K1063 6-Phase Relay Tester Technical Specification

Technical Data of K1063

Voltage generators		
Setting Range	4-phase AC (L-N)	4 x 0 ... 130 V
	2-phase AC (L-L)	1 x 0 ... 260 V
Power	4-phase AC (L-N)	4 x 110VA, at 0 ... 130 V
	2-phase AC (L-L)	1 x 220VA, at 0 ... 260 V
Accuracy		<0.14% reading + 0.06% range guaranteed at 0-130V
		<0.04% reading + 0.01% range typical at 0-130V
Resolution		1mV
Current generators		
Setting Range	6-phase AC (L-N)	6 x 0 ... 20 A
	3-phase AC (L-N)	3 x 0 ... 40 A (Group A II B)
	1-phase AC (3L-N)	1 x 0 ... 120 A
Power	6-phase AC (L-N)	1x 450VA ,at 0 ... 20A
	3-phase AC (L-N)	1x 260VA, at 0 ... 40A (Group A II B)
	1-phase AC (3L-N)	1 x 1000 VA, at 0 ... 120A
Accuracy		<0.14% reading + 0.06% range guaranteed at 0-20A
		<0.05% reading + 0.02% range typical at 0-20A
Resolution		1mA
Generators, general		
Frequency	Range	0 ... 1000 Hz

	Accuracy / drift	Error < 0.001Hz at 0 ... 450Hz, error < 0.01Hz at 450…1000 Hz
	Resolution	0.001Hz
Phase	Range	- 360° ... +360°
	Accuracy / drift	Error < 0.2 °
	Resolution	0.1°
Timer	Range	0 ... 9999.999s
	Accuracy / drift	Error<0.1ms
DC generators		
Voltage ranges		0 ... 130V/180VA
Current ranges		0 ... 20A/130W
Accuracy		Error< 0.2%
Resolution		1mA; 1 mV
Aux DC Supply		
Range		0...130V/0.6A
Binary inputs		
Number		8 pairs
Compatible Voltage		10V ... 250V
Binary outputs		
Number		4 Pairs
Capacity		250V/2A
Synchronization		
Synchronization mode		GPS
Harmonic		
orders		2 ... 20
Power supply		
Nominal input voltage		220V± 20% VAC, 1-phase
Power		1000VA
Nominal frequency		50/60Hz
Environmental conditions		
Operation temperature		-5°C ... 55 °C
Storage temperature		-20°C ... 70 °C
Humidity range		5% ... 90 %, non-condensing
Weight		24KG
Dimensions		460（D）×140 (W)×360 (H) mm
PC connection		RJ45

System Description

K10 series multifunction microcomputer-based test Instrument systems with relay protection are the new generation test systems with relay protection on the basis of Windows CE operating system and have high-precision signal and high-efficiency and high-stability power amplifier with the advanced level in the world by the developed digital phrase lock patented algorithm and SPWM technology based on the advanced SOC design concept, to provide customers with comprehensive and easy-to-use testing solutions with complete functions.

1. The advanced embedded system and the latest high-speed DSP processor and ultra-large-scale field programmable logic devices FPGA have been adopted.

2. 1448 points waveform fitting is for every cycle, reaching the leading position at home, as has significantly improved the amplitude-frequency Property and voltage-current transient response for the system, with the current transient response of 20 μs. And the transient voltage response of 30 μs, clearly exceeds the national standard (200 μs). Excellent transient response can be more applicable to the development trend of the new rapid microcomputer-based protection.

K1063 Testing software

1. The testing software of the upper-computer supports WINDOWS 2000\WINDOWS XP operating system.

2. Rich multifunction, friendly interface and easy-to-use can meet the needs of all kinds of protection testing.

K1063 Features

1. All types of voltage, current, frequency, power, impedance, harmonic, differential and synchronism relays can be manually or automatically tested; space and Zero Sequence Protection devices can be checked with fixed value and the Distance test of the protection device can be carried on by simulating various types of faults; the digital microcomputer-based and digital transformer can been automatically scanned as well as the differential protection ratio restraint curve for the Generator Transformer set, with the GPS triggering function;

2. Reliability is ensured by its unique heat dissipation parts, with four high power exhaust fans in the instrument and installed temperature protector and measurer; these ensures excellent stability and reliability during heavy current and long time working. The current source itself already possesses the functions of open circuit protection and open circuit alarming, the voltage source has short circuit protection function, and chopped distortion detection as well as miss-wiring determining and alarming self-locking functions. It can perform dynamic monitoring of output waveform and display it.

3. Has isolated input contacts, compatible of idle contacts and electric potential contacts, which make various wiring connection ways possible.

4. Has four-channel voltage output, and extra one channel is for auxiliary DC voltage, making it more convenient for field debugging.

5. Has improved offline operation function, it can independently output seven-phase voltage and six-phase current, with arbitrary and continuously adjustable amplitude, phase and frequency. Easy to operate, 640x480 large screen LCD display, and Chinese-English interface can arbitrarily be changed. When it's running independently, it may be manual or automatic methods for testing the movement value and time of various DC, frequency, power, impedance, harmonic differential and synchronism relays and pace, and Zero Sequence Protection devices can be checked with fixed value and the Group test of the protection device can be carried on by simulating various types of faults and digital transformer can been automatically scanned as well as the differential protection ratio restraint curve for the Generator Transformer set;

6. Architectural inner frame structure, with anti-vibration and shock resistant high strength aluminum alloy machine box that makes the device able to stand vigorous vibration test.

7. Uses latest DSP and large scale programmable FPGA of American TI Company, with 1448-point waveform simulation,

gearing the instrument with better transient response and frequency-amplitude characteristic. It's the first to have used 20bit serial port DA in China, which will further improve output precision.

Voltage and Current Amplifier

Current source and voltage source have no current booster and no voltage booster and direct coupling mode is adopted for them, so that the output frequency spacing of the power is from DC to 1000Hz, and DC to AC voltage and current with all kinds of frequencies can be output, such as square waveform, changing waveform by the exponential function and mixed overlapping waveform. Basically it meets the transient testing requirements of the protection device, thereby achieving the simple simulation of various protection devices.

Power amplifier circuit has the perfect over-current, over-voltage and over-temperature protection function to prevent the high-power device from being damaged in the test. When the power amplifier is input, the built-in protection circuit in the device will real-time detects the output current from the voltage circuit and determines whether the detected current values are overload. When there is overload or short-circuit in the circuit voltage, the power of the power amplifier will shut down automatically and the test will stop, giving out the alarm signal. To prevent the current amplifier from overheating under the large current (10A-40A), when any one phase current in the testing device is more than 10A, the software has set to limited function. The limited time is calculated according to the formula $t = 50 \times (41-i)$. For example, if the current i=40A, the limited time t = 50 seconds. And if I=10A, t=1550 seconds.

Major Functions:

Items	IEEE(R) No.
Synchronizer relay	
Transient playback	
GPS Synchronization	
Overcurrent relays	50/76
Inverse time overcurrent relays	51
Undercurrent relays	37
Ground fault relays	50
Directional overcurrent relays	67
Directional ground fault relays	67N
Overvoltage relays	59
Undervoltage relays	27
Directional voltage relays	91
Directional power relays	32
Power factor relays	55
Differential protection (differential circuits)	87
Distance protection equipment (phase by phase)	21
Negative sequence overcurrent relays	46N
Motor overload protection	51/86
Automatic reclosing devices	79
Tripping relays	94
Voltage regulating relays	
Overimpedance relays, Z>	
Underimpedance relays, Z	
Time-delay relays	