



# KFA310 Relay Test Set



	KFA310(20A)	KFA310(10A)	KFA300Pro(20A)	KFA300Pro(10A)	KFA300
Voltage&Current	4*300V,3*20A	4*300V,3*10A	4*300V,3*20A	4*300V,4*10A	3*265V,3*10A
Accuracy	<math>\pm 0.02\%rd+0.03\%rg</math>	<math>\pm 0.02\%rd+0.03\%rg</math>	<math>\pm 0.02\%rd+0.03\%rg</math>	<math>\pm 0.02\%rd+0.03\%rg</math>	<math>\pm 0.02\%rd+0.03\%rg</math>
Voltage Power	22.5VA Max	22.5VA Max	22.5VA Max	22.5VA Max	22.5VA Max
Current range	0-20A,LN 0-40A,LL-N 0-45A,LLL-N	0-10A,LN 0-20A,LL-N 0-30A,LLL-N	0-20A,LN 0-40A,LL-N 0-45A,LLL-N	0-10A,LN 0-20A,LL-N 0-20A,LLL-N	0-10A,LN 0-20A,LL-N 0-20A,LLL-N
Current Power	130VA Max	75VA Max	130VA Max	75VA Max	22.5VA Max
Phase	0°~360°	0°~360°	0°~360°	0°~360°	0°~360°
Frequency	10-1000Hz	10-1000Hz	10-1000Hz	10-1000Hz	10-1000Hz
Harmonic	2~60th	2~60th	2~60th	2~60th	2~9th
GPS,IRIG-B	Support	Support	No	No	No
Binary IN/OUT	4 Binary IN/OUT	4 Binary IN/OUT	2 Binary IN/OUT	2 Binary IN/OUT	2 Binary IN/OUT
USB Port	1*USB3.0	1*USB3.0	1*USB2.0	1*USB2.0	1*USB2.0
WIFI, Blue Tooth	Support	Support	No	No	No
Low-Level Output	Support	Support	No	No	No
Energy Meter	Support	Support	No	No	No

## Total Function

## Special Points

B5 paper size, **built-in battery design**, for on-site maintenance and testing of **non-electric environment**, protection relay testing, secondary circuit inspect and secondary voltage and current testing.

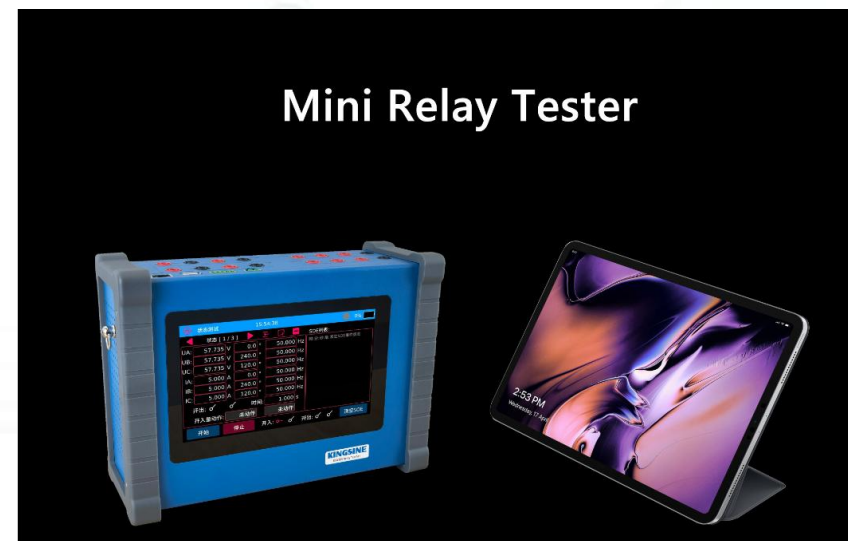
12.2-inch panel  
7.5-inch touch screen



KFA300 Relay Test Set As Mini As iPad Pro

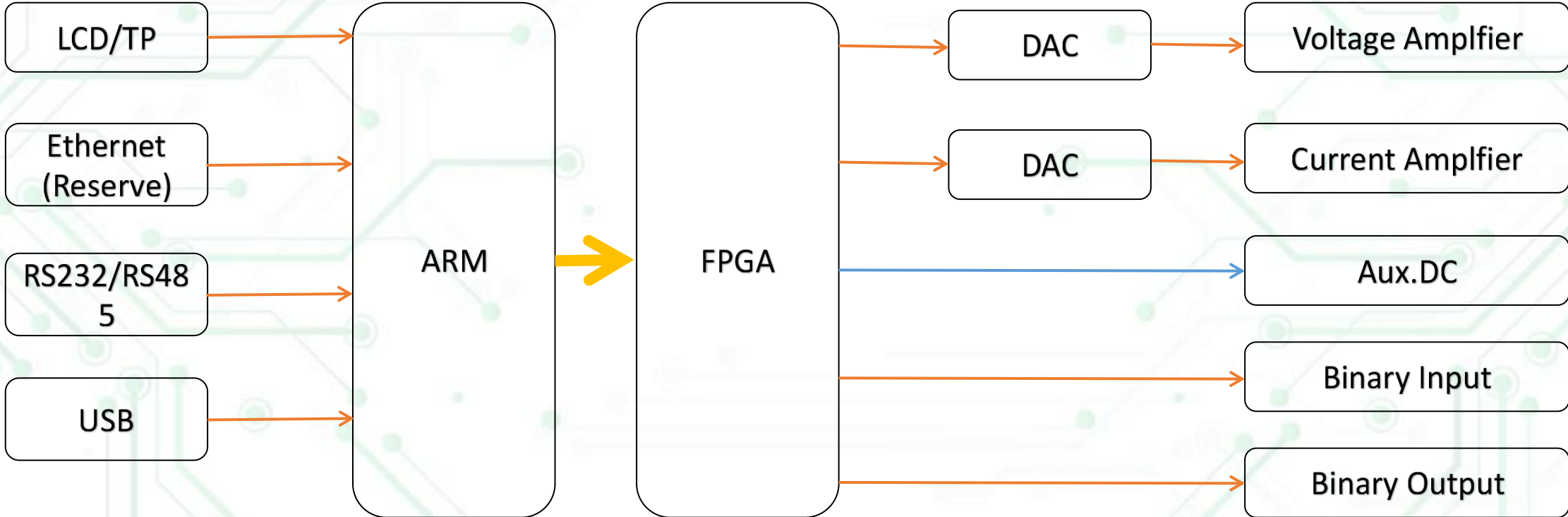
## Technical Benifit

- Device Size: IPAD size, aluminum alloy case,Very small and light.
- Device Weight: 3.5kg ,Beautiful and light, easy to carry and use。
- Operational performance:high-performance FPGA,32-bit ARM microprocessor 1000MHz, smooth operation, 7.0-inch LED capacitive touch screen, full touch operation, mobile phone operation habits, display light transmission, non-reflective contrast, clear display for outdoor
- Equipment self-protection function: voltage output short-circuit, current output open-circuit, temperature overheat protection.



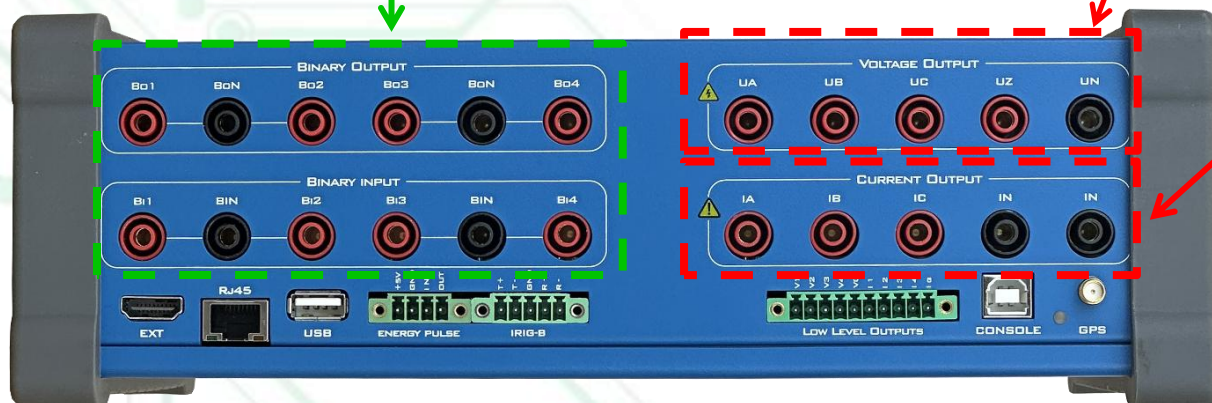


Hardware design Diagram



Binary Input	
Quantity	4pairs
Voltage range	dry contact, input voltage DC 0~300V
Fast Binary Output	
Quantity	4pairs
Circuit Breaker Simulate	Can be define as Open or Close status
Contact performance	Open the dry contact output using opto-coupler relay, the on-resistance is $\leq 50\Omega$ , and the shut-off withstand voltage is $\geq DC300V$

Voltage Outputs		
Output Range & Power	4x300 V ac (L-N)	22.5 VA max each@300V
		21 VA max each@200V
		12.5 VA max each@100V
		7 VA max each@63.5V
		6.65 VA max each@57.7V
		1.1 VA max each@10V
Accuracy	<0.015%Rd+0.005%Rg Typ. <0.02%Rd+0.03%Rg Guar.	
Resolution	0.001V	
Distortion	<0.05%Typ. / <0.1% Guar.	
Current Outputs		
Output Range & Power	3x20A ac (L-N)	148 VA max each@45A(LL-L-N)
		25.5 VA max each@20A(L-N)
		24 VA max@8A
		17 VA max each@5A
		3.88Vmax each@1A
Accuracy	0~0.2A: $\pm 2mA$ 0.2~IMax: $\pm (0.02\%Rd+0.03Rg)$ Guar.	
Resolution	0.001A	

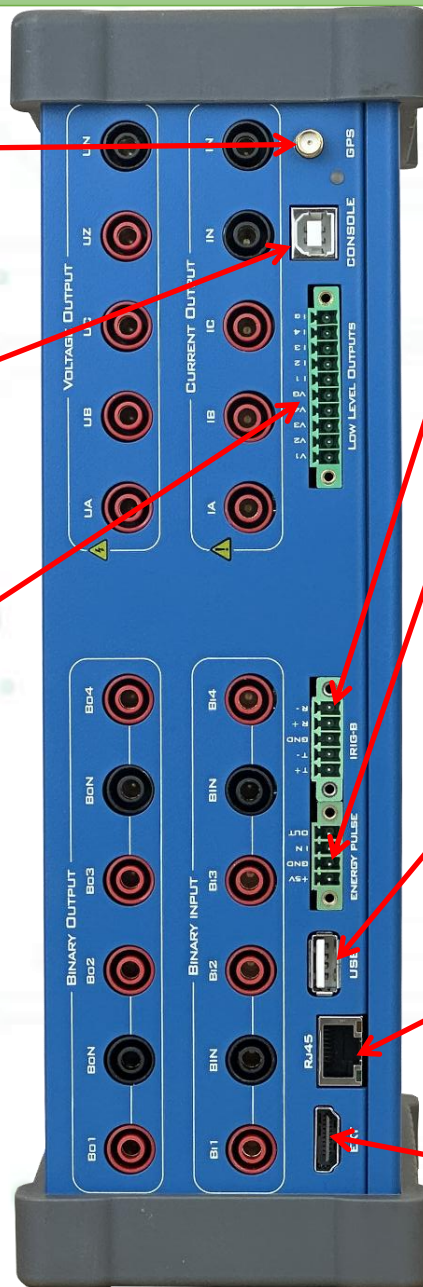


## Hardware Introduce

**GPS Port**  
 Can connect to external antenna, for end-to-end test on line differential or other synchronize testing.  
 When GPS synchronize works, LED beside port will light up.

**USB**  
 USB Port 2.0, use for report upload and software update.

Low level outputs	
Number of outputs	8
Setting range	0~8Vrms
Max. output current	Rating 2mA, 10mA transient max.
Accuracy	(0.01~0.8 Vrms):<0.05% Typ. / <0.1% Guar. (0.8~8 Vrms): <0.02% Typ. / <0.05% Guar.
Resolution	250 $\mu$ V
Distortion (THD+N)	< 0.05% Typ. / <0.1% Guar.
Connection interface	Phoenix terminal



IRIG-B Synchronization Port	
Port define	Use for IRIG-B synchronize, or can be set as time clock source.
Time accuracy	5us

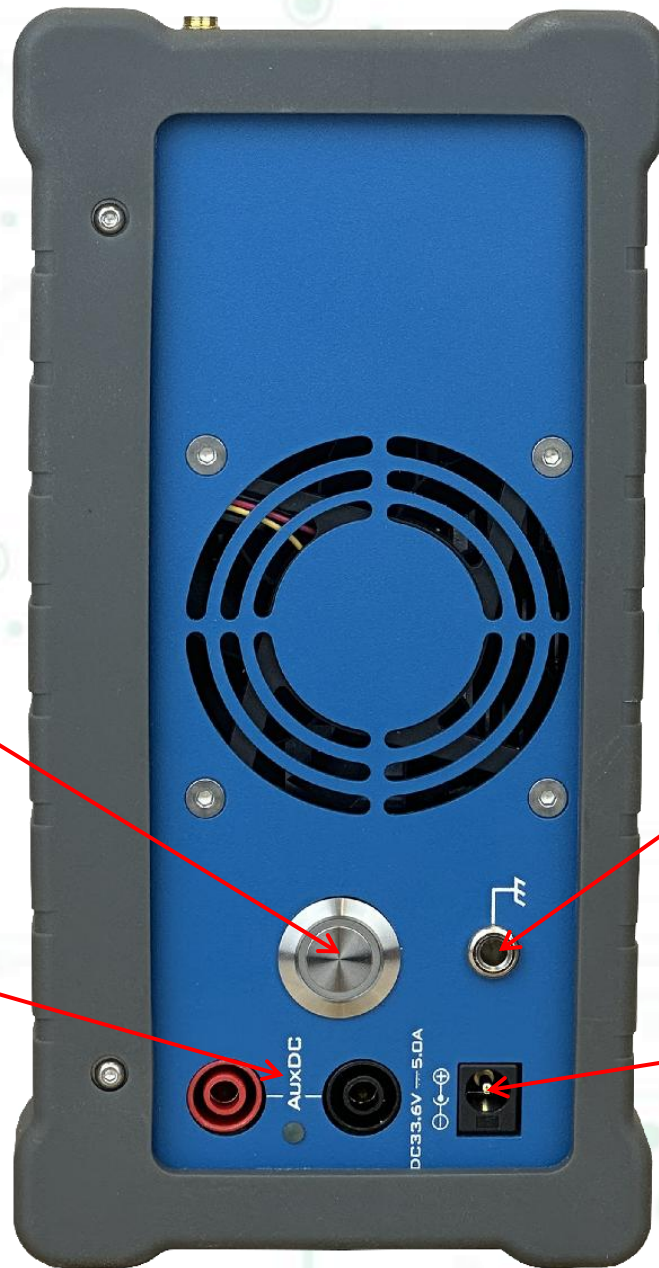
Energy Pulse Port	
Sensor Usage	Mechanical meters / Electronic meters
Sensor Output	High level:>4.5V, Low level:<0.2V
Pulse Input	1 pulse input port, 5Vdc high level valid only.
Pulse Range	500KHz pulse input Max.
Pulse Output	1 Transistor output, Open-collector, 5Vdc/5mA

**USB**  
 USB Port 3.0, use for report upload and software update.

Communication	
RJ45 (Reserve)	Ethernet port, TCP/IP protocol, use for communication with relay and IED device

Ext	
USB-B	Use for hardware function extension, such as Binary input/output numbers, external measurement, LVPT, LPCT testing.





**Power switch**  
Power on or power off device

Aux.DC	
Use for power supply of under test device.	
Output range	12~350V
Output power	40W max
Accuracy	<1%

**Grounding port**  
Use for grounding

AC/DC Charger	
Input	100~240Vac, 50/60Hz, Max2.5A
Output	33.6Vdc, 5.0A (168W)



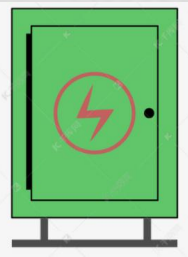


Dimensions(W x D x H):288x185x95 (mm)

3.7Kg



# Extremely light



Distribution test



Oil and Gas  
Platforms



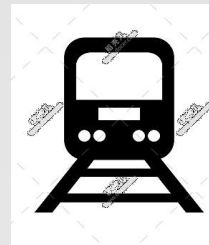
Substations



Industry



Photovoltaic plants



Rail and Metro

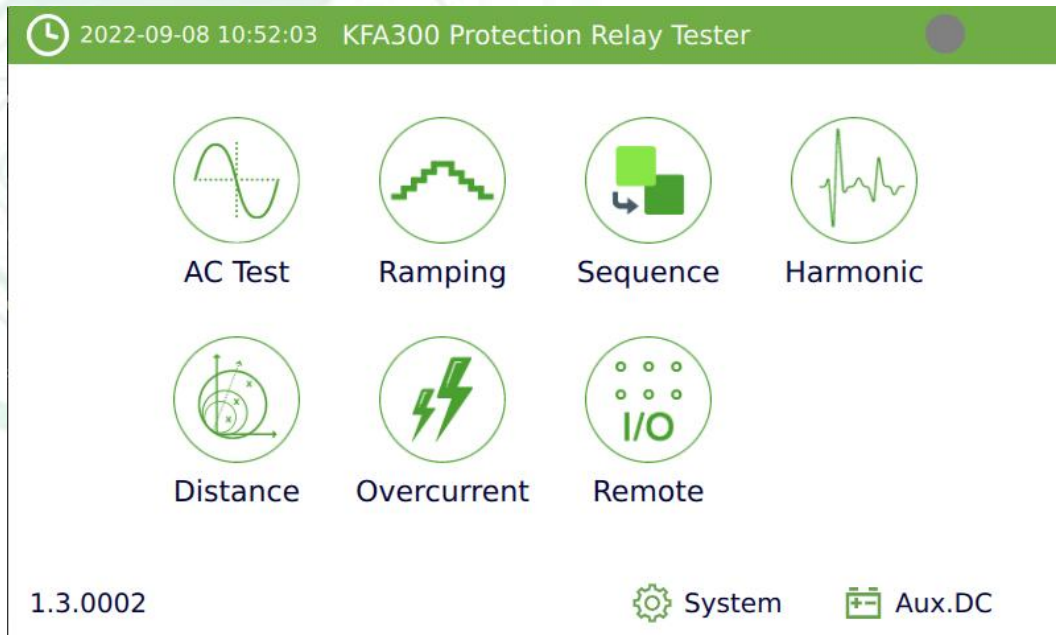


Wind Farm

We KFA310 Support two sets of software which can switch by user, in different testing environment of substation and distribution.

### Substation Test Software interface

### Distribution Test Software interface





Substation Test Software interface

AC test module interface

🏠 2022-09-08 10:52:34
AC Test

UA:	<input type="text" value="57.735"/> V	<input type="text" value="0.000"/> °	<input type="text" value="50.000"/> Hz
UB:	<input type="text" value="57.735"/> V	<input type="text" value="240.000"/> °	<input type="text" value="50.000"/> Hz
UC:	<input type="text" value="57.735"/> V	<input type="text" value="120.000"/> °	<input type="text" value="50.000"/> Hz
IA:	<input type="text" value="1.000"/> A	<input type="text" value="0.000"/> °	<input type="text" value="50.000"/> Hz
IB:	<input type="text" value="1.000"/> A	<input type="text" value="240.000"/> °	<input type="text" value="50.000"/> Hz
IC:	<input type="text" value="1.000"/> A	<input type="text" value="120.000"/> °	<input type="text" value="50.000"/> Hz

**Trip Value**

**Trip Time**

**Return.Coeff**

**Parameter Setting**

Start:  V

End:  V

Step:  V

Auto  s

Variable:  ▼

TestItem:  ▼

Mode:  ▼

DI:1  2 
DO:1  2

**Fault-Calc**

Fault Parameter		Short-Circuit Impedance	
Mode	<input type="text" value="Const I"/> ▼	Fault-I	<input type="text" value="1.000"/> A
F-Type	<input type="text" value="A-N"/> ▼	Load-I	<input type="text" value="0.000"/> A
CT Dir.	<input type="text" value="Line"/> ▼	Load-θ	<input type="text" value="0.000"/> °
PT Dir.	<input type="text" value="Line"/> ▼		
Fault Dir.	<input type="text" value="Forward"/> ▼		

Z	<input type="text" value="0.000"/> Ω	R	<input type="text" value="0.000"/> Ω
θ	<input type="text" value="75.000"/> °	X	<input type="text" value="0.000"/> Ω

Grounding Factor	
Mode	<input type="text" value="KL"/> ▼
KL Range	<input type="text" value="0.670"/>
KL Angle	<input type="text" value="0.000"/> °

**Substation Test Software interface**

**Distance module interface**

2022-09-08 10:57:14 Distance

Parameter	Setting		
Z	0.000 Ω	R	0.000 Ω
θ	75.000 °	X	0.000 Ω
Fault	A-N		
Fault Dir.	Forward	Time	1.000 s

UA	0.000V	0.000°
UB	57.735V	240.000°
UC	57.735V	120.000°
IA	1.000A	0.000°
IB	0.000A	0.000°
IC	0.000A	0.000°

Impedance Factor

0.70
  0.95
  1.05
  1.20

Test Result

Fault	Fault Dir.	Z	Zθ	T.nom	Dev	Trip Time	DI	Result

DI:1 2 DO:1 2

2022-09-08 10:57:29 Distance

Parameter	Setting		
Mode	Const I	Fault-I	1.000 A
CT Dir.	Line	Load-I	0.000 A
PT Dir.	Line	Load-θ	0.000 °
Grounding	KL	KL Range	0.670
		KL Angle	0.000 °
T.Prefault	3.000 s	T.Interval	1.000 s

DI:1 2 DO:1 2

Substation Test Software interface

Ramping module interface

2022-09-08 10:58:05 Ramping

Voltage Current Parameter Setting

UA: 0.000 V 0.000 ° 50.000 Hz  
 UB: 57.735 V 240.000 ° 50.000 Hz  
 UC: 57.735 V 120.000 ° 50.000 Hz

Start: 0.000 V End: 57.735 V  
 Step: 1.000 V Time: 1.000 s  
 Variable: UA TestItem: Amplitude  
 Mode: Phase Function: 50

T.Prefault: 1.000 s  Output Once  
 T.Interval: 0.200 s

Variable	Function	T.nom	Dev	Trip Time	DI	Result

DI:1  2  DO:1  2

Harmonic test module interface

2022-09-08 10:57:43 Harmonic

Order: 1 [1/5] Setting

UA: 57.735 V 0.000 °  
 UB: 57.735 V 240.000 °  
 UC: 57.735 V 120.000 °  
 IA: 1.000 A 0.000 °  
 IB: 1.000 A 240.000 °  
 IC: 1.000 A 120.000 °

Start: 0.000 V End: 57.735 V +  
 Step: 1.000 V  From-to -  
 Auto 1.000 s Order: 1  
 Variable: UA TestItem: Range  
 THD:  Amplitude  Percentage  
 T.nom: 1.000 s Dev: 0.100 s

Variable	T.nom	Dev	Trip Time	DI	Result
UA	1.000s	0.100s			NoTest

DI:1  2  DO:1  2



Substation Test Software interface

Overcurrent module interface

2022-09-08 10:58:25 Overcurrent

Parameter Setting

Time Overcurrent(50)	Inst. Overcurrent(51)	Test Point
Pick-up: 1.000 A	Pick-up: 1.000 A	I-test: 0.000 A
Time Dial: 1.000 s	Time Dial: 1.000	Function: 50
	Curve: IEC-NI	FaultType: A-N

Test Result Delete Clear

FaultType	ABS	Function	T.nom	T.min	T.max	Trip Time	DI	Result

Start DI:1 2 DO:1 2 Report

2022-09-08 10:58:49 Overcurrent

Parameter Setting

Current Tol: 5.000 %	<input checked="" type="checkbox"/> T.Prefault: 0.500 s	<input checked="" type="checkbox"/> OC Directional
Time Tol: 5.000 %	<input type="checkbox"/> Output Once	V.Fault L-N: 30.000 V
Max Fault Time: 200.000 s	<input checked="" type="checkbox"/> T.Interval: 0.200 s	Current Angle: -60.000 °

Test Result Delete Clear

FaultType	ABS	Function	T.nom	T.min	T.max	Trip Time	DI	Result

Start DI:1 2 DO:1 2 Report

**Substation Test Software interface**

**Overcurrent module interface**

2022-09-08 10:59:15 Overcurrent

Parameter Setting

Time Overcurrent(50) Inst. Overcurrent(51) Test Point

Pick-up: 1.000 0.000 A

Time Dial: 1.000 50 Add

A-N Multi

Delete Clear

FaultType	ABS	Time	DI	Result

Test Result

Start DI:1 2 DO:1 2 Report

**Add Multi-Points**

Begin 0.000 A

End 10.000 s

Step 1.000 A

OK Cancel

Substation Test Software interface

State Sequencer module interface

2022-09-08 10:53:21 Sequence

State [ 1 / 3 ]

	Voltage	Current
UA:	57.735 V	0.000 ° 50.000 Hz
UB:	57.735 V	240.000 ° 50.000 Hz
UC:	57.735 V	120.000 ° 50.000 Hz

Trip: Time  
 Angle: Phase  
 Time: 1.000 s  
 Logic:  And  Or  
 DI:  1  2  
 DO:  1  2

Calc

Test Result Assessment

State	DI 1	DI 2
1	NoTest	NoTest
2	NoTest	NoTest
3	NoTest	NoTest

Start DI:1  2  DO:1  2  Report

2022-09-08 10:53:45 Sequence

State [ 1 / 3 ]

	Voltage	Current
IA:		1.000 A 0.000 ° 50.000 Hz
IB:		1.000 A 240.000 ° 50.000 Hz
IC:		1.000 A 120.000 ° 50.000 Hz

Trip: Time  
 Angle: Phase  
 Time: 1.000 s  
 Logic:  And  Or  
 DI:  1  2  
 DO:  1  2

Calc

Test Result Assessment Add Delete Clear

	Start	Stop	T.nom	Dev	Act Time	Result

Start DI:1  2  DO:1  2  Report



**Substation Test Software interface**

**Remote module interface**

2022-09-08 11:08:43 Remote

Storm Test    Resolution Test

Width:  ms  
Count:   
Enable-DI:  1    2

SOE List:  
HH:mm:ss:ff SOE event info

Start   DI:1 ⚡ 2 ⚡   DO:1 ⚡ 2 ⚡   Clear SOE

2022-09-08 11:09:18 Remote

Storm Test    Resolution Test

DO1 Width:  ms  
DO2 Width:  ms  
Resolution:  ms

SOE List:  
HH:mm:ss:ff SOE event info

Start   DI:1 ⚡ 2 ⚡   DO:1 ⚡ 2 ⚡   Clear SOE

Distribution Test Software interface

MultiTest module interface

2022-09-08 11:12:21 Multi Test

UA:	57.735 V	0.000 °	50.000 Hz
UB:	57.735 V	240.000 °	50.000 Hz
UC:	57.735 V	120.000 °	50.000 Hz
IA:	1.000 A	0.000 °	50.000 Hz
IB:	1.000 A	240.000 °	50.000 Hz
IC:	1.000 A	120.000 °	50.000 Hz

SOE List:  
HH:mm:ss:ff SOE event info

U	100%	+10%	-10%
I	100%	+10%	-10%

Start DI:1  2  DO:1  2  Clear SOE

Fault Test module interface

2022-09-08 11:12:59 Fault Test

Norm(U,F): 57.735 V 50.000 Hz

Load-I: 1.000 A 0.000 °

Fault-U: 30.000 V

Fault-I: 2.000 A 0.000 °

Max Time: 10.000 s

Pre-Fault: 10.000 s

Fault-DO:  1  2

Trip:

SOE List:  
HH:mm:ss:ff SOE event info

Start DI:1  2  DO:1  2  Clear SOE

**Distribution Test Software interface**

**State Sequencer module interface**

2022-09-08 11:12:42 Sequence

State [ 1 / 3 ]

SOE List: HH:mm:ss:ff SOE event info

UA:	57.735 V	0.000 °	50.000 Hz
UB:	57.735 V	240.000 °	50.000 Hz
UC:	57.735 V	120.000 °	50.000 Hz
IA:	1.000 A	0.000 °	50.000 Hz
IB:	1.000 A	240.000 °	50.000 Hz
IC:	1.000 A	120.000 °	50.000 Hz

DO:  1  2 Time: 1.000 s

Trip:

1  2  1  2

2022-09-08 10:53:45 Sequence

State [ 1 / 3 ]

Voltage **Current**

IA:	1.000 A	0.000 °	50.000 Hz
IB:	1.000 A	240.000 °	50.000 Hz
IC:	1.000 A	120.000 °	50.000 Hz

Trip: Time  
 Angle: Phase  
 Time: 1.000 s  
 Logic:  And  Or  
 DI:  1  2  
 DO:  1  2

**Assessment**

Start	Stop	T.nom	Dev	Act Time	Result

1  2  1  2



Distribution Test Software interface

Remote module interface

2022-09-08 11:13:32 Remote

Storm Test  Resolution Test

DO1 Width:  ms

DO2 Width:  ms

Resolution:  ms

SOE List:  
HH:mm:ss:ff SOE event info

Start DI:1  2  DO:1  2  Clear SOE

2022-09-08 11:13:16 Remote

Storm Test  Resolution Test

Width:  ms

Count:

Enable-DI:  1  2

SOE List:  
HH:mm:ss:ff SOE event info

Start DI:1  2  DO:1  2  Clear SOE

## Distribution Test Software interface

## System Setting module interface

2022-09-08 11:00:47 System

Norm.Volt:  V    Norm.Curr:  A  
Norm.Freq:  Hz    Deglitch Time:  s

System Time:

Theme:  Default     Blue  
Lanuage:  Chinese     English     Portuguese

Device Type: KFA    Software Version: 1.3.0002  
Serial Number: 0000    Firmware Version: 0.0.0000

2022-09-08 11:04:39 Hardware

Device Type:     Temp.Off:  °C  
Serial Number:     Temp.On:  °C

Max Voltage:  V    Volt.Range:  V  
Max Current:  A    Curr.Range:  A

Voltage/Current Output Phase:  3     4