KINGSINE

Specialize in Electric Power Testing

MERAZET

K31 series Protection Relay Test Set

Small, lightweight(17.5kg) 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.

Model: K3130i

7 Channels (4V + 3I) output. Each output channels are independent control of magnitude, phase angle & frequency values, can generate a variety of output waveforms such as: DC; sinewave; sinewave 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.

Light weight & State of art design, 17Kg only

IEC61850 GOOSE and SV complying

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

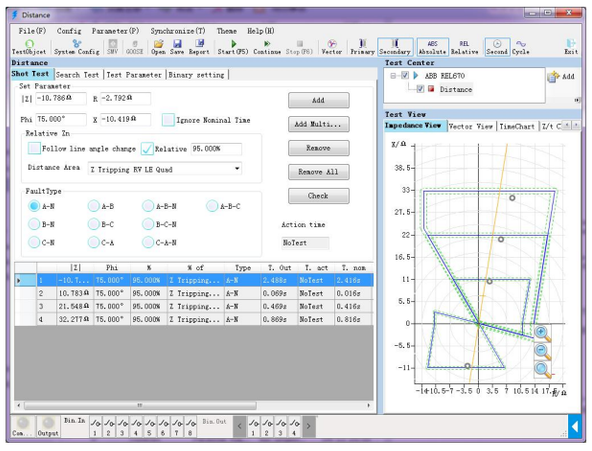
GPS sync end-to-end testing

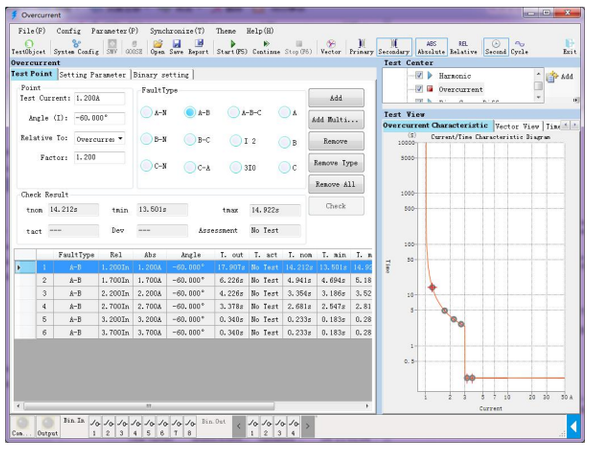
Online vector display

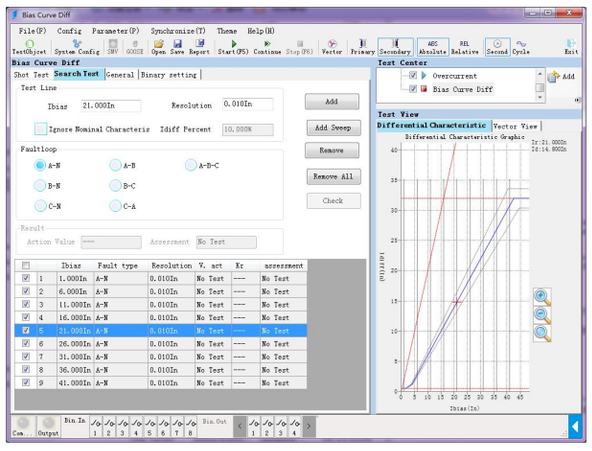
Automatic compare actual characteristic with expected characteristic

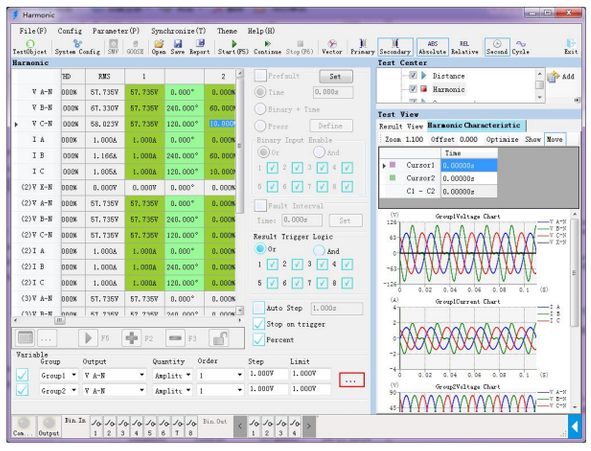
Comtrade file generate and playback

Automatic test report creation









Independent Battery Simulator:
DC 15 ~ 350V / 140W

Ethernet for PC control

13 Channels Low-Level output

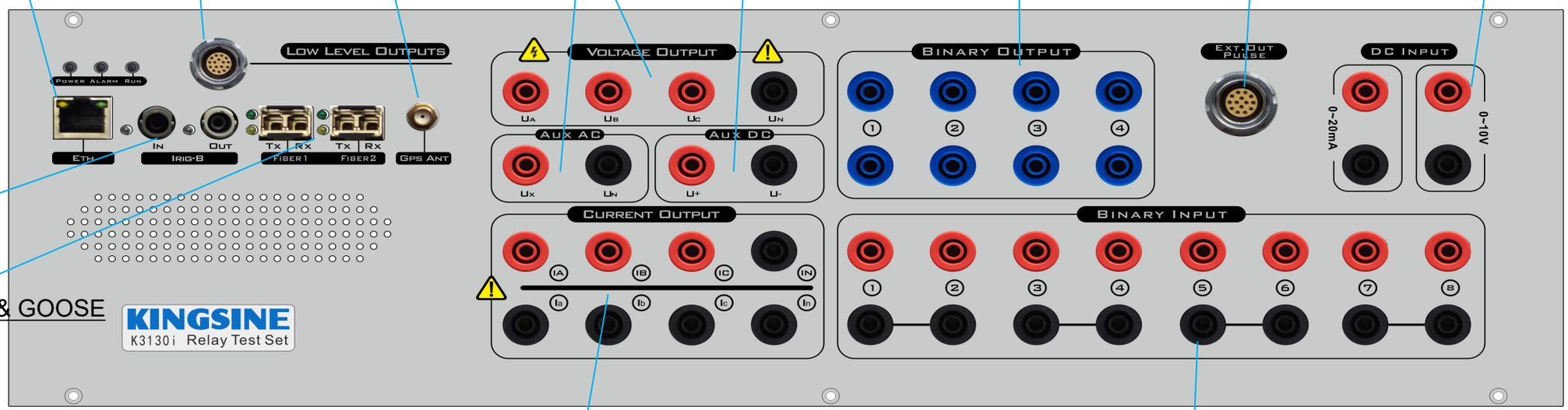
External GPS antenna

4 voltage outputs:
4 x 310V / each 124VA

4 fast binary outputs
and energy pulse I/O

0 ~ ±10V / 0 ~ ±20mA DC input

4 binary outputs (relay type)



IRIG-B I/O port

2 Fiber T/R ports
For IEC61850 SV & GOOSE

3 current outputs:
3 x 35A / each 480VA
1 x 100A / 1000VA

8 binary inputs (dry/wet)
0~600Vac/dc measurement, accu. 0.1%

Models reference for selection

Models	Configuration
K3163i	(6 x 35A / 3 x 70A, 4 x 310V)
K3166i	(6 x 35A / 3 x 70A, 7 x 310V)
K3130i	(3 x 35A, 4 x 310V)
8 Pairs Binary Inputs & 4 Pairs Binary Outputs DC 0~350V Battery Simulator Optional for IEC61850 SV or GOOSE, Energy meter calibration, Transducer calibration, Standard meter, modules	

Capable of what K31 series can test

Items	ANSI® No.	Items	ANSI® No.
Distance protection relay	21	DC overcurrent relays	76
Synchronising or synchronism-check relays	25	Phase-angle measuring or out-of-step protection relays	78
Undervoltage relays	27	Automatic reclosing devices	79
Directional Power relays	32	Frequency relays	81
Undercurrent or underpower relays	37	Motor overload protection relays	86
Negative sequence overcurrent relays	46	Differential protection relays	87
Overcurrent/ground fault relays	50	Directional voltage relays	91
Inverse time overcurrent/ground fault relays	51	Voltage and power directional relays	92
Power factor relays	55	Tripping relays	94
Overvoltage relays	59	Voltage regulating relays	
Voltage or current balance relays	60	Overimpedance relays, Z>	
Directional overcurrent relays	67	Underimpedance relays, Z	
Directional ground fault relays	67N	Time-delay relays	

Current Generators	
Current:	AC 3x35A @ 480VA
	AC 1x100A @ 1200VA
	DC 3x20A @ 300W
Current Accuracy	<0.02%rd+0.01%rg,Typ.@ 0.5~35Aac
	<0.05%rd + 0.02%rg,Guar.@ 0.5~35Aac
Range	Range I : 3A; Range II : 35A; Autoselection
Distortion	< 0.025% Typ. / <0.07% Guar.
Voltage Generators	
Voltage:	AC 4x310V L-N @ 124VA Max
	DC 3x350V @ 140W
Voltage Accuracy	<0.015%rd +0.005%rg. Typ.@ 2～310V
	<0.04%rd +0.01%rg. Guar.@ 2～310V
Range	Range I: 30V; Range II: 310V; Autoselection
Distortion	< 0.015% Typ. / <0.05% Guar.
Frequency & Phase angle	
Frequency range:	DC~1KHz, 3KHz transient
Frequency accuracy:	±0.5ppm
Freq. resolution:	0.001Hz
Phase angle:	-360~+360°
Phase accuracy:	<0.02°typ,<0.1°Guar,50/60Hz
Phase resolution:	0.001°
13 Low-level outputs	
Quantity:	13 channels, 16 pin combination socket
Voltage:	AC 0~8Vrms, DC 0~10V
Current:	Rating 2mA, 10mA transient max.
Power:	⩾0.5VA
Accuracy	(0.01~0.8 Vrms):<0.05% Typ. / <0.1% Guar.
	(0.8~8 Vrms): <0.02% Typ. / <0.05% Guar.
Resolution:	0.25mV
Distortion (THD%):	< 0.05% Typ. / <0.1% Guar.
Binary outputs (Relay type)	
Quantity:	4 pairs
Type:	Potential free relay contacts, software controlled
Break capacity AC	Vmax:400Vac / Imax:8A / Pmax:2500VA
Break capacity DC	Vmax: 300Vdc / Imax: 5A / Pmax: 150W

Binary outputs (Semiconductor)	
Quantity:	4 pairs semiconductor
Type:	Open-collector, 14 pin combination socket
Break capacity DC	5~15Vdc / 0.1A, 0.5A max
Response time:	<100us
Binary input	
Quantity:	8 pairs
Type:	wet/dry, measurement
Threshold:	0~600Vdc or potential free, Programmable
Sample rate:	10KHz
Time resolution:	10us
Debounce time:	0~25ms (Software Controlled)
Time range:	Infinite
Time errors:	< ±1ms @ 0.001~1s， < ±0.1% @ >1s
Galvanic isolation:	4 isolated with each 2 pairs
Iuput impedance:	600KΩ
Auxiliary DC (Battery simulator)	
Auxiliary DC:	0~350V @ 140W Max
	0.5% rg Guar.
Others, Size & Weight	
PC connection:	1 x 10/100M Base-Tx RJ45 Ethernet
Synchronizer port:	IRIG-B,GPS SMA Antenna
Others:	RS-232
	14 pin comb. socket for pulse I/O and Bi.output
Size:	468 x 375 x 164 mm
Weight:	<18kg
Power supply & Environment	
Nominal input voltage	100~240Vac
Permissible input	85～264Vac, 125~350Vdc
Nominal frequency	50/60Hz
Permissible frequency	45～65Hz
Power Consumption	1500VA max.
Connection Type	IEC60320 Standard AC socket
Grounding Terminal	4mm banana socket
Temperature	-10℃～55℃ (operating), -20℃～70℃(storage)
Humidity	5%-95% RH,non-condensing

Optional Functions

AC/DC Measurement (Optional)	
Voltage range:	0~600Vrms (Rg:0.1V,1V, 10V, 60V, 600V)
Voltage accuracy:	<0.1% rg
Current range:	0~5Arms(clamp input) (0~30A Optional)
Current accuracy:	<0.1% rg
Frequency range:	45~65Hz, Accuracy < 0.01Hz
Phase accuracy:	0~360°, <0.2°Typ
Recorder time:	Max 50 Sec.

Transducer calibration (to be activated)	
DC Current	
Range:	DC: 0~±1mA; 1~±20mA; Auto range
Max. input:	600mA
Input impedance:	15Ω
Accuracy:	<0.05% rg Typ. <0.1% rg Guar.
DC Voltage	
Range:	DC 0~±10V
Max. input:	±11V
Input impedance:	1MΩ
Accuracy:	<0.05% rg Typ. <0.1% rg Guar.

Energy Meter Calibration (to be activated)	
Sensor usage:	Mechanical meters / Electronic meters.
Sensor output:	Highlevel:≥4.5V,Lowlevel:≤0.2V.
Pulse input:	1 pulse input ports
Pulse range:	500KHz pulse input max.
Pulse output:	1 transistor outputs
Accuracy:	<0.1% rg Typ. <0.2% rg Guar.

IEC61850 Fiber & GOOSE Ethernet Ports (to be activated)	
Fiber Ports:	2 x 100Base-FX Full Duplex, LC type
	Configurable to 10/100Mbit, Ethernet RJ45 type
Fiber Type:	62.5/125um (Multiple optical fiber, Orange Red)
Wavelength	1310nm
Transmit distance	>1Km
Indicator:	SPD Green (light): valid connection
	Link/Act Yellow (blinking): Data exchanging
NOTE:	All hardware ready for activate

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