



KINGSINE

Power Alarm Run



KF85P Universal Tester



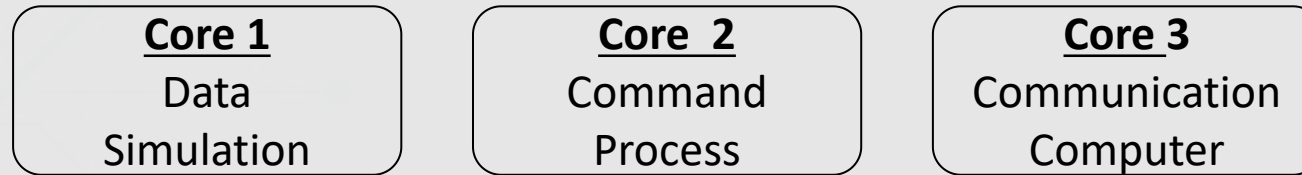


- Super portable test equipment applied in both smart substation and traditional substation all over the world
- Meticulously designed by KINGSINE, a leading Chinese technology company with over 24 years in the market and a leading supplier of test and measurement equipment to the Chinese government;



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

KF85P adopts Multi-Core SOC. avoiding the troublesome communication process caused by using data bus to exchange data



The KF85P 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



Free training



Cutting edge technology



Lifetime Technical Support



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



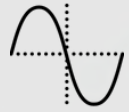
Tutorials and Video Lessons



Complete Software for Test Automation



3 Year Warranty, extendable to 5 years



10 Independent Analog Channels



Integrated Wi-Fi Module



Variable DC Battery Simulator



Time Synchronization Protocol



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



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.

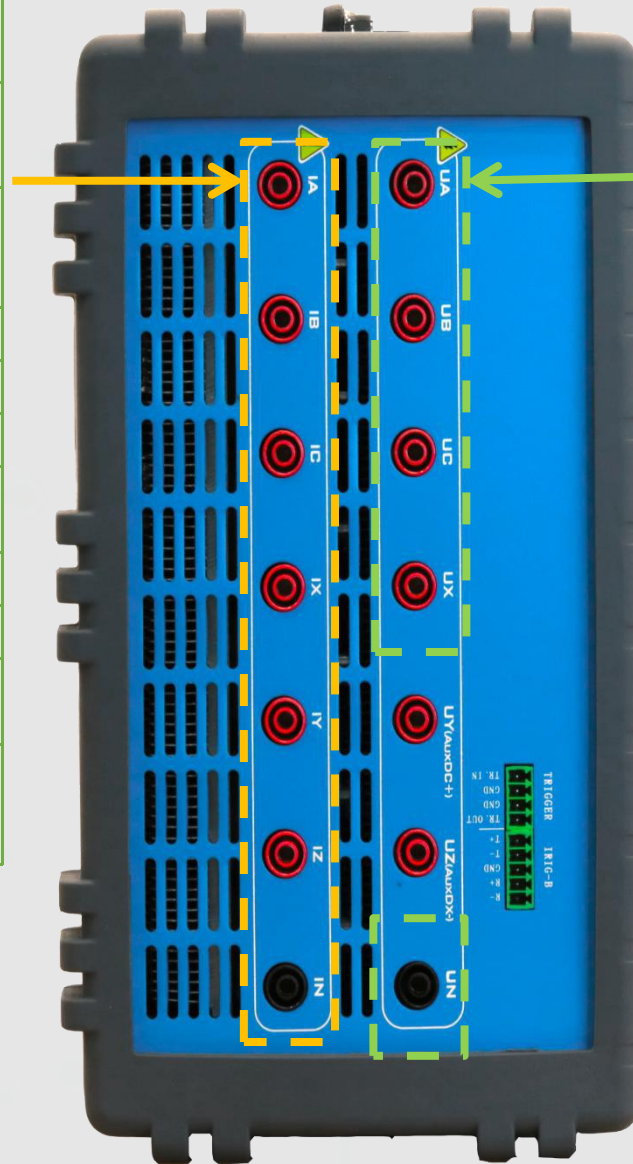


- Supports subscribing, publishing GOOSE messages;
- Multiple GOOSE control block messages can be subscribed/published;
- Automatically detects optical digital signals from MU, protection device and intelligent operation box, and realizes the function of automatic setting of sampling value and GOOSE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

Current Channels (AC Mode)	
Amplitude and Power	6×35A @ 424VA max each; 3×70A @ 670VA max each;
Accuracy	<0.015%Rd+0.005Rg Typ. <0.04%Rd+0.01Rg Guar.
Range	Range I: 3A Range II: 30A Automatic Range
Offset DC	<3mA Typ./ <10mA Guar
Resolution	1mA
Distortion	<0.025%Typ. / <0.07% Guar.
Response Time Increase decrease	<100us
Current Channels (DC Mode)	
Amplitude and Power	3×20A @ 400W max
Accuracy	±5mA @ <1A ±0.2% @ ≥1A
Response Time Increase decrease	<100us

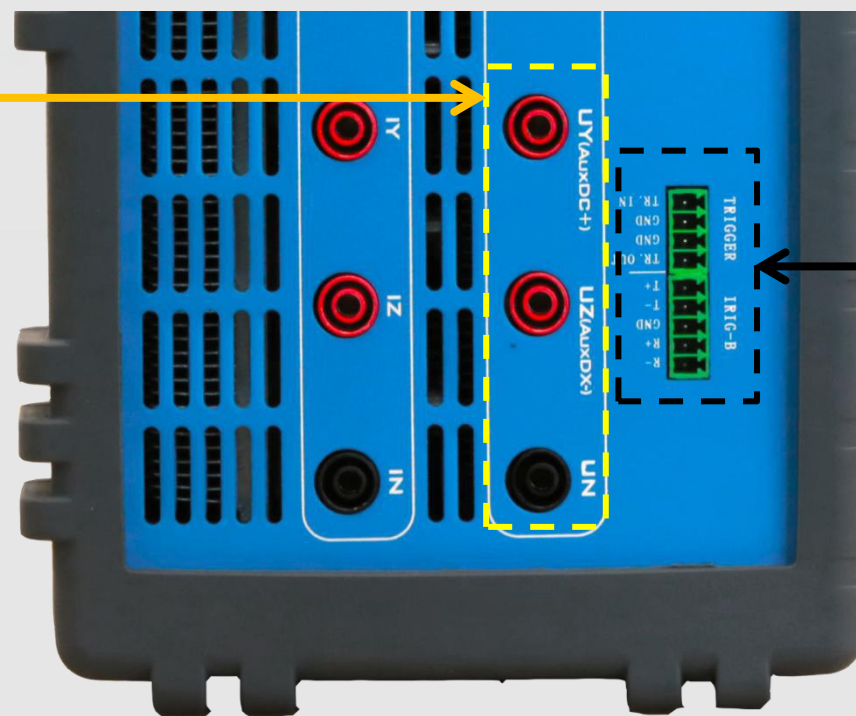


Voltage Channels (AC Mode)	
Amplitude and Power	4×310V @105VA max each
Accuracy	<0.015%Rd+0.005Rg Typ. <0.04%Rd+0.01Rg Guar.
Range	Range I: 30V Range II: 310V Automatic Range
Offset DC	<10mV Typ./ <60mV Guar
Resolution	1mV
Distortion	<0.015%Typ. / <0.05% Guar.
Response Time Increase decrease	<100us
Voltage Channels (DC Mode)	
Amplitude and Power	4×350V @ 75W max
Accuracy	±10mV @ <5V ±0.2% @ ≥5V
Response Time Increase decrease	<100us

DC Auxiliary Source	
Range	0 – 350 Vdc

- Adjustable value via software;
- The value of the output voltage independent of the tests in progress.
- Used only for powering relays, meters.....

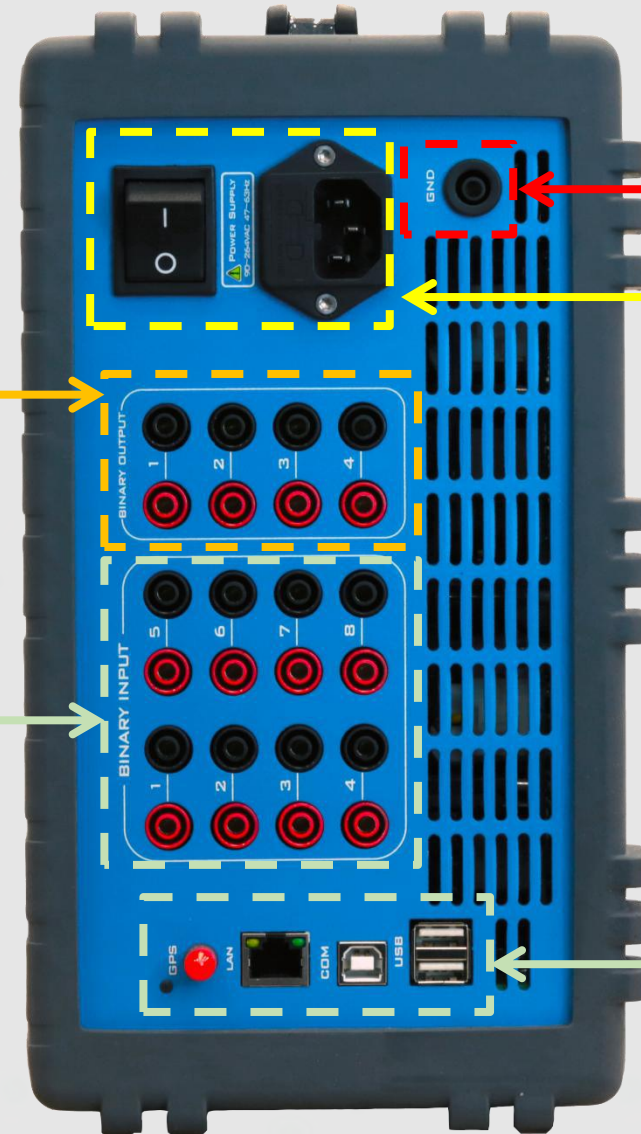
Do not use to power control circuits or similar...



Time Synchronization	
Satellite Sync	1 × SMA, Use for GPS antenna interface Support GPS and Beidou Satellite
IRIG-B Fiber	2 × ST, 1 for transmit, 1 for receive
IRIG-B Electric	5 phoenix 5.08mm pins 1 for transmit, 1 for receive
External trigger synchronization	4 pin 5.08mm phoenix external trigger input + external trigger output

Digital Outputs	
Quantity	4 pairs, Fast speed
Type	Banana type 4.0mm
AC break capacity	Vmax: 250V (AC) / Imax: 0.5A
DC break capacity	Vmax: 250V (DC) / Imax: 0.5A
Electrical isolation	All pairs isolated

Binary input	
Electrical isolation	10 pairs of electrical isolated each
Input impedance	5 kΩ...13kΩ (Empty contact)
Input feature	0 V~300Vdc Or dry contact (Binary input turn over potential can be programmable)
Sampling Rate	10kHz
Time resolution	10us
Time measurement range	0~100000s
Time accuracy	±1ms @ <1s±0.1% @ ≥1s
Debounce time	0~25ms (Software controlled)



Grounding Point

Power supply	
Nominal voltage	220V/110V (AC)
Allowable voltage	85V~265V (AC) 127V~350V(DC)
Nominal Frequency	60Hz
Allowable Frequency	47~63Hz
Current	10A max
Power Consumption	1200VA max
Connection Type	Standard AC socket 60320

Communication interface	
Ethernet	1 × RJ45 , 10/100M
WIFI	Inbuilt WIFI DHCP service
USB	2 × USB2

Compact



extremely light

Ideal for use in:



Oil and Gas Platforms



Substations



Industry



Photovoltaic plants



Rail and Metro





Simple and Powerful software

Ideal for testing various equipment such as:

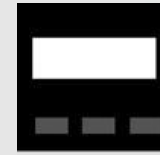


Protection Relays

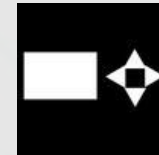
- Digital
- Electromechanical
- Static



Power Meters



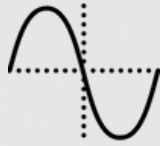
Transducers



And many others



Automatism - Test Modules



AC Test



Ramping



StateSequencer



Harmonic



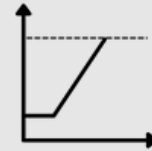
Frequency



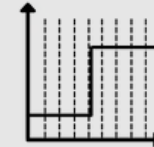
Overcurrent



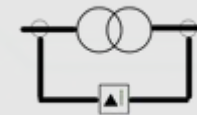
ZeroSequence



Differential



Harmonic
Restraint



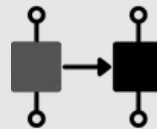
Differential
Configuration



Distance



Power Swing



Reclose



Synchronizer



Test Plan

With just one
“click”
Test various
functions



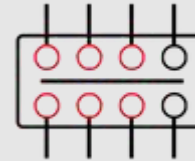
Templates

Create or use
ready-made
templates



Reports

Automatic Reports
Formats: RTF, XML
customizable



Wiring
diagram

Easily view
connections



Multiple
Languages

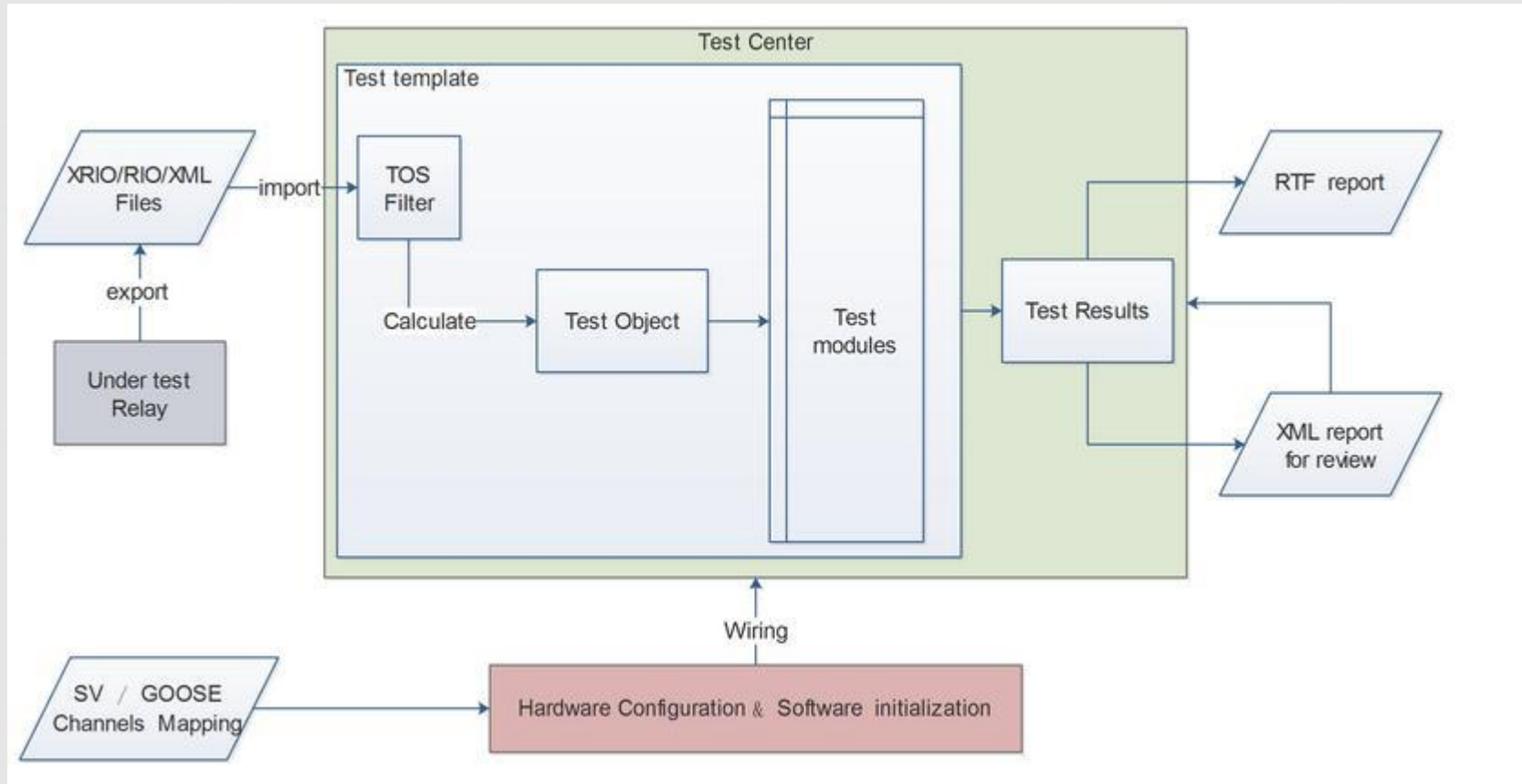
English
Portuguese...



Virtual
Instrumentation

real-time
monitoring

Software Diagram



“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

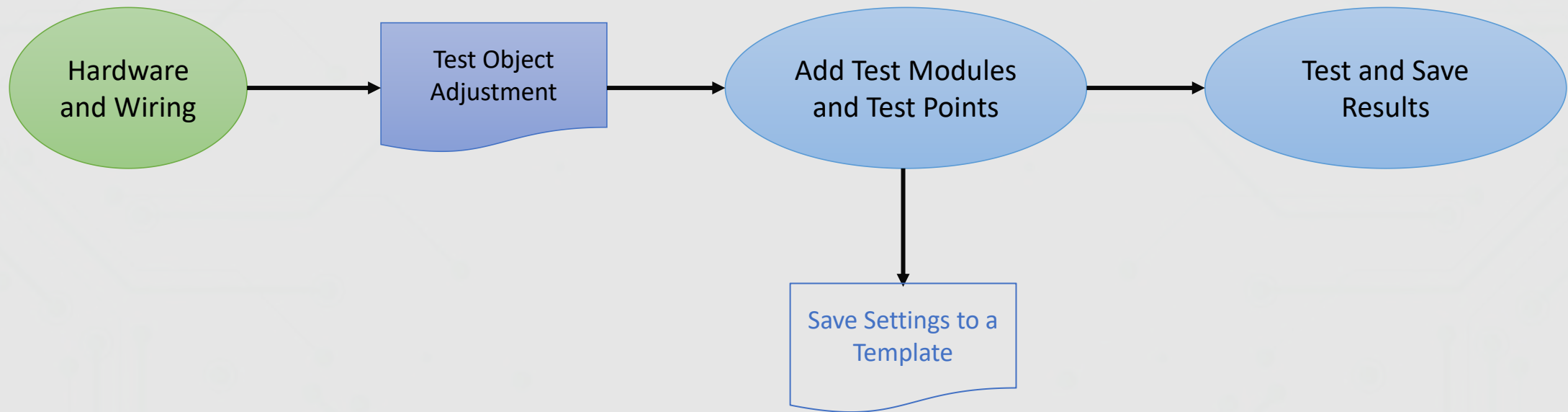
- Defines the object's nominal and fault conditions
- Characteristics of the protection function to be tested;
- General information of the protected electrical system...

M = Test Module

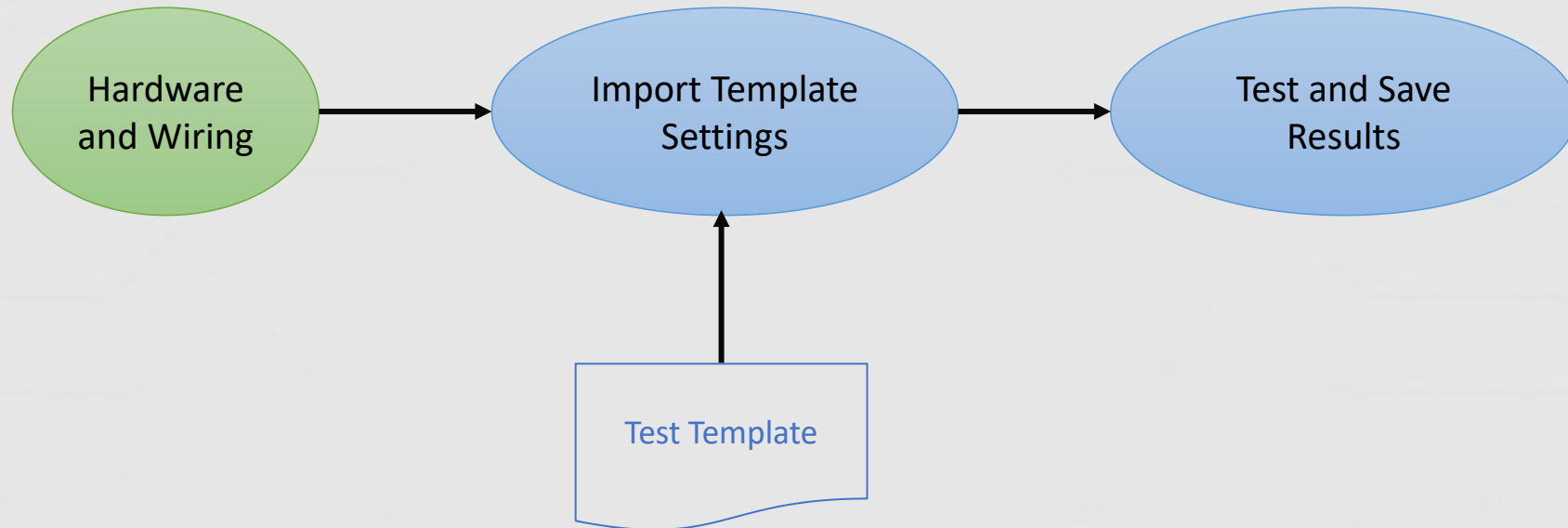
- Defines characteristics of Faults
- Time delays (Pre-fault time, fault time and post-fault time);
- Trigger Logic for Binary Inputs and Outputs;
- Visual Graphics defining test failures;
- Different views like: Vector View, Report View, Connection View, Time View etc.



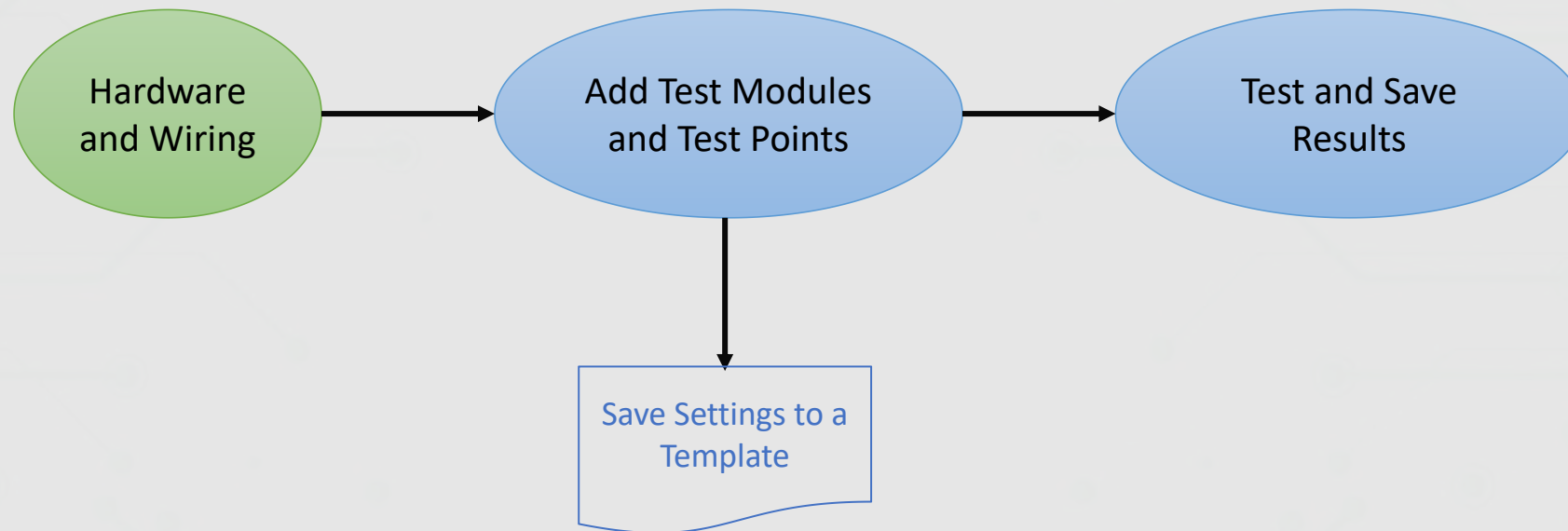
New Test Object



Tested Object



No Test Object Defined



KF85P Full View





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	

KF85P Universal Relay Test Set

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	Not Applicable
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
KF85P(4U3I)	(3 x 35A / 1 x 70A, 4 x 310V)
KF85P(4U6I)	(6 x 35A / 3 x 70A, 4 x 310V)
KF85P(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






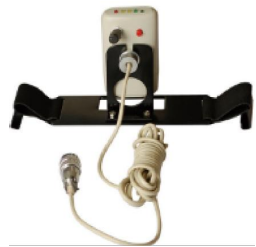

Standard Accessories

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	For IEC61850 Function
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	