

The World's Lightest High-Power Universal Relay Tester



K68i



*The most cost-performance
3-phase relay tester
(Class:0.1)*

KT210



*The lightest
portable CT/PT
Analyzer*

KS833

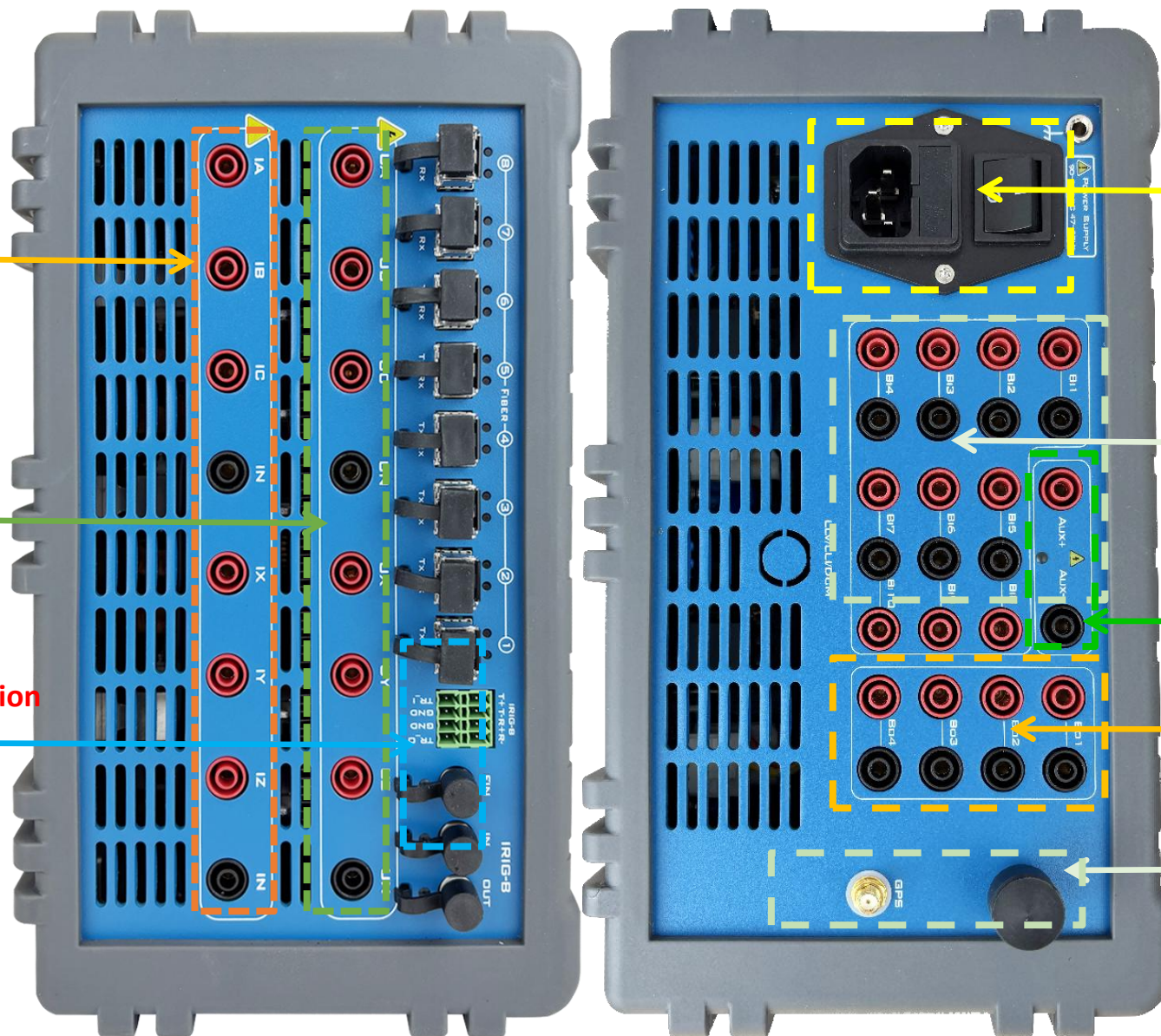


*The most reliable
3-phase electrical calibration
tool for lab use(Class:0.05)*

KFA310



*Ultra-light hand-held
3-phase protection
relay tester*



Current output
6×35A\425VA
3×70A\670VA
1×100A\1000VA

Voltage output
6×310V\105VA
3×620V\175VA

Time Synchronization
IRIG-B Fiber
IRIG-B Electric
External trigger synchronization

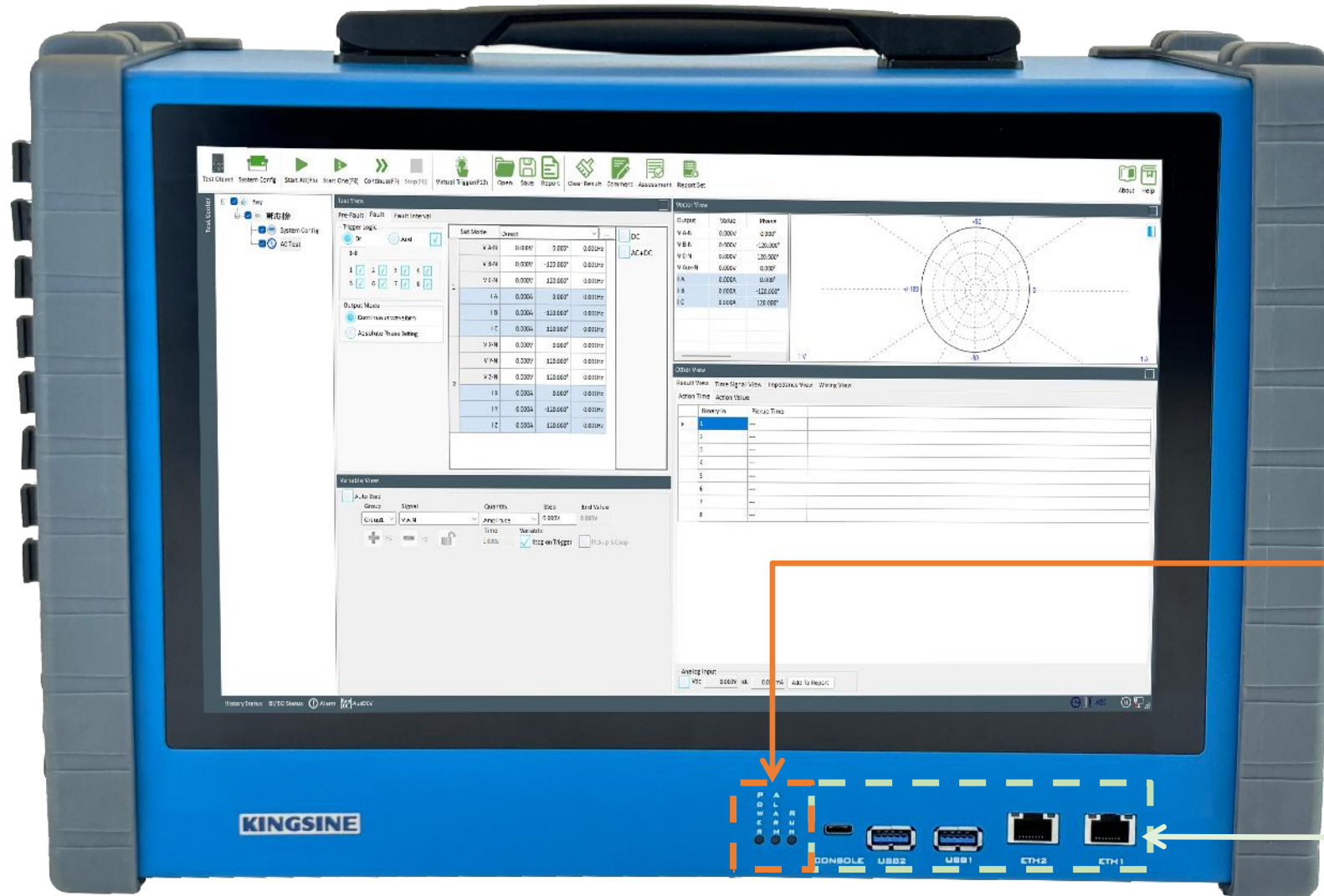
Power Supply & Switch
85V~265V (AC)
127V~350V(DC)

10 Pairs Binary input
0 V~300Vdc Or dry contact
(Binary input turn over potential can be programmable)

Aux.DC Output

4 Pairs Binary Output

GPS Port for End-to-End Test
Wifi antenna port



Equipment status indicator light

Ethernet port for communication
Serial port for debug
2 USB port for report and update



- Super portable test equipment applied in both smart substation and traditional substation all over the world
- Meticulously designed by KINGSINE, a leading Chinese technology company with over 24 years in the market and a leading supplier of test and measurement equipment to the Chinese government;

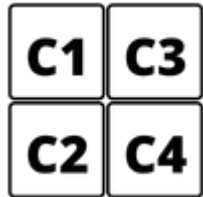
Important information: Compact 6-phase relay test set with high accuracy & full solution (complying IEC61850 sampled value and GOOSE), fully meet all the requirements for detection and debugging of IEC61850 IEDs, Merge Units, station control systems and traditional protection relays

KF86 adopts Multi-Core SOC. avoiding the troublesome communication process caused by using data bus to exchange data

Core 1
Data
Simulation

Core 2
Command
Process

Core 3
Communication
Computer



The KF86P system is highly integrated, allowing it to fully meet the testing and commissioning requirements for:

- Protection relays;
- Measuring and control devices;
- smart terminals;
- Merge units;
- Intelligent substation control systems.



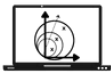
High Precision and Control of Electrical Quantities



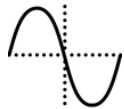
Cutting edge technology



It allows testing Protection Relays (Digital, Electromechanical...), Merge Unit, Meters.....



Complete Software for Test Automation



12 Independent Analog Channels



Variable DC Battery Simulator



10 Pairs Digital Inputs (Dry or "Wet Contact")
4 Pairs Digital Outputs



Free training



Lifetime Technical Support



Tutorials and Video Lessons



3 Year Warranty, extendable to 5 years



Integrated Wi-Fi Module



Time Synchronization Protocol



Integrated GPS/BDS Timing Module

IEC 61850

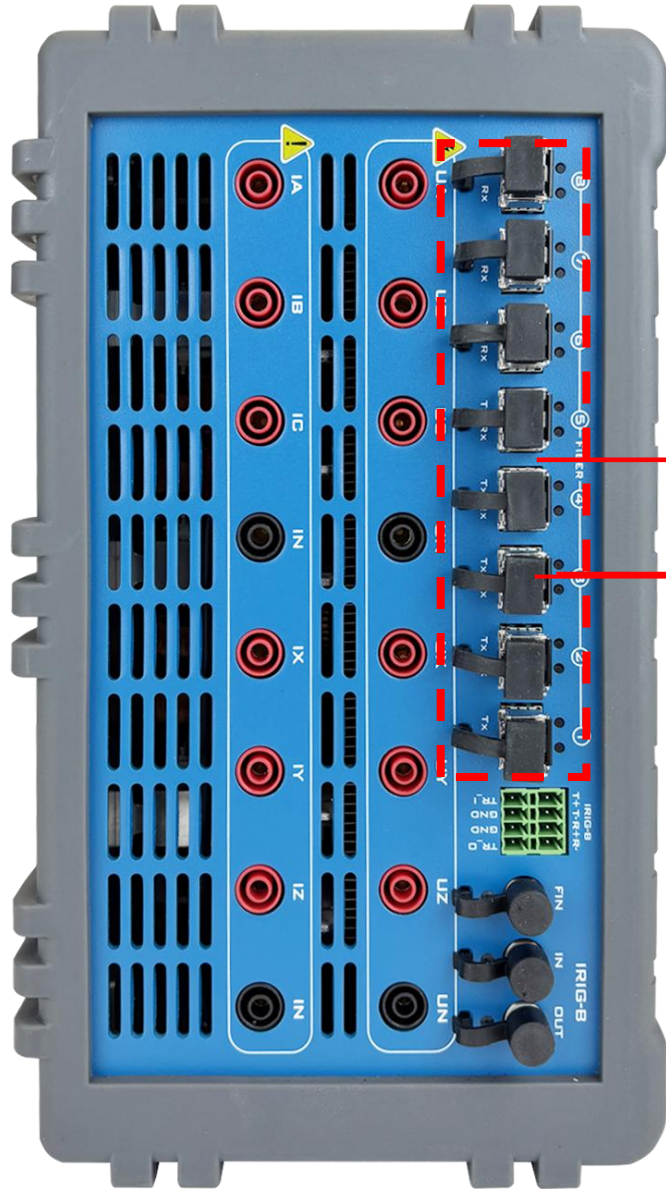
- Automatically import SCL files (SCD, ICD, CID, NPI) to perform automatic setup of sampled values and GOOSE information and save sample values and GOOSE configuration information as a configuration file for testing;
- Support graphical display of SCD files, graphically display IED interconnect relationship and virtual terminal connection.



- Supports subscribing, publishing GOOSE messages;
- Multiple GOOSE control block messages can be subscribed/published;
- Automatically detects optical digital signals from MU, protection device and intelligent operation box, and realizes the function of automatic setting of sampling value and GOOSE information



- Simultaneously inject analog signals and IEC61850 Sampled Value Messages;
- Up to 36 channels freely defined by the user;
- The channel quality of the outgoing SV message can be set and the simulation unit can be simulated and debugged



Fiber port (LC type)	
Type	100Base-FX (100Mbit,Fiber, full duplex)
Port Number	8 Pairs
Cable model	62.5/125μm(Multiple-mode fiber, orange)
Wave length	1310nm
Transmission distance	> 1Km
Status indication	SPD Green (lights): active connection Link\Act Yellow (blinking): data exchange

Apply Two Fiber port type



RJ45 type Ethernet cable



LC type Fiber cable





Simple and Powerful software

Ideal for testing various equipment such as:



Protection Relays

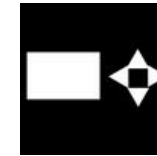
- Digital
- Electromechanical
- Static



Power Meters



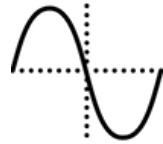
Transducers



And many others



Automation - Test Modules



AC Test



Ramping



StateSequencer



Harmonic



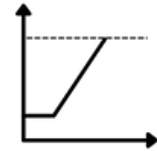
Frequency



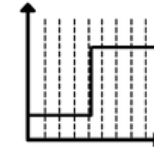
Overcurrent



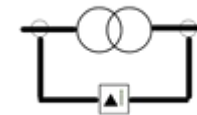
ZeroSequence



Differential



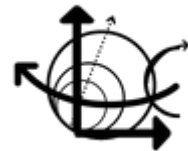
Harmonic
Restraint



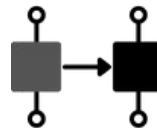
Differential
Configuration



Distance



Power Swing



Reclose



Synchronizer



Test Plan

With just one
“click”
Test various
functions



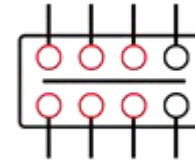
Templates

Create or use
ready-made
templates



Reports

Automatic Reports
Formats: RTF, TXT
customizable



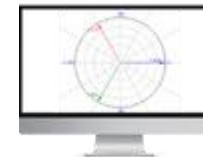
Wiring
diagram

Easily view
connections



Multiple
Languages

English
Portuguese...



Virtual
Instrumentation

real-time
monitoring

“COM” Concept

C = Connect and Configure



- IP definition;
- Connection status..



- Definition of system parameters;
- Digital I/O definition;
- Definition of Goose and Sampled Value channels;
- Identification of analog channels and digital I/O
- Aux channel voltage level selection. DC (if necessary)

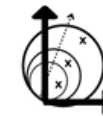


O = Test Object

- Defines the object's nominal and fault conditions
- Characteristics of the protection function to be tested;
- General information of the protected electrical system...

M = Test Module

- Defines characteristics of Faults
- Time delays (Pre-fault time, fault time and post-fault time);
- Trigger Logic for Binary Inputs and Outputs;
- Visual Graphics defining test failures;
- Different views like: Vector View, Report View, Connection View, Time View etc.



Kingsine Electric Automation Co., Ltd. has been specializing in Research & Development, production and sales of Electric Testing & Measurement Instruments since 1999 foundation who is also honored as the High-tech enterprise certification and Software enterprise certificate recognized by China authority. With about high development speed every year, Kingsine win the Chinese top manufacturer for electric test equipment in the domestic relay-tester market.

Research & development:

Kingsine also own the strong technicians and experts and is capable of providing electric power test solution in conformity with customer's specifications, With his creative All-in-One design idea and many patents, Kingsine's product has been well approved and recommended by China National Institute of Metrology and power research institutes of each provincial as well as CE certificate.

Marketing & Service:

Now Kingsine's products are approved by over 90 countries worldwide in many industries of electrical power, metallurgy, petrochemical, railway mining and relative scientific research institution as well as same trade of meter and protective relays factories, and getting the warm welcome from the world large Electricity & Energy Exhibition such as POWER-GEN International of USA, Middle East Electricity of Dubai, HANNOVER MESSE of Germany and FIEE Electrical of Brazil. Its Relay-Tester is suitable working for many world famous relay protection devices such as ABB, SIMENS, ALSTOM, TOSHIBA, SCHNEIDER, AREVA, SEL, GE etc and Kingsine also give the full service with his distribution net from many countries partners of European, Asia and Middle East.

Kingsine Electric Automation Co., Ltd.

Add: 6/F, Block 4-CD, TianAn Cyber Park, Shenzhen 518048, China

Tel: +86 - 755 - 8341 8941 (direct line)

URL: www.kingsine.com

Manufacture:

With ISO 9001:2000 certified and Located the High-tech Zone downtown of Shenzhen neighbor Hong Kong, Kingsine integrates all precision processing and advancing manufacture method around mainly on Protection Relay Test Set, Standard Power, Power Calibrator, RTU-Tester & Multifunctional Power Meter, which ensure his products with 3-year quality warranty on free repair.





Small, lightweight(10kg) all in one box solution, with optional IEC61850 SV, IEC61850 GOOSE, energy meter & transducer calibration modules, fully functions KRT software allow advance state sequence, ramping, overcurrent, distance, differential, power swing, synchronizer modules, etc.

AC current source	
Amplitude & Power	6×35A @ 425VA max each; 3×70A @ 670VA max each;
Accuracy	<0.015%Rd+0.005%Rg Typ. <0.04%Rd+0.01%Rg Guar.
Range	Range I: 3A Range II: 35A Automatic Range
DC Offset	<3mA Typ./ <10mA Guar
Resolution	1mA
Distortion	<0.025%Typ. / <0.07% Guar.
Ascends/Descent response	<100us
DC Current source	
Amplitude & Power	3×20A @ 400W max, 0-60A@600W max
Accuracy	±5mA @ <1A ±0.2% @ ≥1A
Ascends/Descent response	<100us
Power	

AC voltage source	
Amplitude & Power	6×310V @ 105VA max each 3×620V @ 175VA max each
Accuracy	<0.015%Rd+0.005%Rg Typ. <0.04%Rd+0.01%Rg Guar.
Range	Range I: 30V Range II: 310V Automatic Range
DC Offset	<10mV Typ./ <60mV Guar
Resolution	1mV
Distortion	<0.015%Typ. / <0.05% Guar.
Ascends/Descent response	<100us
DC Voltage source	
Amplitude & Power	6×350V @ 100W max 3×700V @ 150W max
Accuracy	±10mV @ <5V ±0.2% @ ≥5V
Ascends/Descent response	<100us
Power	

Frequency & Phase Angle	
Frequency Range	DC ~ 1000Hz, 3000Hz transient
Frequency Accuracy	±0.5ppm
Frequency Resolution	0.001Hz
Phase Range	-360°~360°
Phase Accuracy	<0.02° Typ. / <0.1° Guar. 50/60Hz
Phase Resolution	0.001°
Binary Input	
Electrical isolation	10pairs of electrical isolated each
Input impedance	5 kΩ...13kΩ (Empty contact)
Input feature	0 V~300Vdc Or dry contact, Binary 1-4 threshold can be set. Binary 5-10 isolate every two pairs; Isolation: 1+1+1+1+2+2+2; (Binary input turn over potential can be programmable)
Sampling Rate	10kHz
Time resolution	10us
Time measurement range	infinity
Time accuracy	±1ms @ <1s, ±0.1% @ ≥1s
Debounce time	0~25ms (Software controlled)
Binary Output (Fast eSSR)	
Quantity	4 pairs, Fast speed
Type	Fast speed transistor, programmable software control
AC break capacity	Vmax: 250V (AC) / Imax: 0.5A
DC break capacity	Vmax: 250V (DC) / Imax: 0.5A
Electrical isolation	All pairs isolated
Working Environment	
Operating temperature	-10~+55 °C
Relative humidity	5~95%, Non-condensation
Storage temperature	-20°C ~ +70°C
Atmospheric pressure	80kPa~110 kPa (altitude 2000m or lower)

Time Synchronization	
Satellite synchronization	1 × SMA, Use for GPS antenna interface, Support GPS and Beidou Satellite
Fiber IRIG-B	2 × ST, 1 for transmission, 1 for receiving
Electric IRIG-B	1 × 6Pin 5.08mm phoenix terminal, 1 for transmission, 1 for receiving
External trigger synchronization	1 × 4Pin 5.08mm phoenix terminal, external trigger input + external trigger output IEEE1588 fiber port for synchronize
Communication interface	
Ethernet	2× RJ45, 10/100M
WIFI	Inbuilt WIFI DHCP service
Serial port	1 × RS232
USB	2 × USB2
Weight & Size	
Size	390mm×256mm×140mm
Weight	10kg
Display	13.3 inch LCD, touch screen
Keypad	Number key + direction key
Power supply	
Nominal voltage	220V/110V (AC)
Allowable voltage	85~265 VAC; 127V~350V(DC)
Nominal Frequency	50Hz
Allowable Frequency	47~63Hz
Current	10A@220V, 16A@110V
Connection Type	Standard AC socket 60320
Power Consumption	1200VA max

IEC61850 Fiber & GOOSE Ethernet Ports (Optional)	
Fiber Ports:	8 x 100Base-FX Full Duplex, LC type
	Configurable to 10/100Mbit, Ethernet RJ45 type
Cable model:	62.5/125um (Multiple-mode fiber, orange)
Wave length	1310nm
Transmission distance	>1Km
Status indication:	SPD Green (lights): active connection
	Link/Act Yellow (blinking): data exchange
NOTE:	All hardware ready for activate

Energy Meter Calibration (Optional)	
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
Accuracy:	<0.1% rg Typ. <0.2% rg Guar.

Transducer Calibration (Optional)	
DC Current Input	
Range:	DC: 0~±1mA / 1~±20mA; Auto range
Max. input:	600mA
Input impedance:	15Ω
Accuracy:	<0.05% rg Typ. <0.02% rg Guar.
DC Voltage Input	
Range:	DC 0~±10V dc
Max. input:	±11V dc
Input impedance:	1MΩ
Accuracy:	<0.02% rg Typ. <0.05% rg Guar.

Low Level Signal Output (Optional)	
Output channels	10 channels, (8 voltage, 2 current)
Output range	8x0~8Vrms; 2x0~20mA
Max. output current	Rating 2mA, 10mA transient max.
Accuracy	(0.01~0.8 Vrms/0~2mA): <0.05% Typ. / <0.1% Guar. (0.8~8 Vrms/2~20mA): <0.02% Typ. / <0.05% Guar.
Resolution	250 μV
Harmonic(THD%)	< 0.05% Typ. / <0.1% Guar.
Output port type	Phoenix terminal

Models reference for selection









Models	Configuration
KF86P(4U3I)	(3 x 35A / 1 x 70A, 4 x 310V)
KF86P(4U6I)	(6 x 35A / 3 x 70A, 4 x 310V)
KF86P(6U6I)	(6 x 35A / 3 x 70A, 6 x 310V)











10 Pairs Binary Inputs & 4 Pairs Binary Outputs, DC 0~350V Battery Simulator;
Optional for IEC61850 SV or GOOSE, Low-level outputs, Energy meter calibration, Transducer calibration, Standard meter, modules



Kingsine Electric Automation Co.,Ltd.

Accessories for KINGSINE KF86P/KF85P






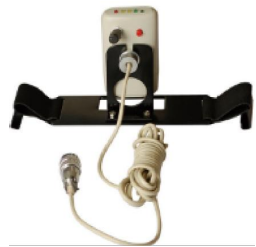

Standard Accessories

No.	Item	Photo (for reference)	Description	Qty.
1	Transport Case		Rugged pelican transport box with wheels and handle. Pack the test kit inside for safety storage or transport.	1 set
2	Testing Wire Pack (details as below)			1 set
2.1	Measurement current cable set		2.5 mm ² cable set, 3 m in length, with 4 mm safety banana plugs on both ends. Includes: red x1, yellow x1, blue x1, black x1	2 set
2.2	Measurement voltage cable set		1.0 mm ² cable set, 3 m in length, with 4 mm safety banana plugs on both ends. Includes: red x1, yellow x1, blue x1, black x1	2 set
2.3	Binary input/output cable set		1.0 mm ² cable set, 3 m in length, with 4 mm safety banana plugs on both ends. Includes: blue x1, black x1	6 set
2.4	Auxiliary power cable set		1.0 mm ² cable set, 3 m in length, with 4 mm safety banana plugs on both ends. Includes: red x1, black x1	1 set
2.5	Short-circuit cable set		2.5 mm ² cables, 0.6 m in length, with 4 mm safety banana plugs on both ends. Includes: red x1, yellow x1, blue x1, black x3	1 set
2.6	Grounding cable		2.5 mm ² cable, 3 m in length, with 4 mm spring-type banana plugs on both ends. Includes: yellow x1	1 set
2.7	Alligator clip 5mm		5 mm, ϕ 4 mm tail socket. Includes: red x5, yellow x4, blue x10, black x 12	1 set

2.8	Alligator clip 10mm		10 mm, ϕ 4 mm tail socket. Includes: red x5, yellow x4, blue x10, black x 12	1 set
2.9	Flat plug 4mm		4 mm plug with ϕ 4 mm socket at the tail end. Includes: red x5, yellow x4, blue x10, black x 12	1 set
2.10	Flat plug 8mm		8 mm plug with ϕ 4 mm socket at the tail end. Includes: red x5, yellow x4, blue x10, black x 12	1 set
2.11	Pin plug 2mm		ϕ 2 mm plug with ϕ 4 mm socket at the tail end. Includes: red x5, yellow x4, blue x10, black x 12	1 set
2.12	Pin plug 4mm		ϕ 4 mm plug with ϕ 4 mm socket at the tail end. Includes: red x5, yellow x4, blue x10, black x 12	1 set
2.13	Spring-type plug 4mm		Spring-type 4 mm plug with rigid insulating sleeve connection. Includes: red x25, black x 17	1 set
3	Phoenix Type Connector		3.50mm 4Pin	2 pc
4	Power Supply Cord		Power Cable for AC socket (Standard base on user's request)	1 pc
5	RJ45 Ethernet Cable		RJ45 Ethernet Cable Length: 2m Type: Cat5	1 pc
6	USB Flash Disk		16GB USB flash disk	1 pc

7	Testing Wire Bag		Black Testing wire bag	1 pc
8	Equipment Stand		Used to hold and support equipment during use	1 pc
9	<p style="text-align: center;">KF86P/KF85P User Manual KRT Software User Manual</p>			2 pc
10	<p style="text-align: center;">Calibration Test Report Issued by KINGSINE's QC Dept</p>			1 pc

Optional Accessories

No.	Item	Photo (for reference)	Description
1	LC-LC Fiber Optical Cable		LC-LC fiber optical cable Length: 3m type:62.5/125um
2	LC-ST Fiber Optical Cable		LC-ST fiber optical cable Length: 3m type:62.5/125um
3	ST-ST Fiber Optical Cable		ST-ST fiber optical cable Length: 3m type:62.5/125um
4	ST-ST Fiber Optical Cable		ST-ST fiber optical cable Length: 10m type:62.5/125um
5	GPS Antenna		GPS antenna SMA male type, 30 meters Need to be purchased separately
6	Photoelectric Conversion Sampler		Accessory for the Energy Meter Testing Function
7	Low-Level Output Adapter		Accessory for the Low-Level Output Function

For
IEC61850
Function