd Izd * Idz

IDZ



IDZ

赫兹电力 HERTZ POWER

“

”　　“　　”

赫兹电力 HERTZ POWER