HZJB-330T

“ ”

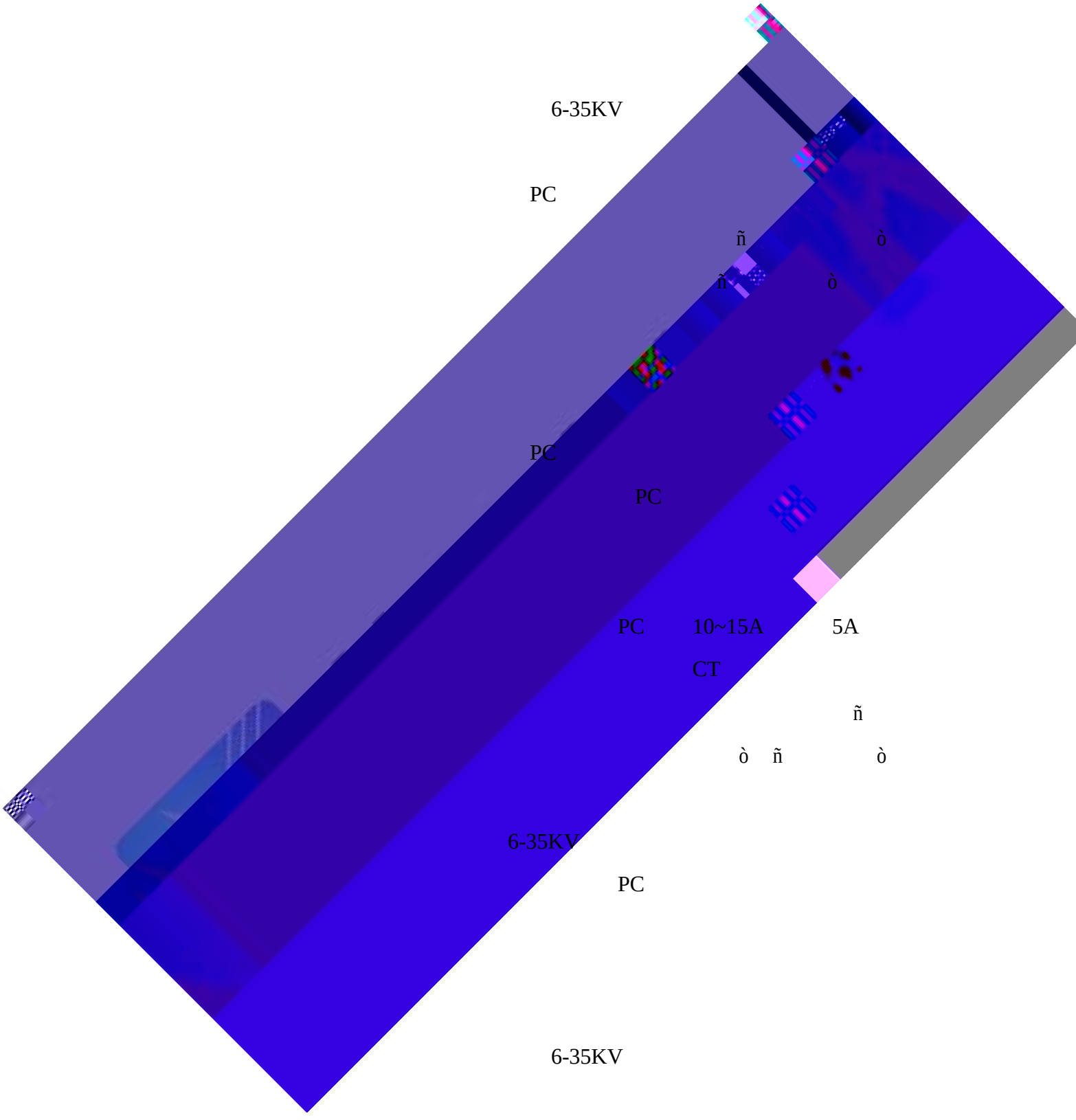
“ ” “ PC ” Windows

PC

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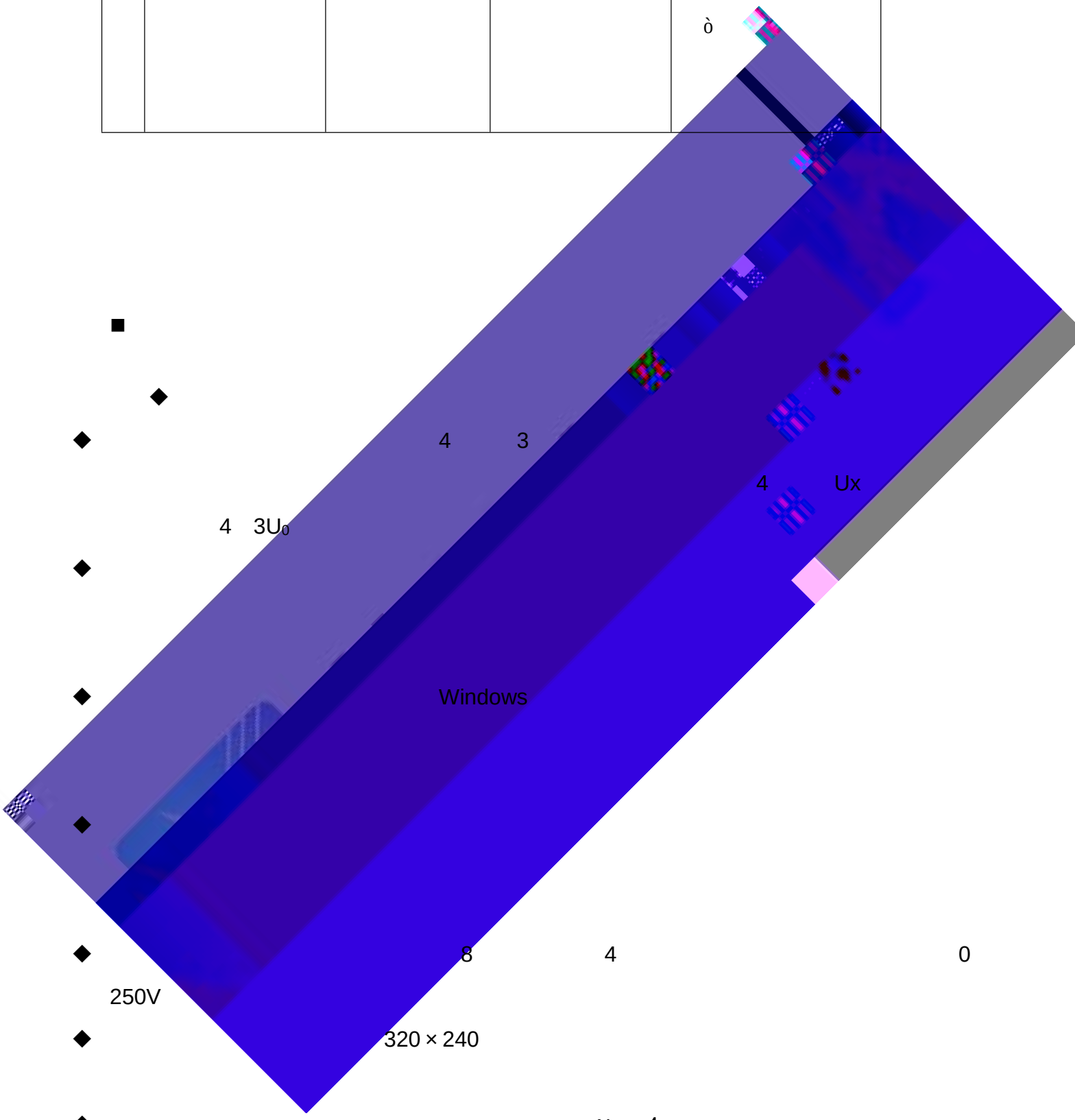
			ñ ò
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Ux



			PC	ñ ò Y/Y
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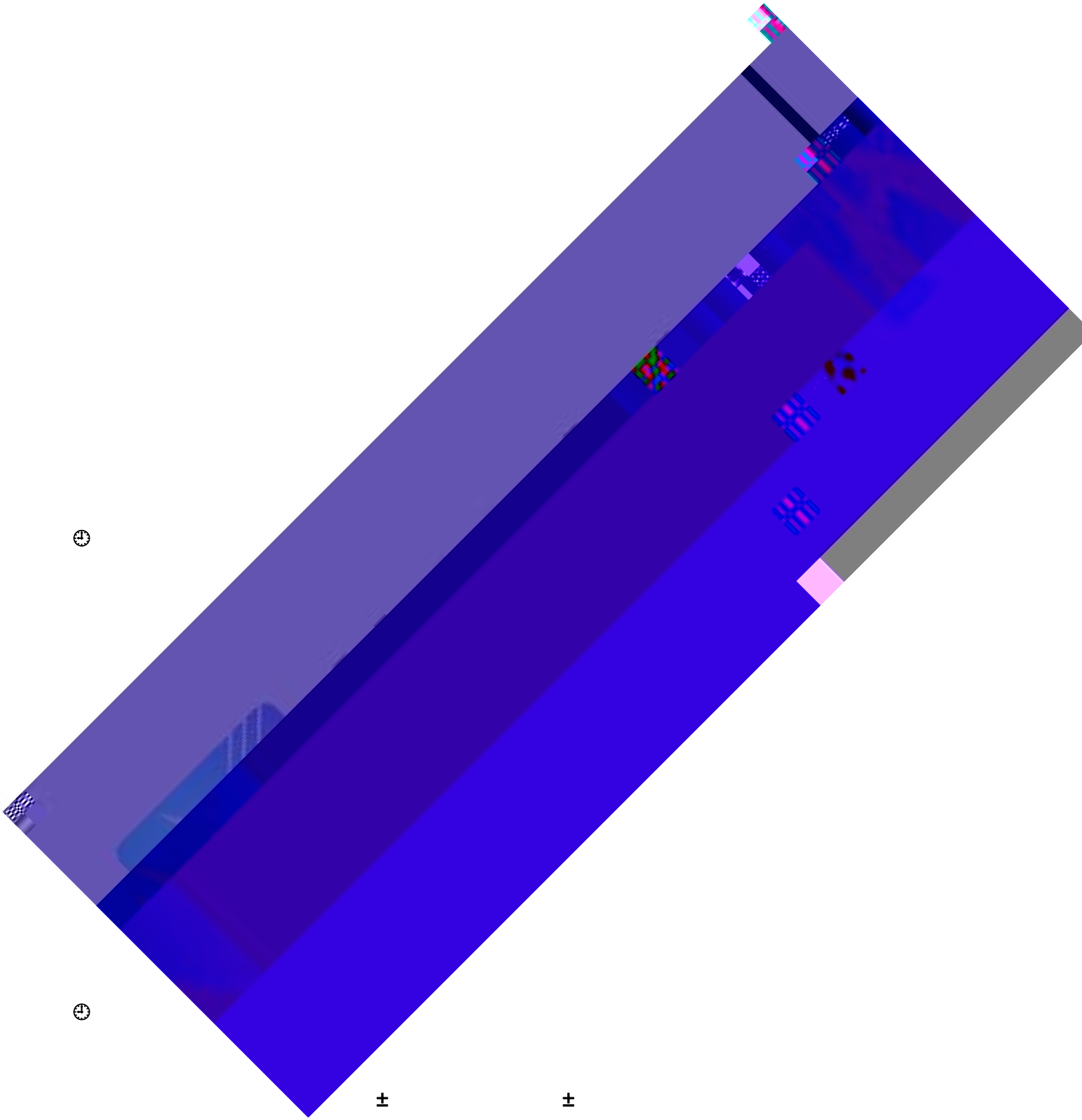
250V

◆ 320 × 240

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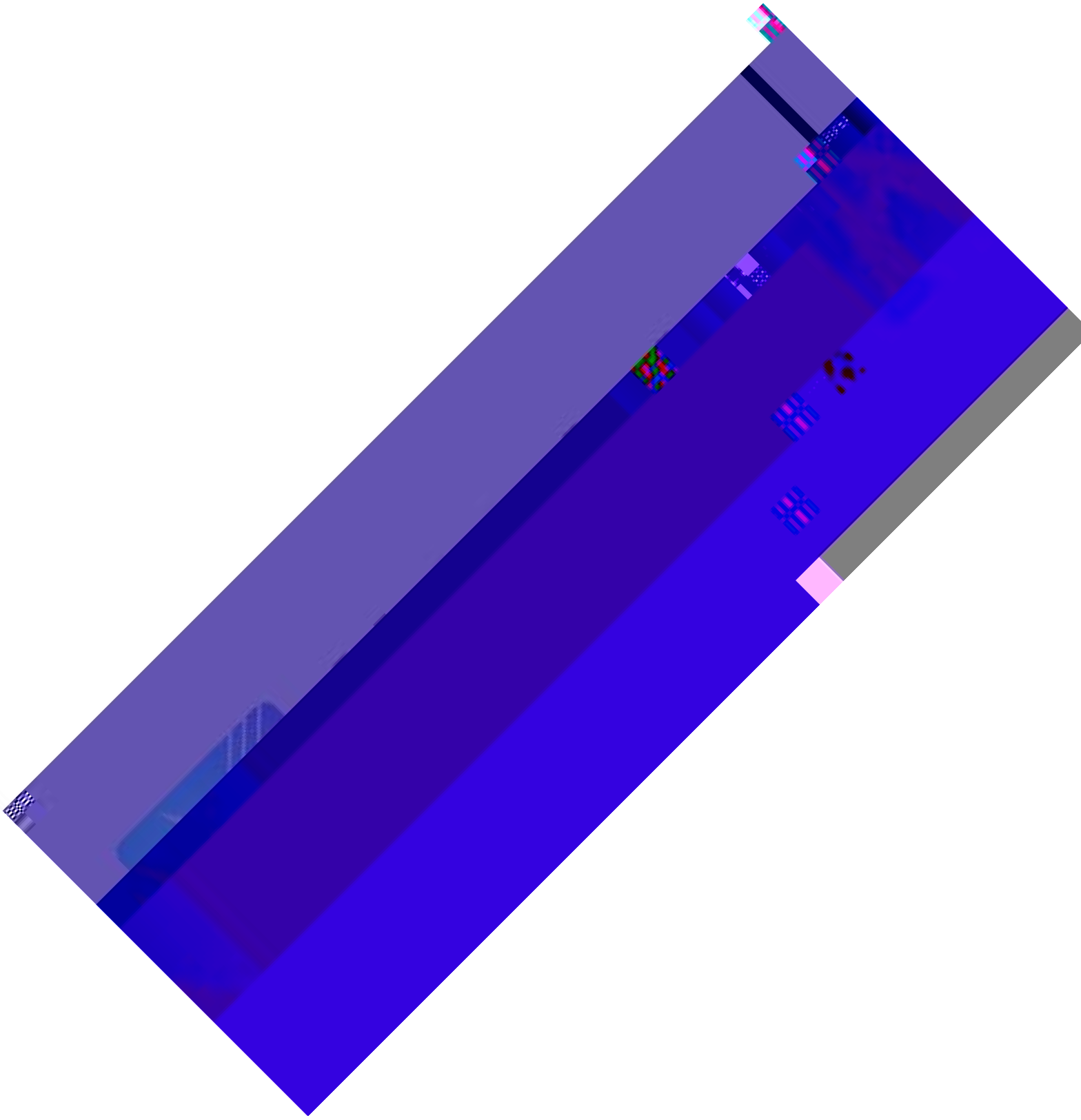
◆ 110V 220V

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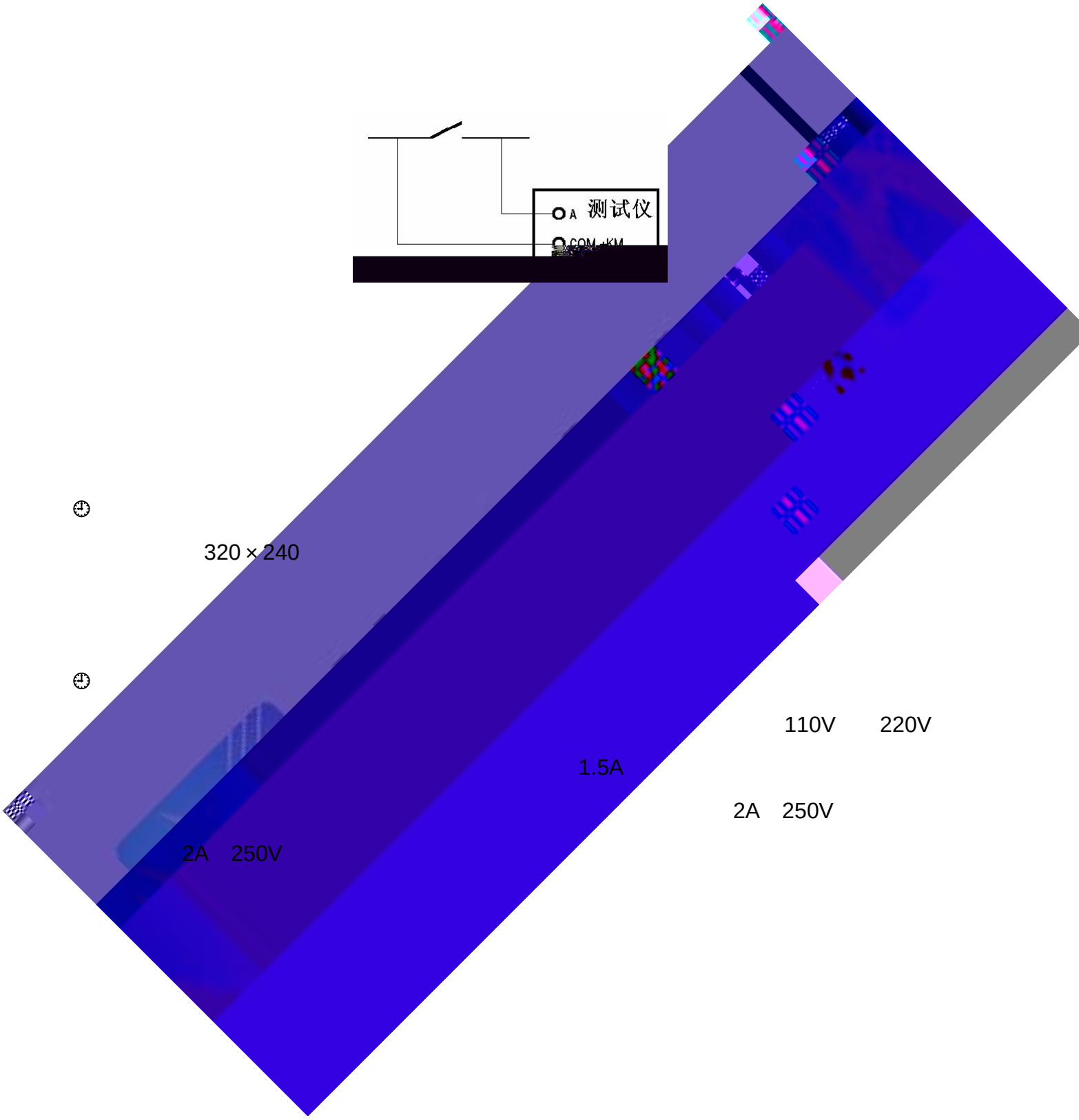




10A

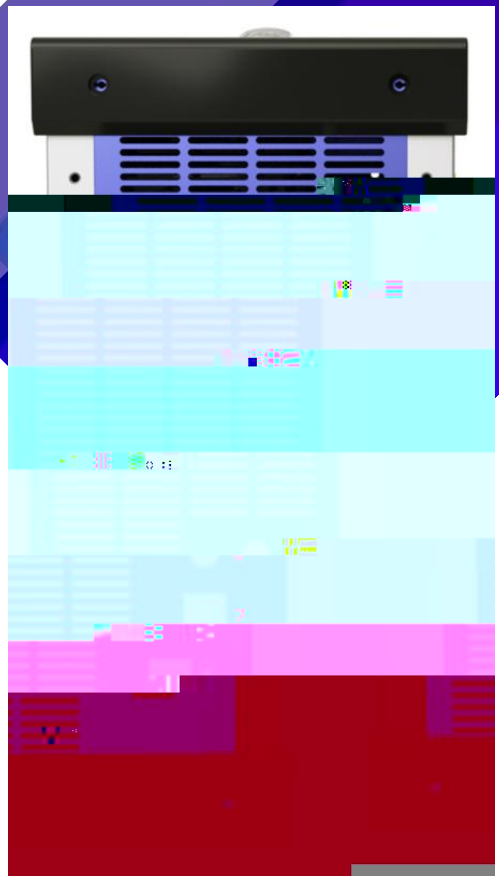
225

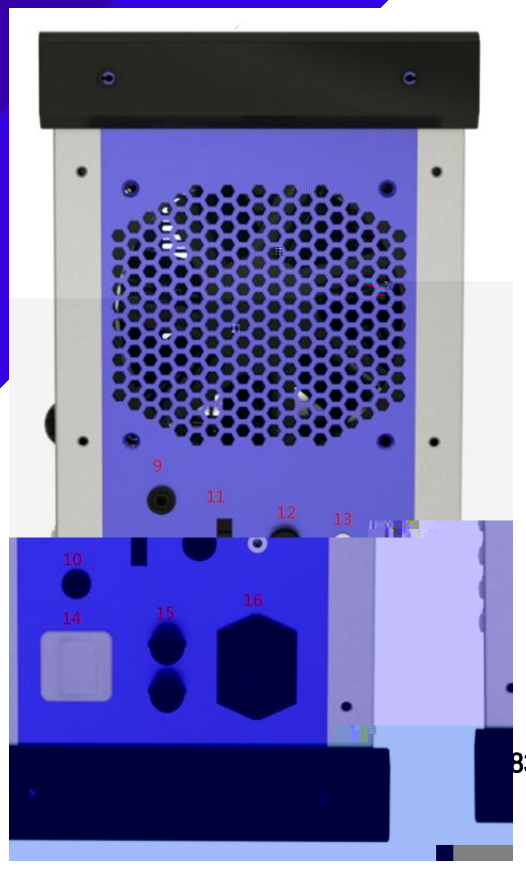
027-83267669


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

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GPS

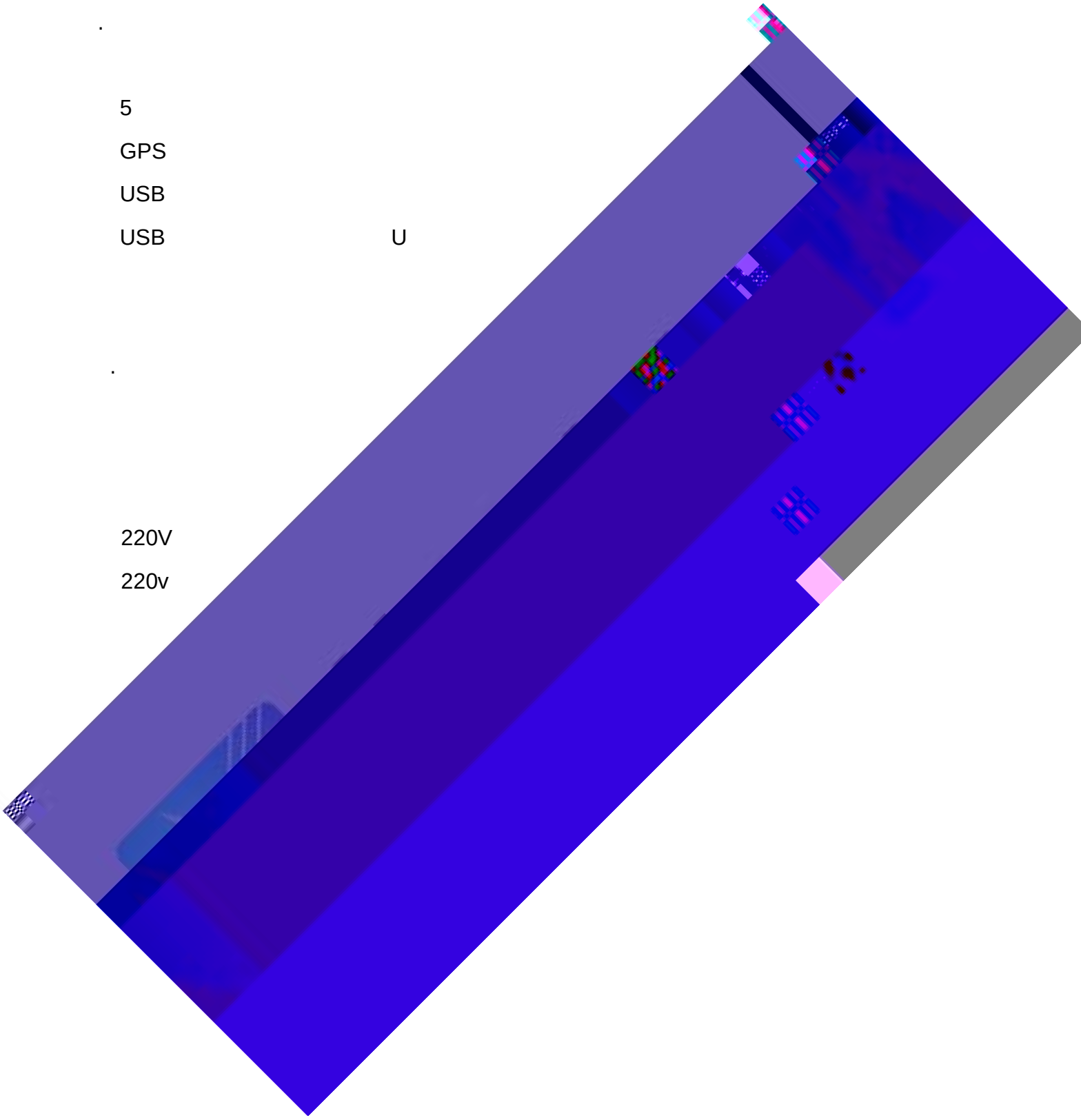
USB

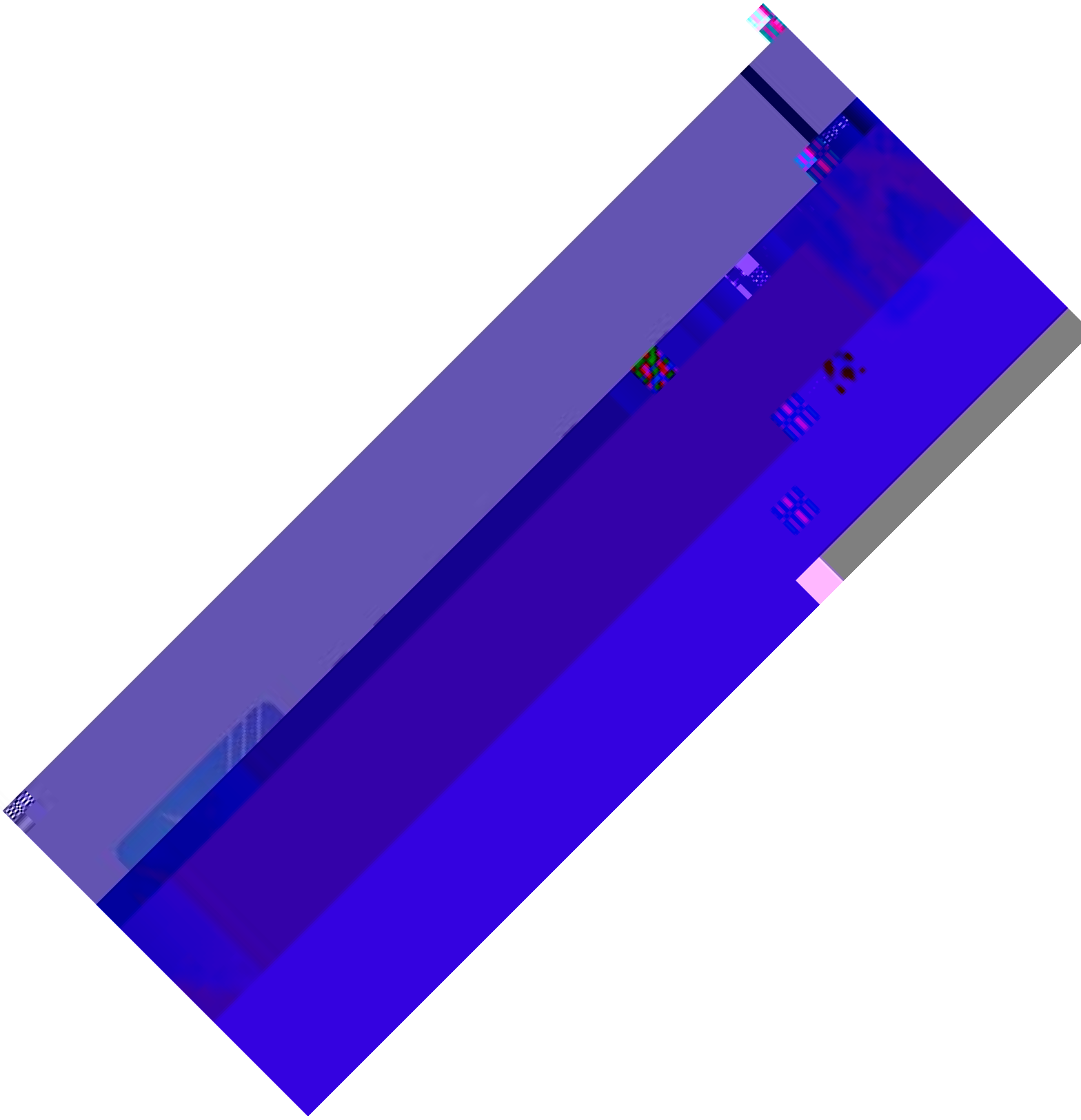
USB U

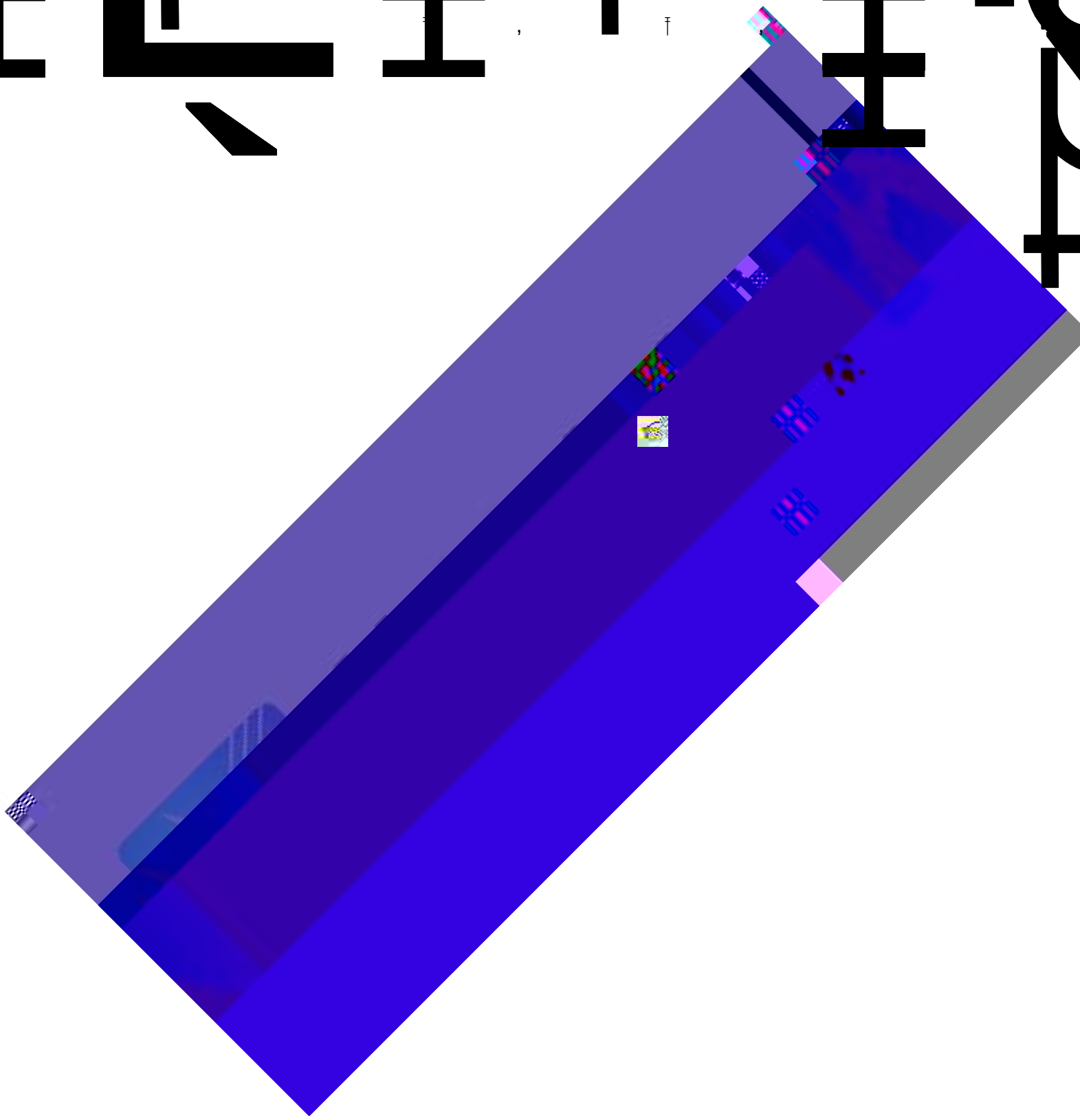
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220V

220v







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Ua　　Ub

Uab

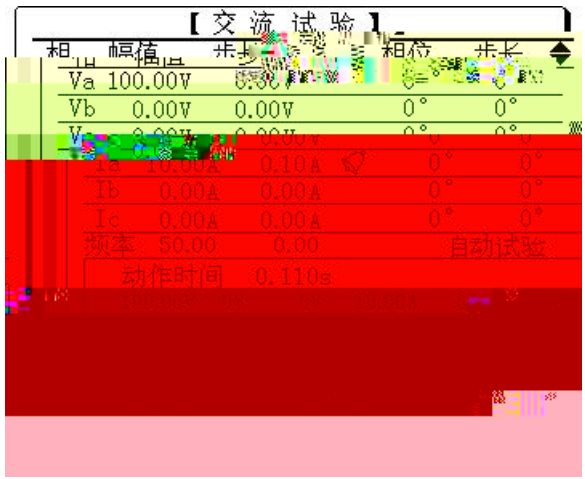
IA　IN

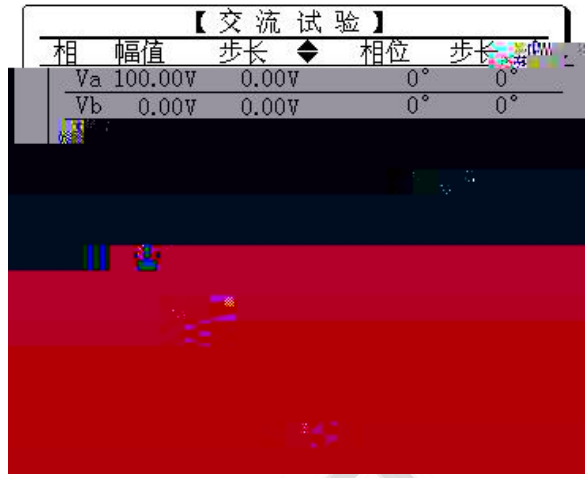
A　COM　A　　8A

0.1A

赫兹电力 HERTZ POWER

1


【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°
Ia 0.10A 0° 0°
Ib 0.00A 0.00A 0° 0°
Ic 0.00A 0.00A 0° 0°
频率 50.00 0.00 自动试验
动作时间 0.110s


【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°

◆



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“ ▲ ” “ ▼ ”

Ua Ub Uc Ia Ib Ic

“ ▲ ” “ ▼ ” “ ” “ ”

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- “ ” “ ”
  “▲” “▼”
  “ ”
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  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

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“ ▼ ”

Ua Uc

“ ▼ ”

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● “ ” “ ”

“▲” “▼”

“ ”

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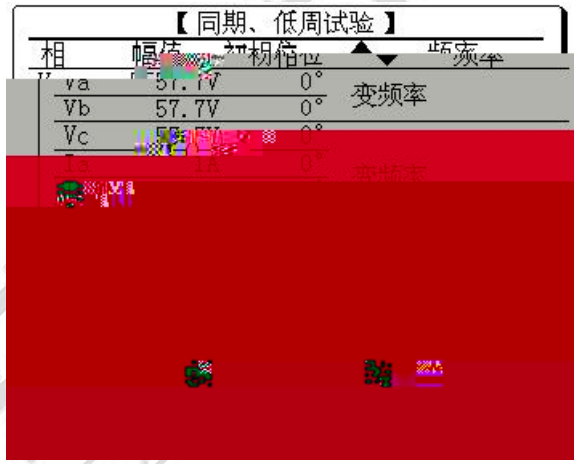
Ua Uc

“ ”

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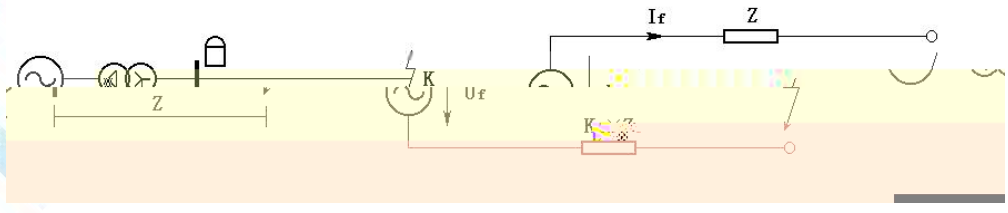
“ ” “ ” “ ” “ ”

f


【同期、低周试验】
相
幅值
初相位
频率
Va 57.7V 0°
Vb 57.7V 0°
Vc
Ia 1A 0°
变频率


【同期、低周试验】
相
幅值
初相位
频率
Va 57.7V 0°
Vb 57.7V 0°
Vc
Ia 1A 0°
变频率

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57.7V 0A “ ” c

“ ”

- A B C R c
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35kv

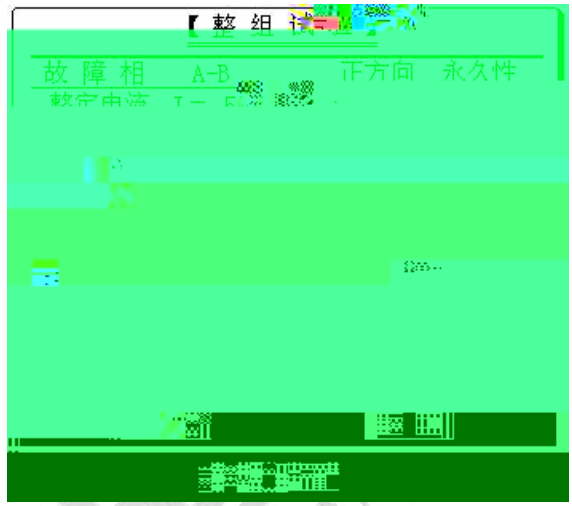
5A 40V

A B C

A C

A R

COM

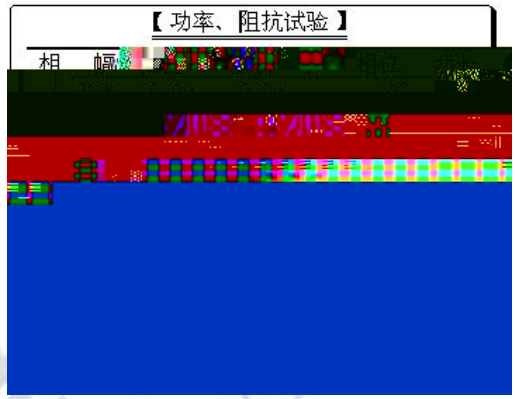


◆

90°

3 57.7V 90°

57.7V



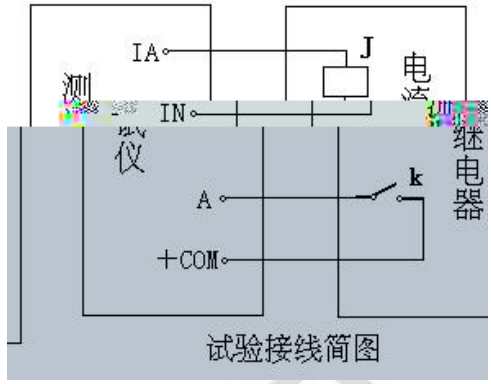
-
- “ ” “ ”
  “▲” “▼”
  “ ”
- ,
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UA UB UC UN

IC IN UAB 100V IC

5A IC 180 °

1 ° 1 °



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Ia Ib Idz

Izd

Idz Izd 6 Idz Izd

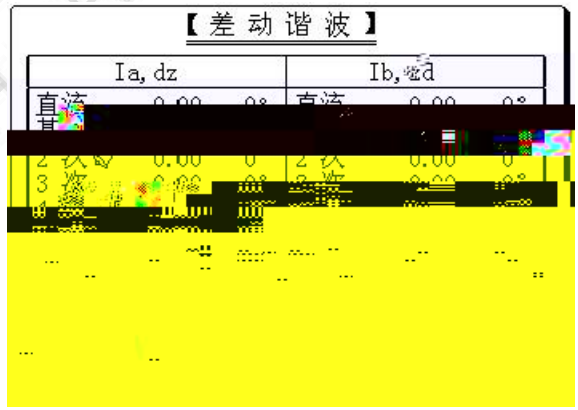
Idz Izd

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“▲” “▼” “ ”

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赫兹电力 HERTZ POWER



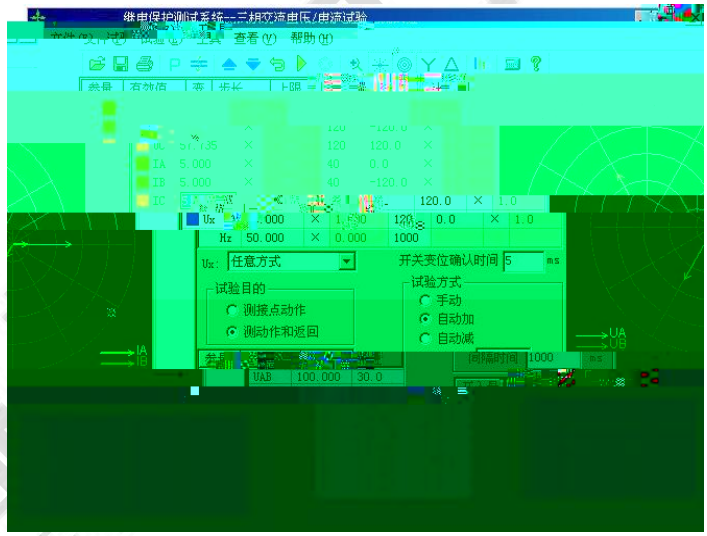
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V A

-180~360°

“ -181° ” “ 179° ”

120V

Ua 120V 0° Ub 120V 180° Uab

240V

40A

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◆ o **Ux**

Ux

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

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赫兹电力
HERTZ POWER

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20ms 5ms

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120Á ñ ò 0Á 120Á 120Á

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90Á ñUAB ICò ñUBC IAò ñUCA IBò 0Á ñUAB IAò ñUBC IBò ñUCA ICò

60 ñ ò

UA UB 0Á U 60V 0Á

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“ “ ”

IC UAB 0Á

45Á 45Á 135Á

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57.735V 0A

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赫兹电力
HERTZ POWER

“ ”

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110V 220V

110V 220V

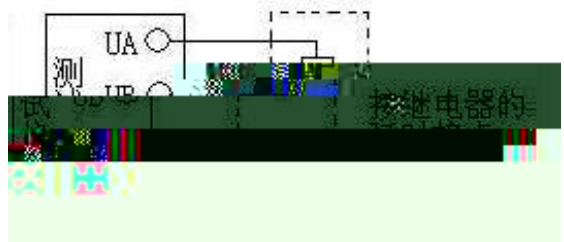
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UA=110V UB= 110V

UA UB

225



220V

“ ”

UA UBd Đ @ c

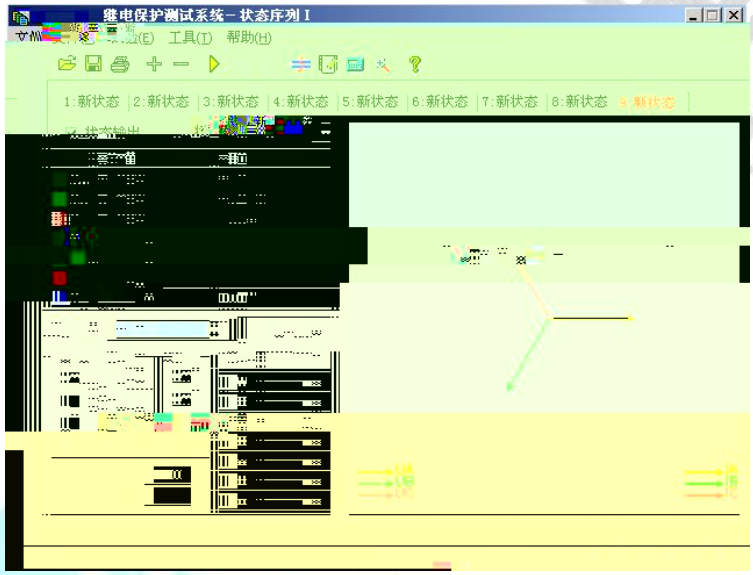
■

“ ” 4 3 “ - ”

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- 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

◆

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“ ” “ ”


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

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ñ ò

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10ms

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A B C R a b c ñ ò

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

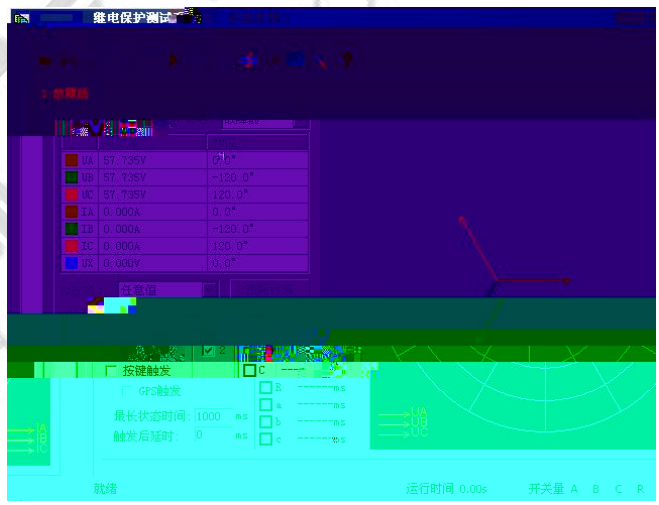
◆

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“ ”

“ ”


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

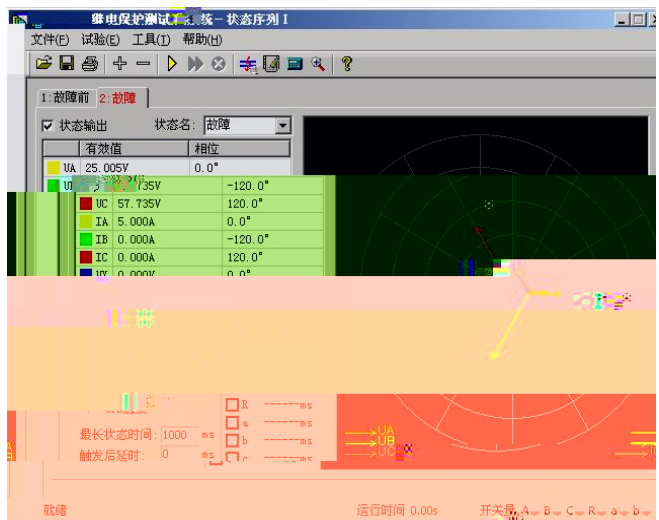
“ ”

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°
最长状态时间: 1000 ms
触发后延时: 0 ms
就绪
运行时间 0.00s

“ ”

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“ ”

“ ” ”

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“ ”

- UA UB UC IA IB IC 2 20
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“ ”

刷新

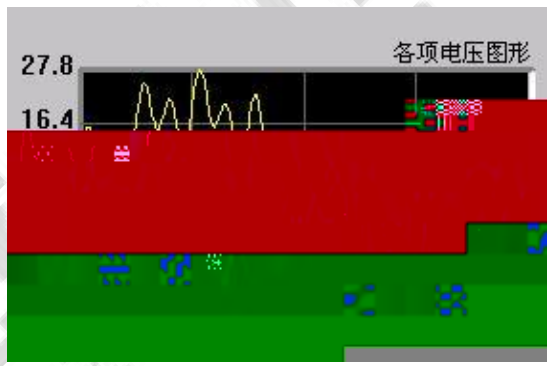
“ ”

清零 2~20

A “ 0° ” B “ 120° ”

C “ 120° ”

3



A

-160~160V

0~120V

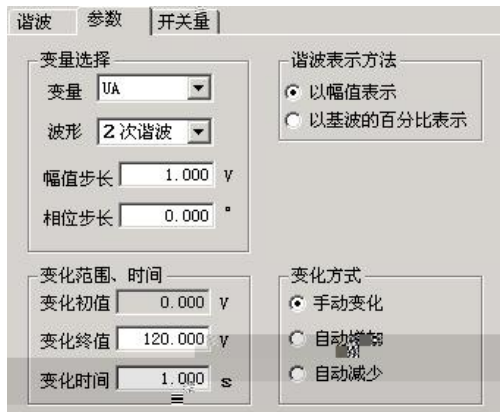
-10~10A 0~40A

120V 40A/30A

120V

40A/30A

◆ O



A

20

“ ”

“ ”

A V “ ”

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“ ” “ ”

“ ” “ ”

“ ” 2

2V 10V “ ” 2 20

◆ O

A B C R a b c

“ √ ”

ᘐ 5ms

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O

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IA

A IB a

IN

IA

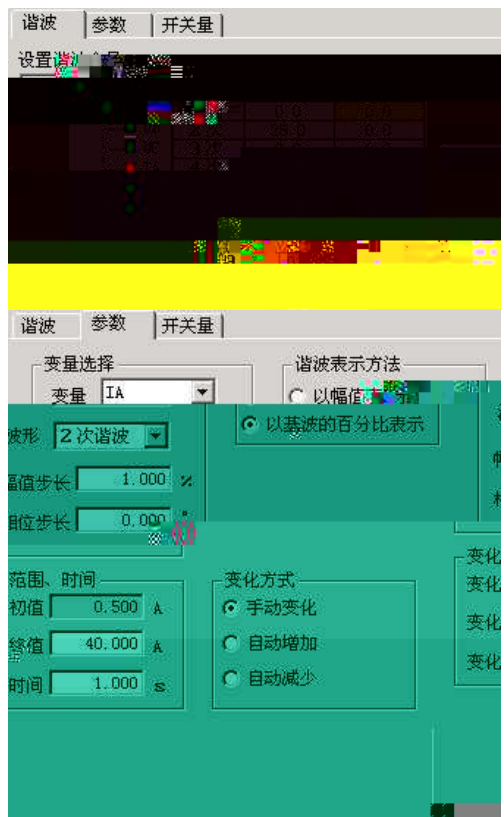
A IN

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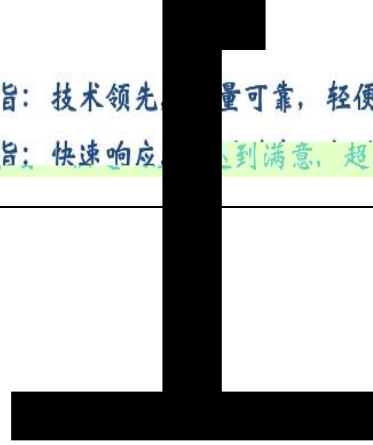
20%

“ ” “ ”

225



“ ” IA



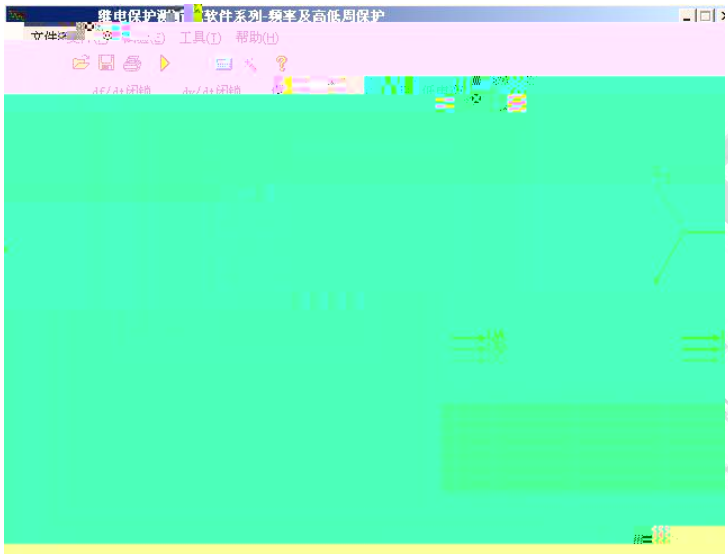
赫兹电力 HERTZ POWER

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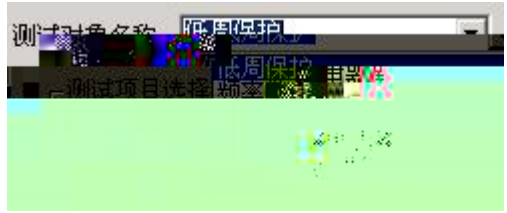


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“ ” “ ” “ df/dt ” “ dv/dt ” “ ” “ ”

“ ” “ ” “ ”



“ ”

赫兹电力 HERTZ POWER

“ ”

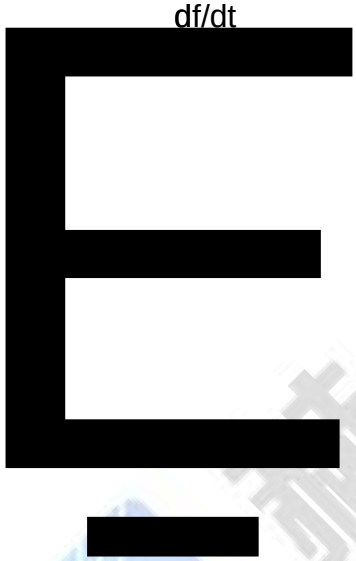
◆ **O df/dt**

“ df/dt ”

df/dt

df/dt

df/dt





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” 0.05Hz

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df/dt

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0.2

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“ Hz ”

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50Hz —— df/dt “

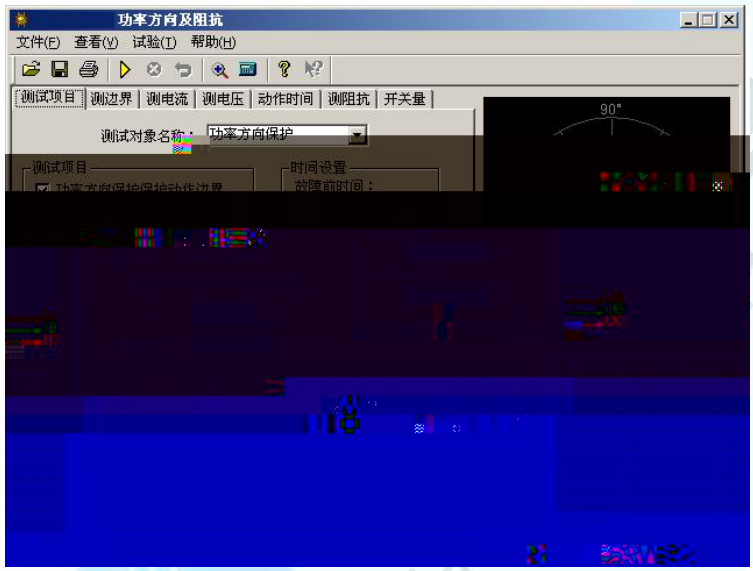
” —— “ ” “ ” 0.2

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- ●


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 “ ”

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“ ”

“ ” “ U0 I0 ” “ U2 I2 ”

“ ”

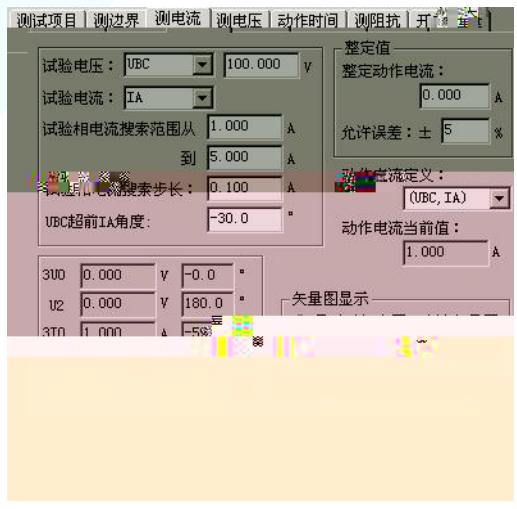
U0 I0 U2 I2

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U2 I2

U2 I2



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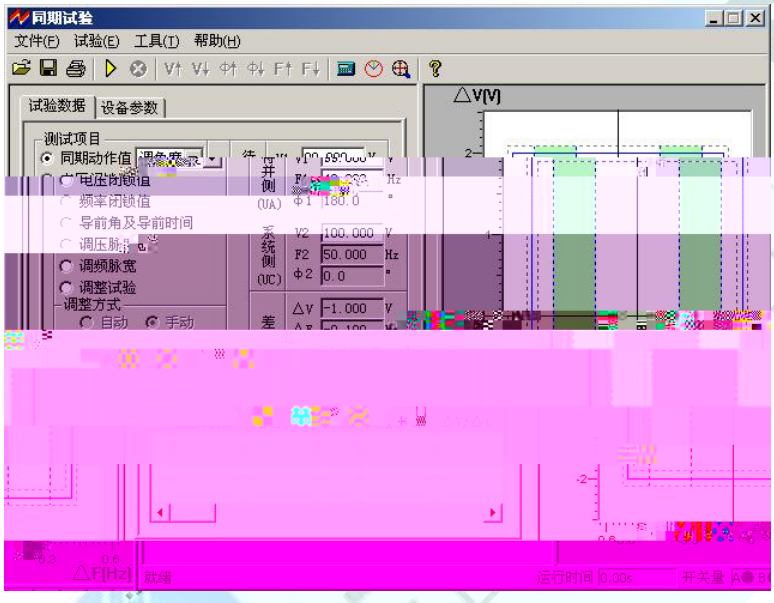
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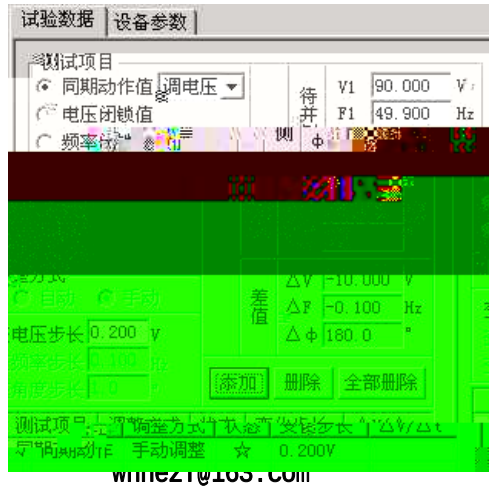
●


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
调压脉宽
调频脉宽
调整试验
调整方式
自动
手动
△V(V)
△F[Hz]
就绪
运行时间 0.00s
开关量

◆

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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
频率闭锁值
待并侧
V1 90.000 V
F1 49.900 Hz
差值
△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
手动调整
0.200V

“ ” “ ” “ ”

“

”

“ ” V1 90V F1 Φ1

49.9Hz 50Hz

0° “ ” “ ”

▲ ▼

“ ” “ ”

“ ”

▲

$$\phi = t / Tw \cdot 360^{o} \qquad Tw = 1 / |f1-f2|$$

ϕ

t

f1

f2


赫兹电力
HERTZ POWER

Y/

5ms

20

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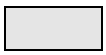
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U1 UA U2 UC UN UN

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“ ” “ ” “ ” “ ” 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

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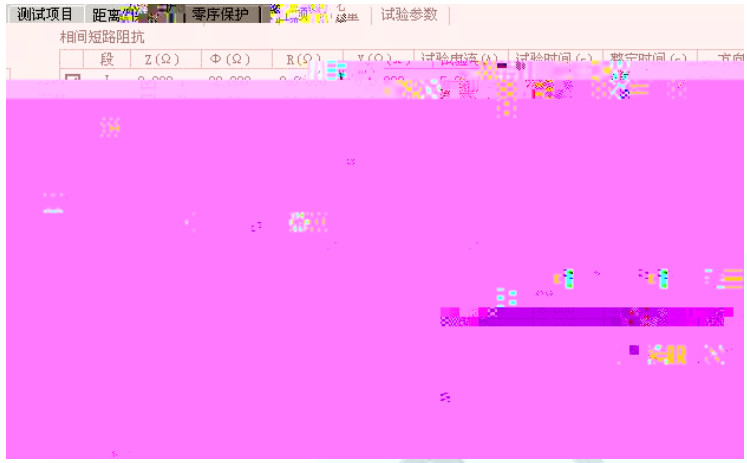
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“ ”“ ”“ ”

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KL Kr/Kx Z0/Z1 “ ”



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“ ”

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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

ᘐ

0.8 0.95 1.05 1.2



“ ”

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“ ”

AC BC

C C

A B C A

“

” 0.2s

1. **XX1 XX4 XD1 XD4**

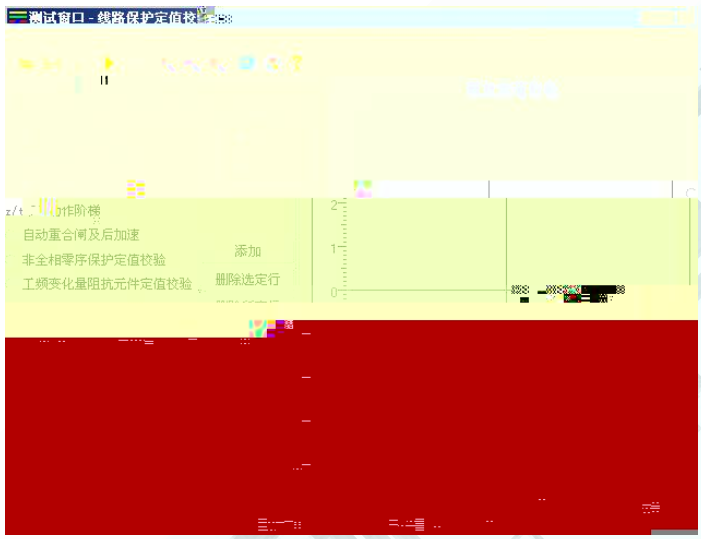
X R 0

■

z/t

●

●


测试窗口 - 线路保护定值校验
z/t
动作阶梯
自动重合闸及后加速
非全相零序保护定值校验
工频变化量阻抗元件定值校验
添加
删除选定行

◆

◆ o

“ ”

“ ”

“ ”

“ ”

“ R-X ” “ Z-T ”

◆ o

“ ” “ KL ” “ Kr Kx ” “ Z0/Z1 ”

“

” “ ” “ ”

“ c ” “ GPS ”

57.735V 0A ñ ò

ñ ò

ñ ò

ñ c ò c ñGPS ò ñ

ò

PT CT

PT PT “ ”

PT “

“

”　“　　”

100V

0 °

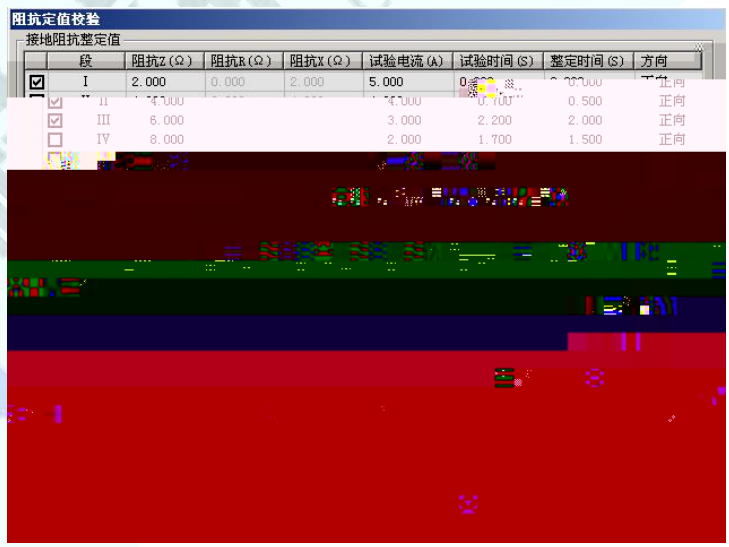
◆ o

“　　”　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

=　×

“　”



“ ” “ ”

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

■

“ ” “

”

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“ ” “Z ” “Z V ”

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“ ”



80%

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“ ”

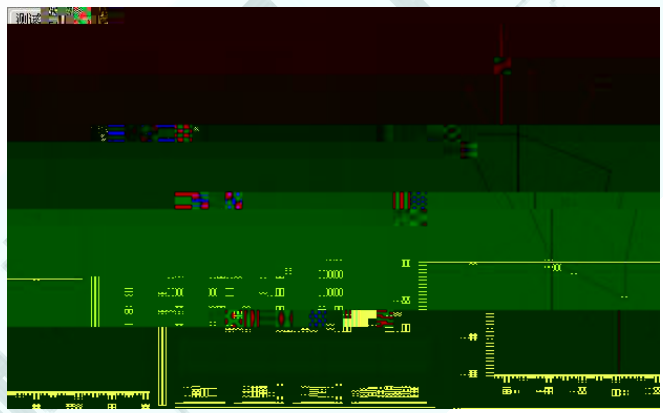
“ ”

“ R-X ” “ Z-Φ ”

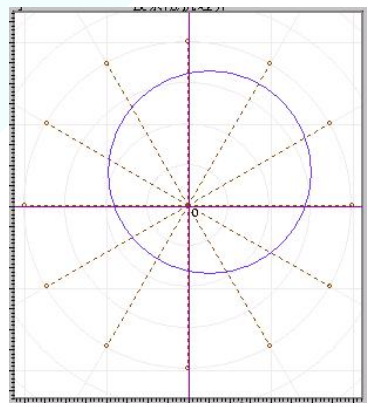
1

R1 X1 0 0

“ ”



R X



“ ”

“ ”

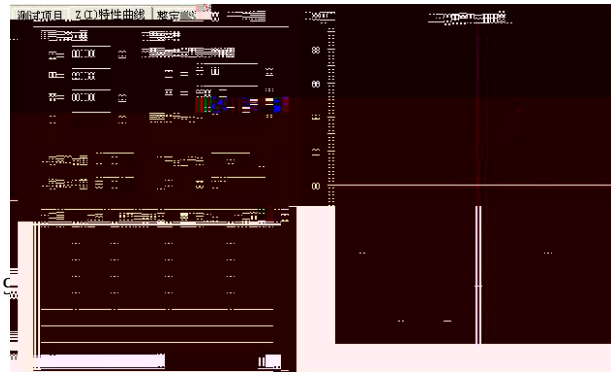
“ ” “ ” “ ”

“ ”

◆ O

“ ” “Z I

”



“Z I ”

“ ”

“ ” 0

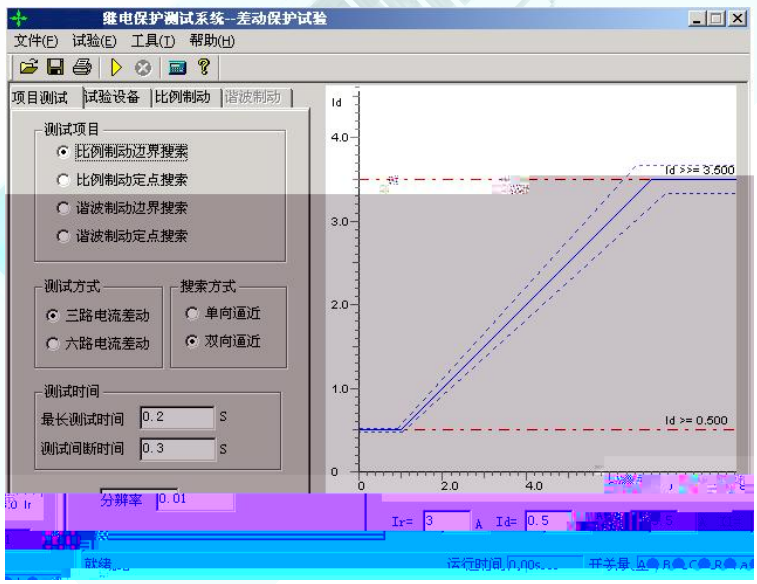
“Z V

” “Z I

■

“ ”

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-
- 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
Id >= 3.500
Id >= 0.500
Ir= 3 A Id= 0.5
就绪

◆

◆ o

“ ” “ ” “ ” “

” “ ” “

“ ”

“ ” “

”

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“ ” 3

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“ ” “ ”

“ ”

“ ” “ ”

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◆ o



Y Y0 -11 -1 Y Y0

“ ” “ ”

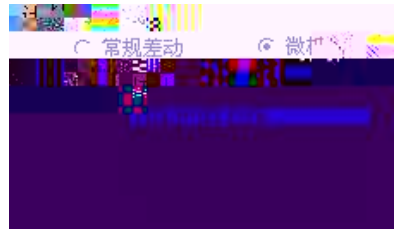
CT

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

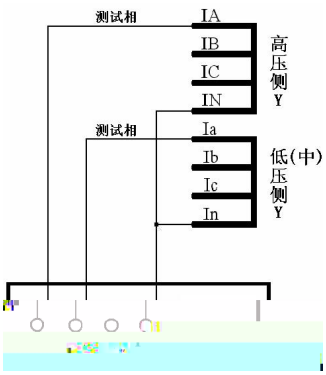


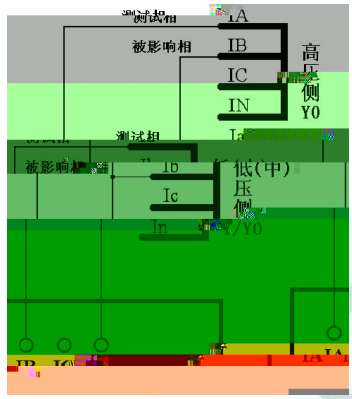
027-83267669
www.whhezi.com
whhezi@163.M N

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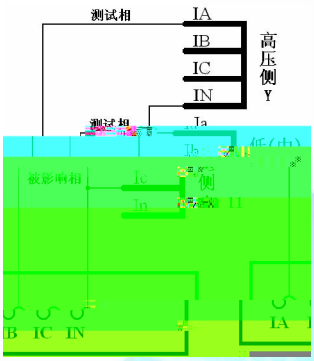
◆ o

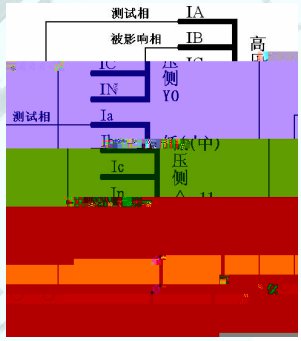
1 Y Y0 / Y Y0





2 Y Y0 / -11





Y , , ,

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

Y0 ,Y



2

3

◆ ○

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**

35KV

● œ ο ъ ص ط



“ ” 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 °

■ **1**

“ ”

RS232 COM1

COM1

COM1

USB RS232

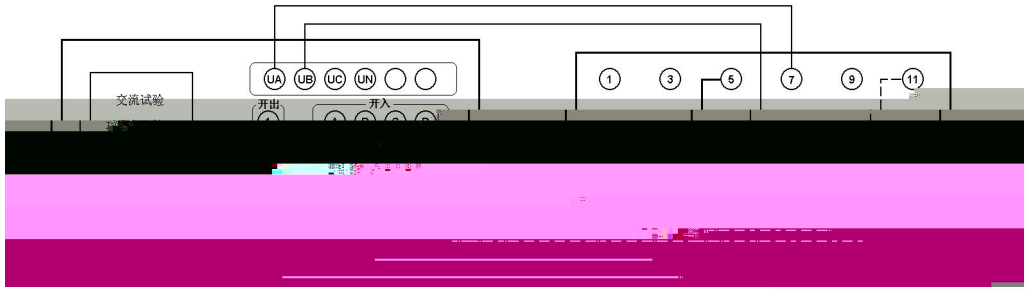
“ USB→ ” Windows 2000

USB

ꕥ “ USB→ ” Ɛ


赫兹电力
HERTZ POWER





Uab Ia

3

Uab

20 Ia

4

Ia 0.5 Uab 100V

◆ 5

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

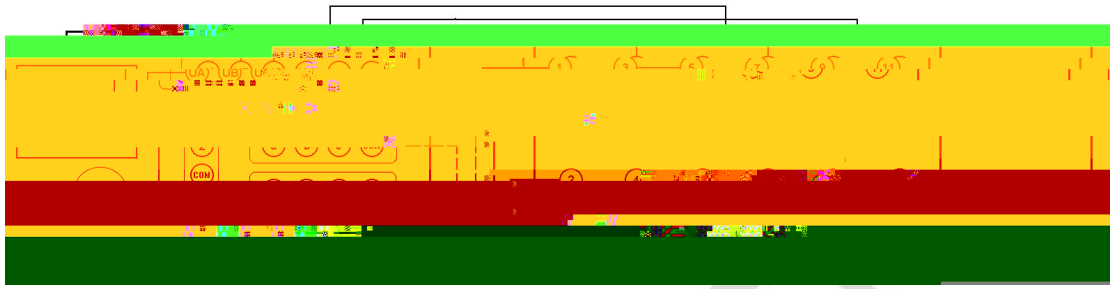
Uab

◆ 6 zi

◆ **8**

1 PC

Ia



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

“ ” “ ” 220V

15 25 Uc 110V

Uc 110 7

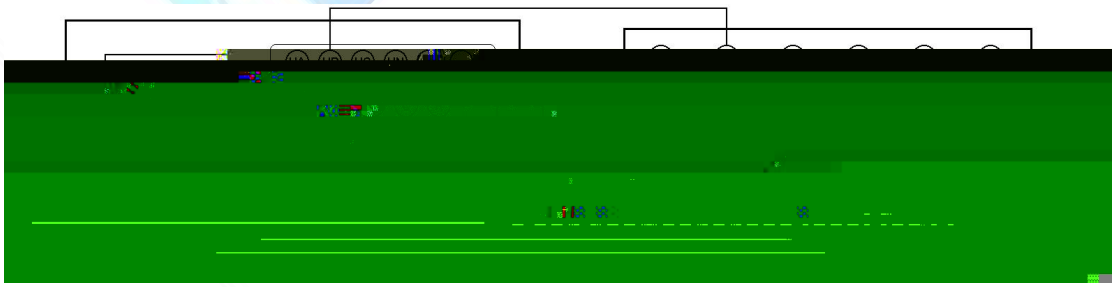
2

IA UAB 220V UA

110V UB 110V “ ” “ ”

220V 15 25 “ ▲ ”

“ ▼ ” 2 UB 2 7 -110V



1

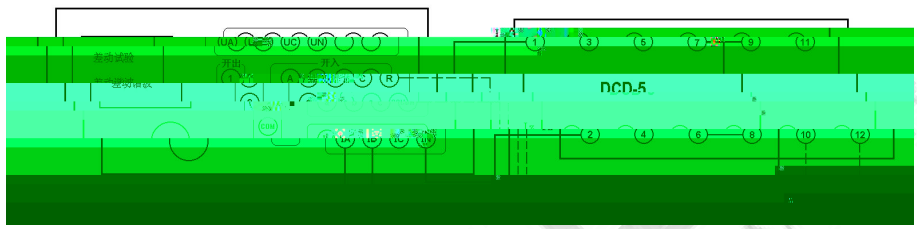
Izd Izd

Idz IDZ È5 f f Ø W

2 µ")½I Þ#•₩H

Izd Izd Idz

IDZ



IDZ

“

”　　“　　”