



KINGSINE

K3163i Intelligent Protection Relay Test

Product Summary

Portable design, Lightweight (17.5kg)

Used in traditional substation, Digital substation, MU, and IEC61850 complying IEDs etc.

www.kingsine.com

Creativity

Cooperation

Responsibility



About KINGSINE

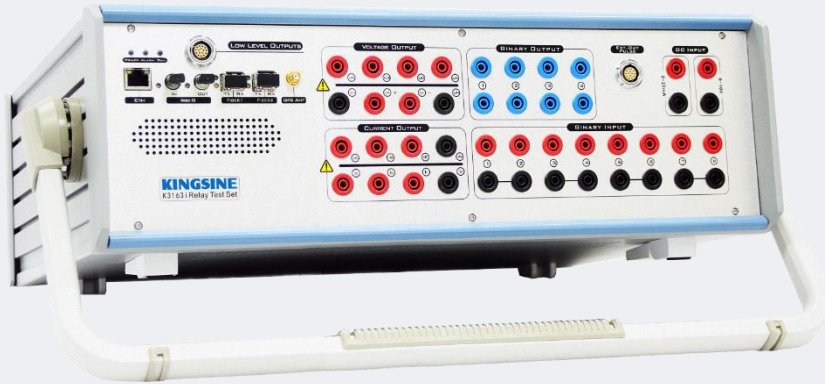


- Kingsine Electric Automation Co., Ltd. has been specializing in Research & Development, production and sales of Electric Testing & Measurement Instruments since 1999 foundation who is also honored as the High-tech enterprise certification and Software enterprise certificate recognized by China authority
- Now Kingsine's products are approved by over 70 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.
- Kingsine also give the full service with his distribution net from many countries partners of European, Asia and Middle East, etc.



K3163i Characteristics ▶

About K3163I



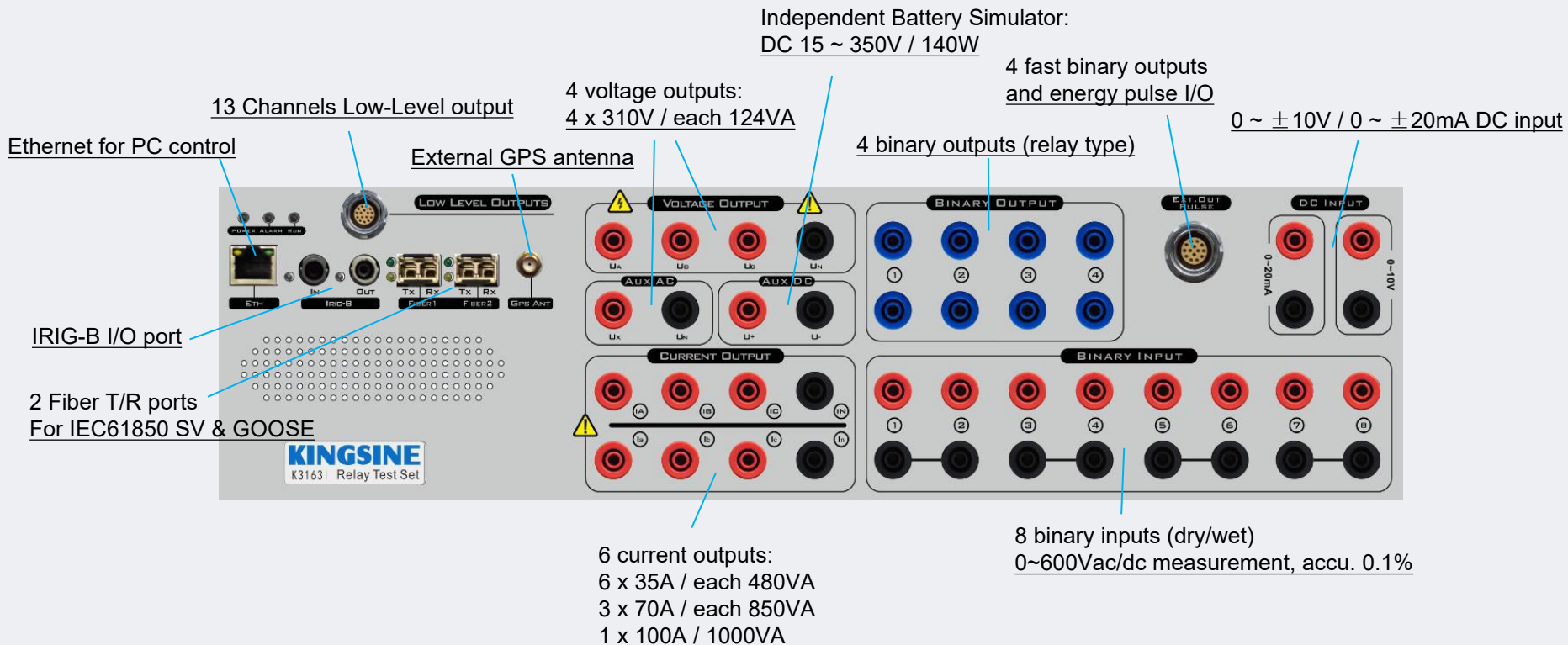
Portable design, full weight < 17.5kg

Used in traditional substation, Digital substation, MU, and IEC61850 complying IEDs etc.

Major manufacturing standards to be followed:

- ✓ T/CEC 247—2019 Technical specification for digital-analog integrated relay protection test device
- ✓ DL/T 1501-2016 Technical specification for digital relay protection test device
- ✓ DL/T 1943-2018 On-site inspection technical for Merge Unit.
- ✓ DL/T 624-2010 Technical requirement of microcomputer-based test equipment for relay protection.

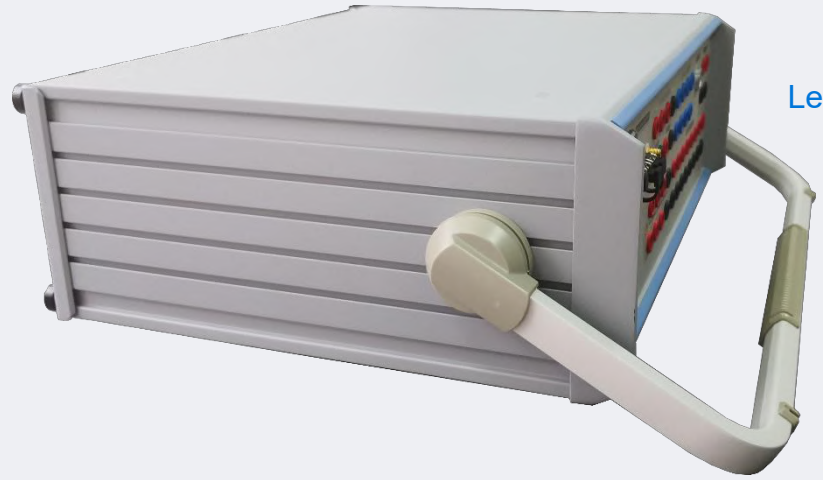
Panel view – K3163i front panel



Panel view – K3163i other panels

Rear side

- 4 cooling fans force heat dissipation.
- Series RS232 port for debug purpose



Left side



Right side

- Power switch
- AC socket
- Grounding port

Current & Voltage output – specifications of K3163i

AC Current Output	
Range	6 × 35A; 1 × 100A
Burden	480VA max each
Accuracy	<0.02%Rd+0.01%Rg
Ascends/Descent response	<100us
DC Current Output	
Range	3 × 20A;
Burden	300W max each
Accuracy	<0.1%

AC Voltage Output	
Range	4 × 310V
Burden	124VA max each
Accuracy	<0.015%Rd+0.005%Rg
Ascends/Descent response	<100us
DC Voltage Output	
Range	3 × 350V
Burden	<0.6A each channel
Accuracy	<0.1%

Optical Fiber - Specification

Fiber Ethernet Port for IEC61850 SV & GOOSE

Model	100Base-FX Full Duplex, LC Type (Optional to 10/100Mbit, RJ45 Type)
Quantity	2 pairs
Fiber Type	62.5/125 μ m(Multiple optical fiber, Orange/Red)
Wavelength	1310nm
Transmission	> 1Km
Indicator	SPD Green(light): Valid connection Link/Act Yellow(Blinking): Data exchanging

Note:

Hardware is ready, to be active with IEC61850 functions

Synchronize and Communication ports

Synchronizing port

Satellite	1 × SMA, to GPS antenna
IRIG-B	Optical Fiber, ST type 1 Transmit, 1 receive

Communication port

Ethernet	1 × RJ45 , 10/100M
Serial port	1 × RS232

Note:

IRIG-B output is dependent on external clock source, only access to GPS or external IRIG-B source, the Tester's IRIG-B output is effective.

Binary Input / Output - Specifications

Binary Input	
Quantity	8 pairs, Galvanic isolated each 2 pairs
Input Impedance	5 k Ω ...13k Ω (Dry type)
Input Characteristics	10 ~ 600Vdc or potential free Programmable
Sampling Rate	10kHz
Time Resolution	100us
Time range	0...10 ⁻⁵ s
Time error	± 1 ms (@ ≤ 1 s) $\pm 0.1\%$ (@ > 1 s)

Binary Output (Relay contact type)	
Quantity	4 pairs
Type	4.0mm banana
Break Capacity AC	Vmax:400V Imax:8A Pmax:2500VA
Break Capacity DC	Vmax:300V Imax:5A Pmax:150W
Galvanic isolation	Isolated
Time response	<10ms

Binary Output (Fast Semiconductor type)	
Quantity	4 pairs
Type	Open-collector, Combination type
Break Capacity DC	5~15Vdc / 5mA, 10mA max
Galvanic isolation	Common grounding for 4 pairs
Time response	<100us

Optional Transducer & Energy Meter - Specifications

Transducer Calibration (Hardware is ready, to be active with the optional function)

Voltage Input	Range	0 ~ ±10V dc
	Max Input	±11V dc
	Accuracy	<0.05%Rg Typical
	Input Impedance	1M ohm
Current Input	Range	0 ~ ±1mA / 1 ~ ±20mA, auto range
	Max Input	600mA
	Accuracy	<0.05%Rg Typical
	Input Impedance	15 ohm

Energy Meter Calibration (Hardware is ready, to be active with the optional function)

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

Note:

The hardware of transducer and energy meter calibration are ready to active with the optional function.

Power Supply & Environment - Specification

Size and Weight	
Dimensions	468mm × 375mm × 164mm
Weight	<17.5kg

Environment	
Operating Temp.	-10~+55 °C
Humidity	5~95% RH, non-condensing
Storage Temp.	-20~+70 °C
Atmospheric pressure	80kPa~110 kPa, Altitude <2000m

Power Supply	
Nominal Voltage	100~240V (AC)
Permissible Voltage	85V~264V (AC); 125V~350V(DC)
Nominal Frequency	50Hz / 60 Hz
Permissible Frequency	45~65Hz
Power Consumption	1500VA(max)



Features of K3163i

10 Channels (4V + 6I) output. Each output channels are independent control of magnitude, phase angle & frequency values, can generate a variety of output waveforms such as: DC; sine wave; sine wave with percent harmonics at various phase angles etc.

Independent variable battery simulator (DC 15~350V, 140watts)

Anti-clipping detect; cabinet grounding, wrong wiring connect alarm and self-protect, overload and over heat protection.

Test high burden electromechanical relays, 6x10A continuously outputs.

Provide convenient and prompt precision calibration for amplitude and phase by software without open the cabinet.



Graphical test modules and templates for testing of various relays

Quick relay testing facility in Manual mode
Point & Click testing

RIO/XRIO import and export facility

Switch on to fault (SOTF)

Power system model for dynamic testing

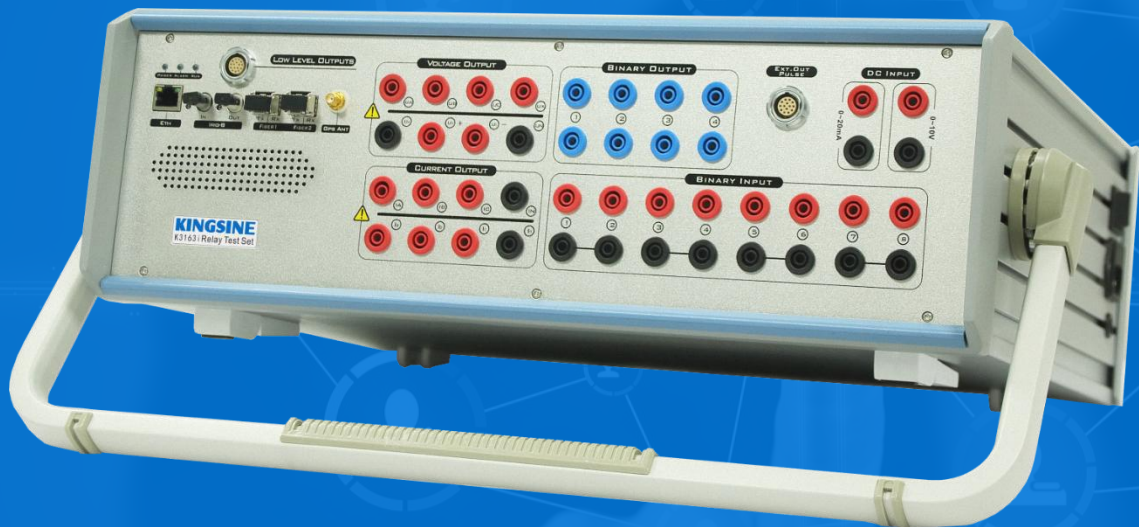
GPS sync end-to-end testing

Online vector display

Automatic compare actual characteristic with expected characteristic

Comtrade file generate and playback

Automatic test report creation



KRT Software ▶

Application

Start page of software

Provide the basic test modules, include: AC Test, Ramping, StateSequencer, Harmonic, Frequency Test, Transplay.

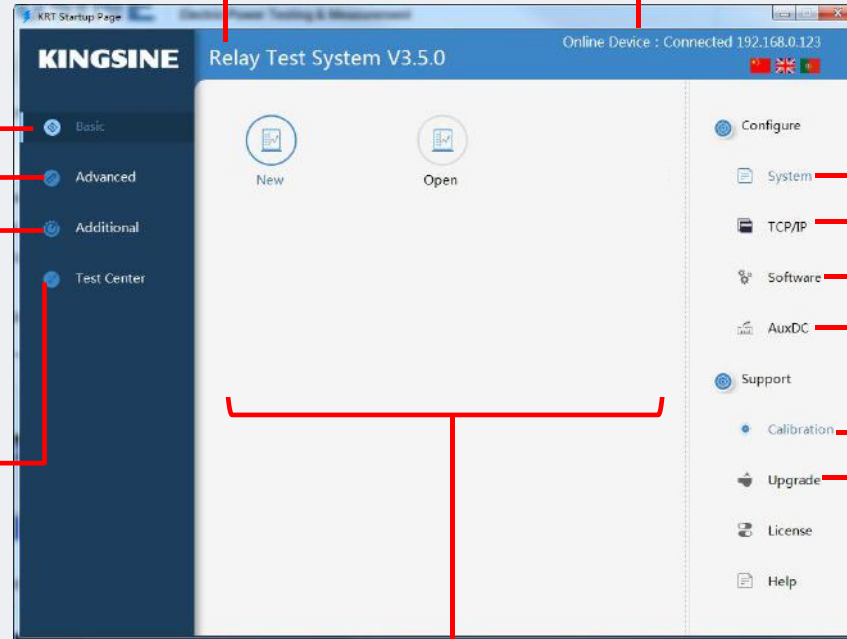
Provide the advanced test modules, include: Distance, Overcurrent, Zero Sequence, Differential, Harmonic Restraint, Reclose, Synchronizer, Power Swing, TCS Relay

Optional Modules, Include: Standard Meter, Transducer, Energy

Manage and execute automated test templates. Dependent on basic tests, advanced tests and additional optional modules to configure the test for automated tests.

Software Name and Version

Online status and IP address of connected device



Configure the output mode of the tester

Configure the IP address of the tester

Configure the general settings for tests

Auxiliary DC output control

Served for calibration purpose

Firmware update entrance

Test function modules under the left pane

Software – Toolbar Description

TestObject contains more content, mainly contains:

- Rating of the relay, PT/CT ratio, substation information etc.
- Setting value of the relay and functions active/deactive;
- Algorithm and graph of characteristic curve

Simulate all kinds of GOOSE abnormal

Simulate all kinds of SMV abnormal



Start run the test from the first activated module of test center.

Continue the test from the present selected test point.

Stop test

Absolute / Relative (%)
Primary / Secondary
Second / Cycle (cy)

Toggles the display position of the vector graphics panel

Configure the output type: Power amplifier, Optical SMV, Low-Levels;

Configure the binary I/O type: Relay contacts, Optical GOOSE, or mixed both;

Import SCD, Mapping SMV and GOOSE channels;

Configure current output mode with the type of Power amplifier output.

Save the test report in RTF format, possibly for edit and print by Word, WPS etc.

Note: This is unlike result save, test reports can not restore the test parameters and results to the test software interface.

Save the test results file, which is the original record of the test, as opposed to the output report, it is in XML format.

Load the saved exist test result file, which contains the test parameters and test results for the test object; Once loaded, you can see the results of the last test, also you can basically run as a new tests.

Software – Test Center Management

The screenshot shows a software window titled "Test Center P444". The window is divided into a main list area and a right-hand toolbar. The list area contains a tree view with a root node "Schneider P441/P442/P444" and several sub-items, each with a checkbox and a right-pointing arrow. The toolbar contains icons for "Add", "Del", "Edit", "Up", "Down", "Copy", "Save", "Open", and "All".

Root of test center
User can preview the test report.

Name of test center

Defined Test Modules

- Open a dialog window, allow user select particular test modules and add into the test center.
- Delete present selected module from test center.
- Edit the present selected module, user can rename and rebind the test parameters to another test object.
- Adjust the position of the selected module in the test center.
- Make a duplicate copy same as the selected module
- Save present test center to a template file. (.KRT)
- Open an exist template.
- Toggles to active / deactivate all the test modules.

Test Center P444

- [-] [] ▶ Schneider P441/P442/P444
 - [] ▶ AC Test--initial sampling test
 - [x] [] ▶ Distance--Shot Test A-N
 - [x] [] ▶ Distance--Shot Test B-C
 - [x] [] ▶ Distance--Shot Test A-B-C
 - [x] [] ▶ Overcurrent--EF & Backup I>
 - [x] [] ▶ Ramping--F<1 & F<2

Toolbar: Add, Del, Edit, Up, Down, Copy, Save, Open, All

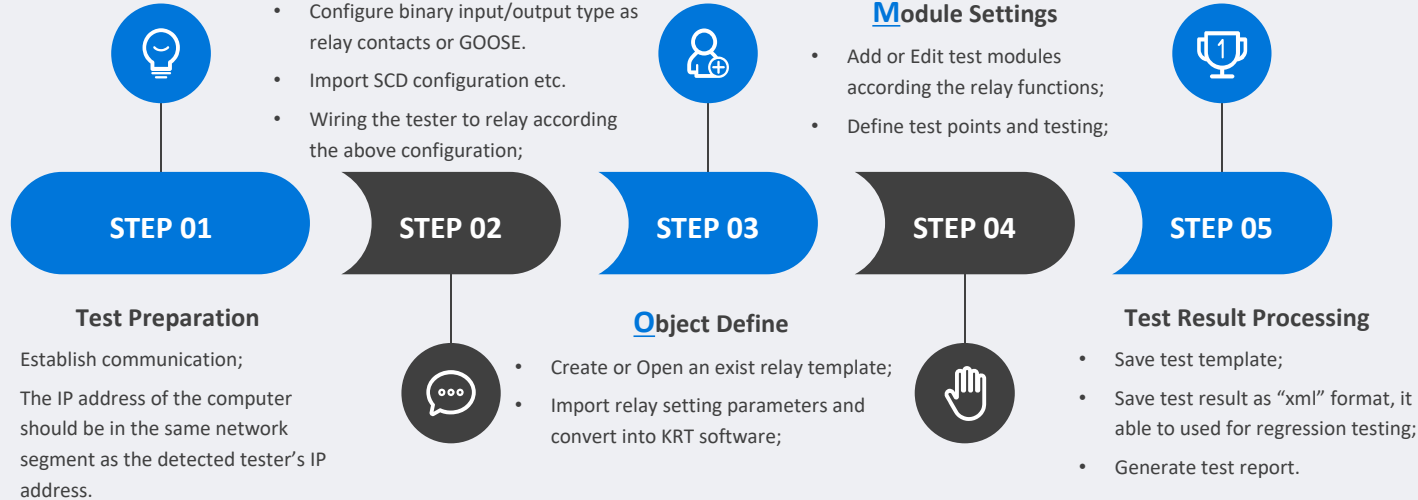
Test Procedure – “COM” terminology

Configuration Hardware

- Configure tester output type: Power amplifier, Optical SV;
- Configure binary input/output type as relay contacts or GOOSE.
- Import SCD configuration etc.
- Wiring the tester to relay according the above configuration;

Module Settings

- Add or Edit test modules according the relay functions;
- Define test points and testing;



C O M

Tip – Combine 2 or more current channels to a virtual channel

Valid for Power Amplifier Output Mode Only

System Config

Device Config Binary Input

Output Type

Power Amp Low-Level IEC61850-9-2 IEC61850-9-1 FT3 Collector

Binary Type

Relay Contact Goose

Current Open Circuit Alarm Detection

Alarm Threshold : 0.020A

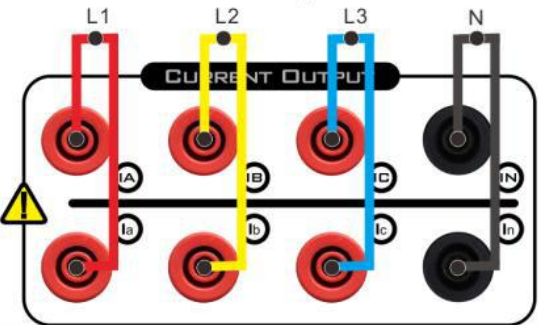
Current

- 6*35A
- 1*100A+3*35A
- 3*35A+1*100A
- 1*100A+1*100A
- 3*70A**
- 1*35A (high burden)+3*35A
- 3*35A (high burden)

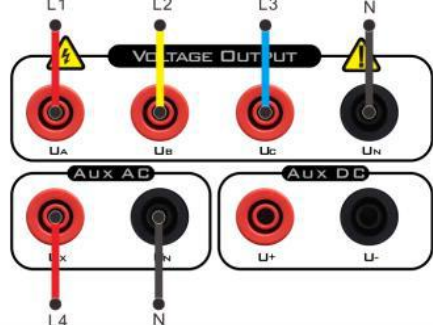
Voltage

- 4*310V**

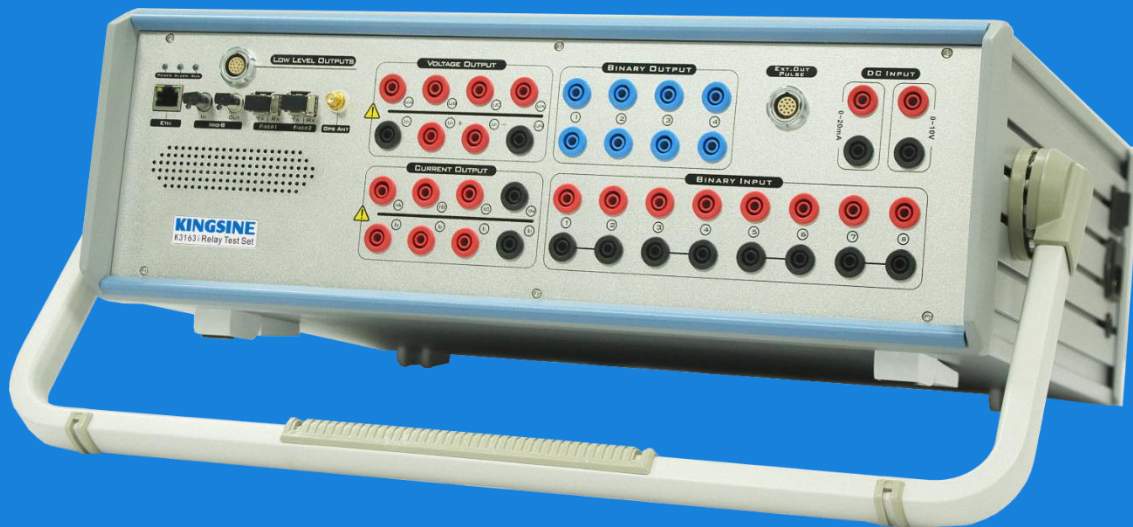
Group-1



Group-1



Load System Config Save System Config Import SCL Open SCL Scout Apply



K31 series model selection guide ▶

K31 Series Selection Guide

K3130i

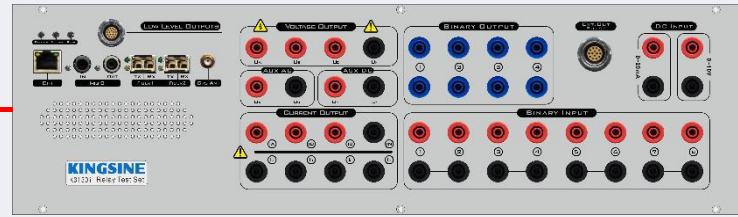
3*35A / 480VA

4*310V / 124VA

8 Binary input

8 Binary output

13 Low-Level output



K3163i

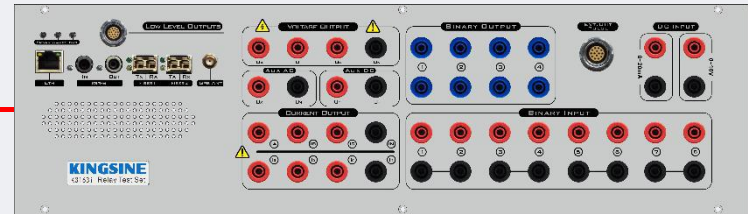
6*35A / 480VA

4*310V / 124VA

8 Binary input

8 Binary output

13 Low-Level output



K3166i

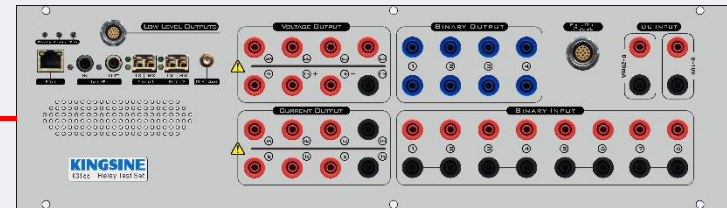
6*35A / 480VA

7*310V / 90VA

8 Binary input

8 Binary output

13 Low-Level output



Optional for all:

- SMV
- GOOSE
- Transducer
- Energy meter
- Standard meter

Looking to the future

Contact Us:



www.kingsine.com



+86-755-83418941



international@kingsine.com