AC/DC/IR HIPOT TESTER
MODEL 19070 & 19050 SERIES

Complete Dielectric Testing Solution

The 19050 series electrical safety testers are advanced digital hipots with load and line regulation to ensure the measurement integrity. Multi-step capability allows users to perform multiple tests in a sequence such as AC hipot followed by IR.

The Chroma Hipot Tester 19050 series provides 3 models for choice. The 19052 is for AC/DC/IR Hipot testing and insulation resistance (IR) measurements. The 19053 IR measurement is with 8 scan channels, and the 19054 IR measurement is with 4 scan channels capability into a single compact unit.

The Chroma Hipot Tester 19070 series provides 2 models for choice. The 19071 is for AC Hipot testing. The 19073 combines both AC and DC Hipot with insulation resistance (IR) measurements into a single compact unit.

Open Short Check (OSC)

The OSC function is used to check whether the connection is open circuit between instrument and DUT or breakdown inside DUT before testing the electrical safety.

Flashover (ARC) Detection

The 19070 and 19050 series are sensitive enough to monitor current spikes even if they do not exceed the maximum trip current level.

Ground Continuity Check

All of the 19050 series testers have a ground continuity check feature to determine the resistance, that is between the ground blade of power cord and any exposed metal on the product, is less than 1 Ω.

Ground Fault Interrupt (GFI)

GFI is required by the National Electrical Code in wet locations. Such devices automatically interrupt power when a ground current > 0.5mA existed for more than a few milli-seconds to protect users.

Quick Discharge

In DC hipot and IR test the device under test is discharged back through the HV transformer. This technique results in a rapid and safe discharge.

MODEL 19070 SERIES
19050 SERIES

Key Features

- AC/DC/IR 3 in 1 hipot tester
- AC 5kV and DC 6kV output
- 1kV insulation resistance test
- Insulation resistance measurement from 1MΩ to 50GΩ
- Ground continuity check
- Standard RS-232 interface
- Open short check(OSC) function
- GFI shutdown the instrument when imbalance current > 0.5mA
- Flashover (ARC) detection
- Quick discharge of DUT in IR and DC test
- Pause mode
- UL and TUV approved (*see spec)
- CE mark
- Programmable ramp/fall and test time
- Programmable high/low limit
- Save/Recall program test function
- Remote control and interface support

Chroma

GPIB RS-232 PRINTER

MAIN FUNCTIONS

FLASHOVER DETECTION

Fast transient in Voltage or Current occured while Hi-Pot testing is called Electrical Flashover. Normally, in AC line frequency (50Hz/60Hz) or DC Hi-Pot testing, the leakage current is the same as 50Hz/60Hz or DC (charge current is excepted). As shown in Figure leakage current varies smoothly.

On the other hand, electrical discharge occurred because of poor insulation in material, electrode gap or surface clearance etc., fast transient in leakage current apparent as shown in figure. This is phenomenon of poor withstanding. Most of Electrical Safety regulations mention the necessity in Withstand Strength Test. Nevertheless, general Hi-Pot tester detects the RMS value of leakage current only without capability to detect Flashover. Therefore, FLASHOVER detection function equipped with Hi-Pot tester is necessary.

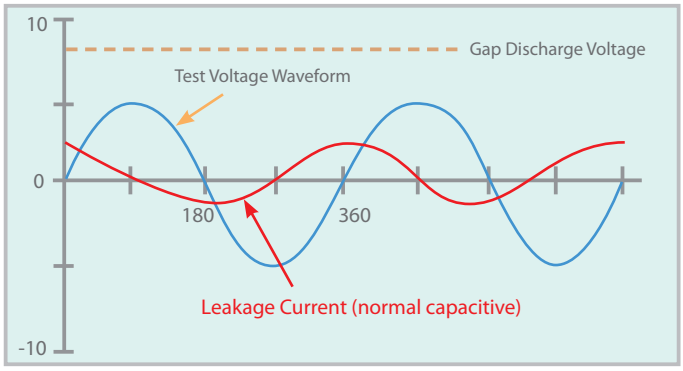


Figure 1 : Normal Leakage Current Waveform

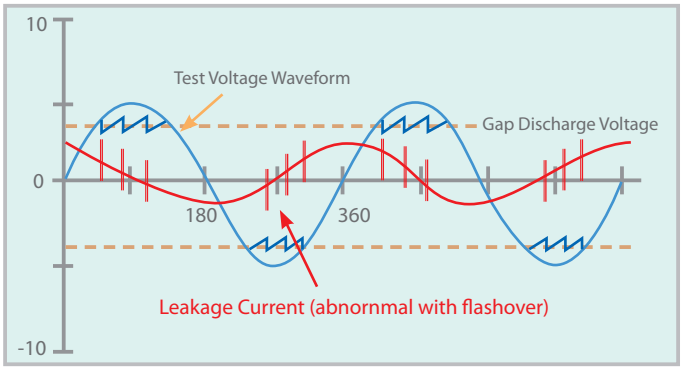
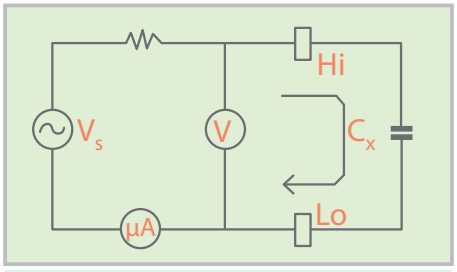


Figure 2 : Leakage Current Waveform when flahover occurred

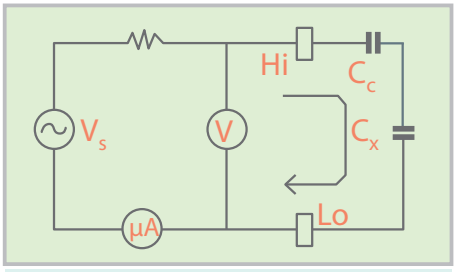
OPEN/SHORT CHECK (OSC)

O.S.C function is used to check the connection is open or short circuit between instrument and DUT(equipment under test) before the Electrical Safety Test. If the connection is bad between the instrument and DUT, sometimes like leads or relay oxidation, the judgment is also PASS. In some cases, the DUT is short before testing. Testing continually leads to our instrument broken because suffered the high load current. Therefore, we have to check the open and short circuit to ensure the test effectively and protect instruments.

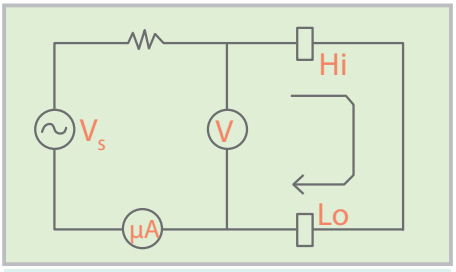
Generally, the DUT have capacitive load (Cx) from tens to thousands of pF. If the connection opening, a capacitance will appear and then total capacitive load is lower than that in normal condition. If the DUT shorting, total capacitive load is higher than that in normal condition. Therefore, we can measure the value of capactive load to check the contact is good or not.



Normal Condition



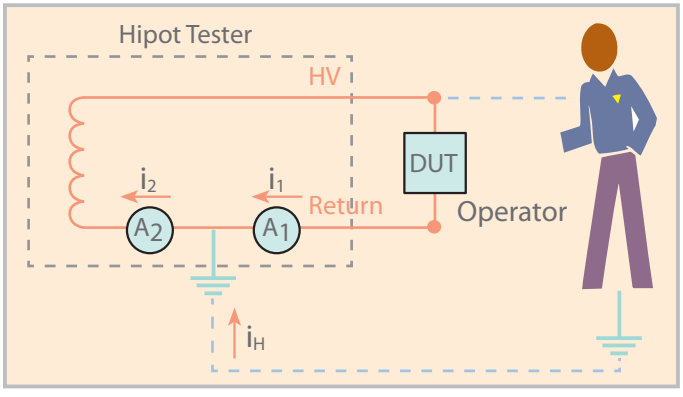
If Circuit Opened :
$C = C_c * C_x / (C_c + C_x) << C_x$



If Circuit Shorted :
$C >> C_x$

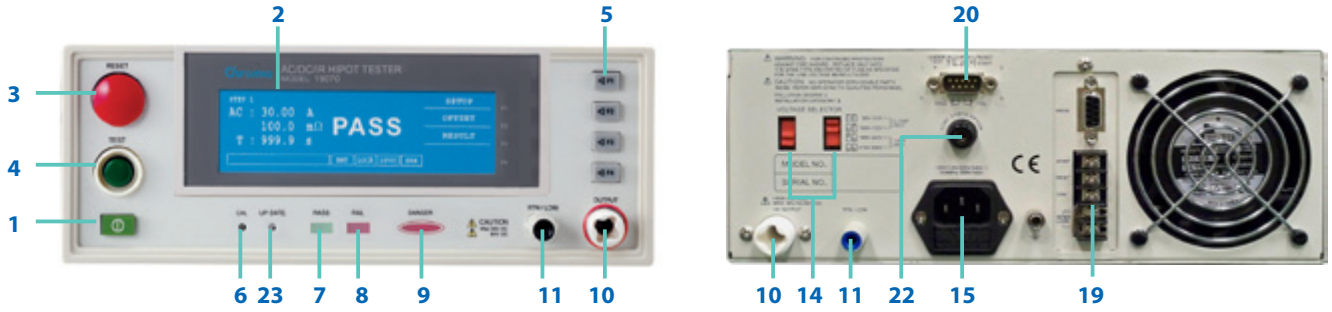
Ground Fault Interrupt (GFI)

The requirement of test environment indicates that test equipment is equipped with auto interrupt device so that Chroma develops into Ground Fault Interrupt (GFI) function. When the current meter A_1 and A_2 detect the difference (i_2-i_1=i_H) between the value i_1 and actual i_2 test current over high, this device can cut the power transiently for protecting human body safety. It is not only compliance with the safety standard but also more safeguards for test personnel.

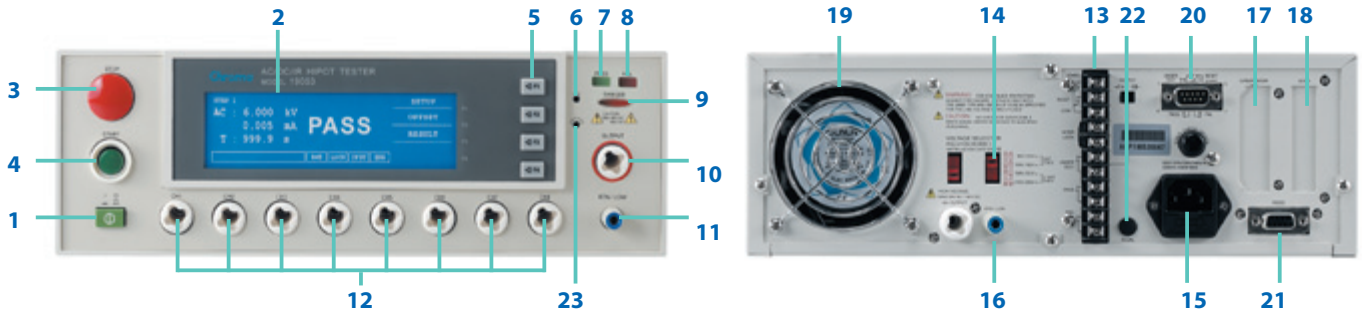


PANEL DESCRIPTION

19073



19053



1. LINE Switch
2. Window Display
3. Stop Button
4. Start Button
5. Function Keys (F1~F4)
6. Calibration Switch
7. Pass Indicator
8. Fail Indicator
9. Test Indicator
10. HV Output
11. RTN/LOW
12. 8 channels HV Output (19053 only)
13. Remote I/O
14. LINE Voltage Selector
15. Power Cord Receptacle
16. RTN/LOW
17. GPIB/Printer Interface (Option)
18. Scan Interface (Option)
19. Fan
20. Remote Interface
21. RS-232 Interface
22. Continuity Test O/P
23. Update Switch

APPLICATION

- Production test of appliances, instruments and information technology equipment in accordance with UL, IEC, TUV and other standards such as EN 60335, EN 60950, EN 61010, CSA C22.2 No.1010.1, UL 3111 and UL 1950
- Transformer electrical safety test
- Electric motor safety test
- Various electronic components tests

ORDERING INFORMATION

19071 : AC Hipot Tester
19073 : AC/DC/IR Hipot Tester
A190701 : Remote Control Box
A190702 : 40kV Test Probe
A190704 : Start Switch
A190706 : 19" Rack Mount Kit
A190708 : ARC Verification Fixture

19052 : Hipot Tester (AC/DC/IR)
19053 : Hipot Tester (AC/DC/IR/ 8CH SCAN)
19054 : Hipot Tester (AC/DC/IR/ 4CH SCAN)
A190344 : HV Gun (SP02)
A190508 : GPIB Interface
A190512 : Auto Control TR. Scan Box
A190517 : 19" Rack Mount Kit

SPECIFICATIONS

Model			19071	19073	19052	19053	19054
Mode			AC	AC/DC/IR	AC/DC/IR	AC/DC/IR/SCAN	
Scanner Unit			-	-	-	8 ports,±phase	4 ports,±phase
Withstanding Voltage Test							
Output Voltage			AC : 0.05 ~ 5kV, DC : 0.05 ~ 6kV				
Load Regulation			1% of setting + 5V				
Voltage Resolotion			2V				
Voltage Accuracy			1% of setting + 5 count				
Cutoff Current			AC : 0.1~20mA, DC : 0.01 ~ 5mA		AC : 0.1 ~ 30mA, DC : 0.01 ~ 10mA		
Current Resolution			AC : 1μA, DC : 0.1μA				
Current Accuracy			1% of setting + 5 count				
Output Frequency			50Hz / 60Hz				
Test Time			0.3 ~ 999 sec., continue				
Ramp Time			0.1 ~ 999 sec., off				
Fall Time			0.1 ~ 999 sec., off				
Dwell Time			0.1 ~ 999 sec., off				
Waveform			Sine wave				
Insulation Resistance							
Output Voltage			-	DC : 0.05 ~ 1kV			
Voltage Resolution			-	2V			
Voltage Accuracy			-	± (1.5% of reading + 5 counts)			
IR Range			-	1MΩ~50GΩ		1MΩ~10GΩ	
Resistance Accuracy	≥ 500V	1.00MΩ~ 25.00MΩ	-	± (5% of reading + 2% of full scale)			
		22.0 MΩ~250.0MΩ	-				
		0.220GΩ~1.000GΩ	-	± (5% of reading + 5% of full scale)			
		1.000GΩ~2.500 GΩ	-	± (10% of reading + 2% of full scale)			
		2.20GΩ~10.00GΩ	-	± (15% of reading + 5% of full scale)			
		10.00GΩ~50.00GΩ	-	± (15% of reading + 1% of scale)		-	
	≤ 500V	0.10 MΩ~25.00MΩ	-	± (10% of reading + 2% of full scale)			
		22.0MΩ~250.0MΩ	-				
		0.220 GΩ~1.000GΩ	-	± (10% of reading + 5% of full scale)			
Flashover (ARC) Detection							
Setting Mode			Programmable setting				
Detection Current			AC : 1mA ~ 15mA, DC : 1mA ~ 5mA		AC : 1mA ~ 15mA, DC : 1mA ~ 10mA		
Secure Protection Function							
Fast Output Cut-off			0.4ms after NG happen				
Ground Fault Interrupt			0.5mA ±0.25mA AC, ON/OFF				
Panel Operation Lock			Present password				
Continuity Check			1Ω ± 0.2Ω, ON/OFF				
GO/NG Judgment Window							
Indication, Alarm			GO : Short sound, Green LED ; NG : Long sound, Red LED				
Data Hold			Least tests data memories				
Memory Storage			60 steps in 60 groups		500 steps in 99 groups		
Remote & Interface							
Remote control			Input : Start, Stop, Interlock (at 11 pin terminal block only) ; Output : Under test, Pass, Fail				
Communication Interface			RS485 (Option)		RS232 (Standard), GPIB (Option).		
General							
Operation Environment			Temperature : 0°C~40°C, Humidity : 15% to 95% R.H@≤40°C				
Power Requirements			100V/120V/220V/240V (AC ±10%), 50/60Hz				
Power Consumption			300W		500W		
Dimension (W x H x D)			270 x 105 x 350 mm		320 x 105 x 400 mm		
Weight			Approx.12 KG		Approx.15 kg		
Certification			UL, TUV, CE		UL, TUV, CE	CE	UL, TUV, CE

*All specifications are subject to change without notice.

Developed and Manufactured by :
CHROMA ATE INC.
HEADQUARTERS
66 Hwaya 1st Rd., Kueishan Hwaya Technology Park, Taoyuan County 33383, Taiwan
Tel: +886-3-327-9999
Fax: +886-3-327-8898
http://www.chromaate.com
E-mail: info@chromaate.com

CHINA
CHROMA ELECTRONICS (SHENZHEN) CO., LTD.
8F, No.4, Nanyou Tian An Industrial Estate, Shenzhen, China PC: 518052
Tel: +86-755-2664-4598
Fax: +86-755-2641-9620

JAPAN
CHROMA JAPAN CORP.
472 Nippa-cho, Kouhoku-ku, Yokohama-shi, Kanagawa, 223-0057 Japan
Tel: +81-45-542-1118
Fax: +81-45-542-1080
http://www.chroma.co.jp
E-mail: info@chromaate.com

U.S.A.
CHROMA SYSTEMS SOLUTIONS, INC.
19772 Pauling,
Foothill Ranch, CA 92610
Tel: +1-949-600-6400
Fax: +1-949-600-6401
http://www.chromausa.com
E-mail: sales@chromausa.com

Worldwide Distribution and Service Network

EUROPE
CHROMA ATE EUROPE B.V.
Morsestraat 32, 6716 AH Ede,
The Netherlands
Tel: +31-318-648282
Fax: +31-318-648288
http://www.chromaeu.com
E-mail: sales@chromaeu.com

19070+19050-E-201407-PDF