

## AC/DC/IR Hipot Tester

### MODEL 19070 SERIES 19050 SERIES

#### Basic Specifications:

- AC/DC/IR 3 in 1 hipot tester
- AC 5kV and DC 6kV output
- 1kV insulation resistance test
- Insulation resistance measurement from 1M to 50G
- Ground continuity check

#### Key Features:

- 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

#### Others:

- Large LCD display (240 x 64 dots matrix)
- 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



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

#### Complete Dielectric Testing Solution

The 19050 series electrical safety tester 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 3 models for choice. The 19071 is for AC Hipot testing, the 19073 which 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 series is 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 .

#### 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.



# Chroma



### FLASHOVER DETECTION

Fast transient in Voltage or Current occurred 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.

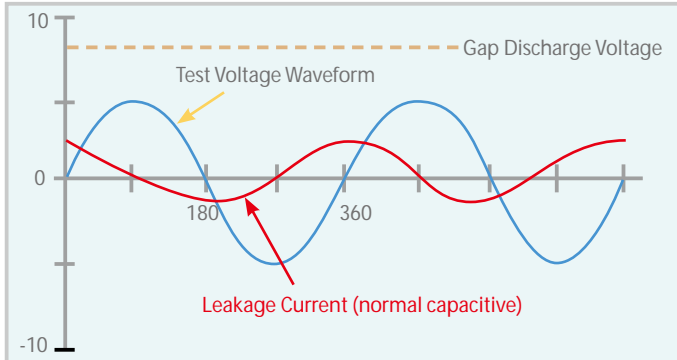


Figure 1 : Normal Leakage Current Waveform

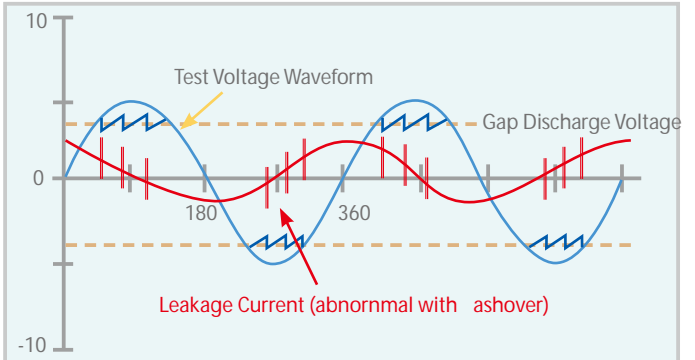
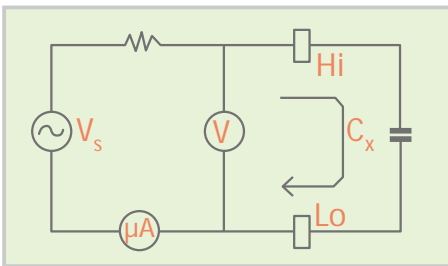


Figure 2 : Leakage Current Waveform when flashover occurred

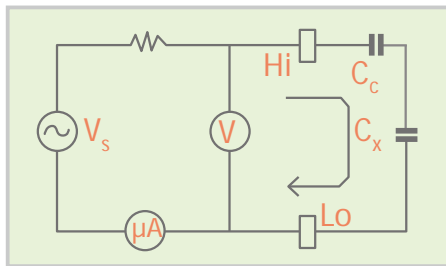
### OPEN/SHORT CHECK (OSC)

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.

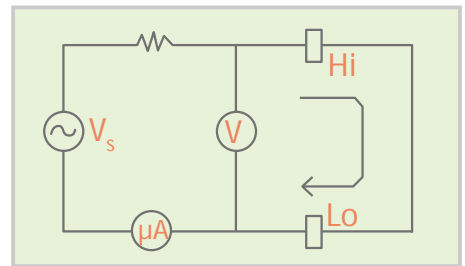
Generally, the DUT have capacitive load (Cx) from tens to thousands of pF. If the connection opening, a capacitance will appear and then total capacitive load is lower than that in normal condition. If the DUT shorting, total capacitive load is higher than that in normal condition. Therefore, we can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



Normal Condition



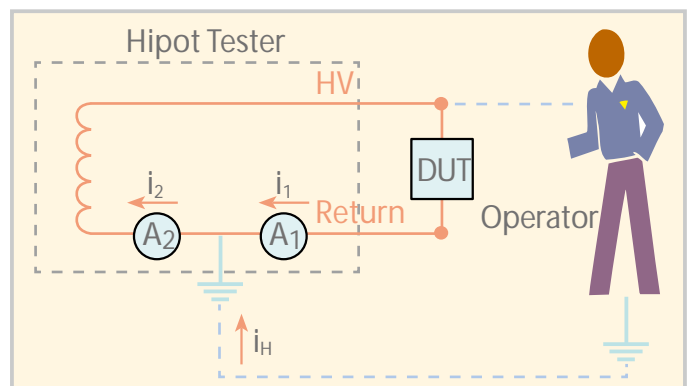
If Circuit Opened :  
 $C = C_c * C_x / (C_c + C_x) \ll C_x$



If Circuit Shorted :  
 $C \gg C_x$

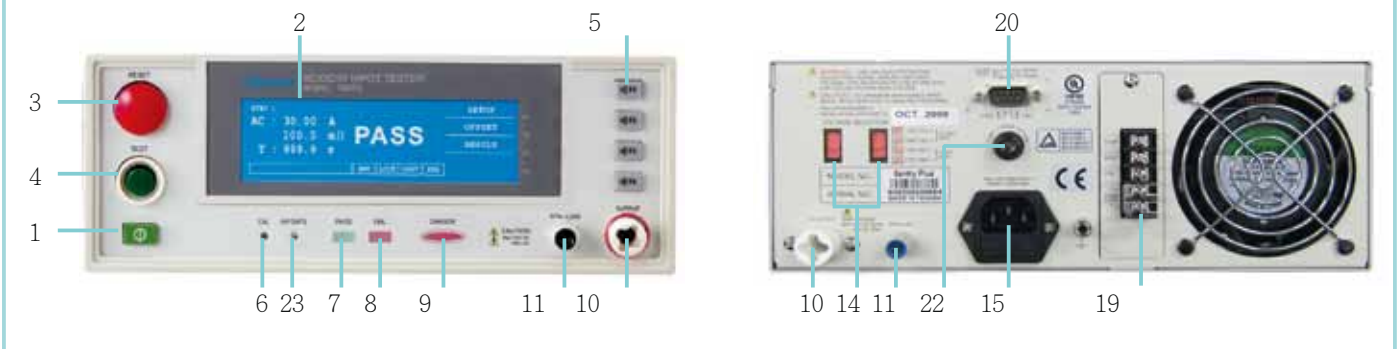
### Ground Fault Interrupt (GFI)

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 A1 and A2 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.

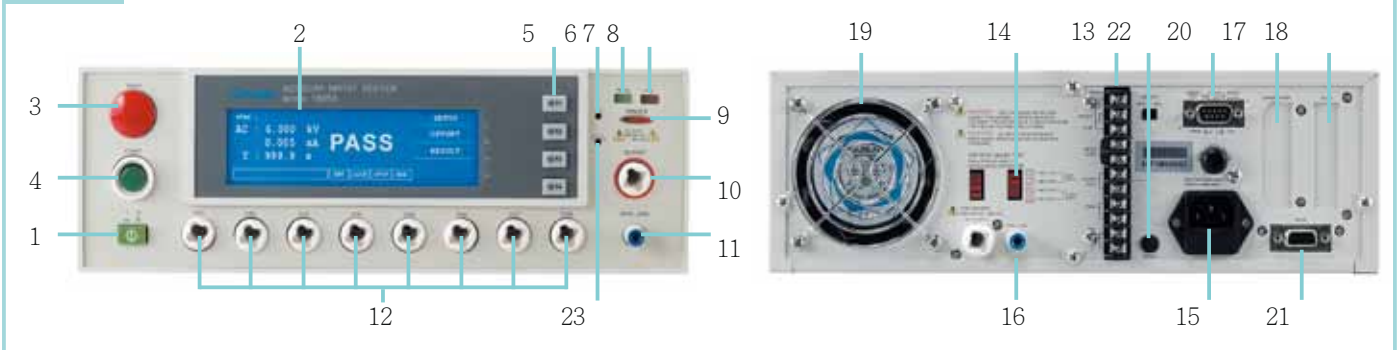


## PANEL DESCRIPTION

### 19073



### 19053



- |                          |                           |                                     |
|--------------------------|---------------------------|-------------------------------------|
| 1. LINE Switch           | 9. Test Indicator         | 16. RTN/LOW                         |
| 2. Window Display        | 10. HV Output             | 17. GPIB/Printer Interface (Option) |
| 3. Stop Button           | 11. RTN/LOW               | 18. Scan Interface (Option)         |
| 4. Start Button          | 12. 8 channels HV Output  | 19. Fan                             |
| 5. Function Keys (F1~F4) | (19053 only)              | 20. Remote Interface                |
| 6. Calibration Switch    | 13. Remote I/O            | 21. RS-232 Interface                |
| 7. Pass Indicator        | 14. LINE Voltage Selector | 22. Continuity Test O/P             |
| 8. Fail Indicator        | 15. Power Cord Receptacle | 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  
 19073 : AC/DC/IR Hipot Tester with RS485  
 A190701 : Remote Control Box  
 A190702 : 40kV Test Probe  
 A190344 : HV Gun (SP02)  
 A190706 : 19" Rack Mount Kit

19052 : Hipot Tester (AC/DC/IR)  
 19053 : Hipot Tester (AC/DC/IR/ 8CH SCAN)  
 19054 : Hipot Tester (AC/DC/IR/ 4CH SCAN)  
 A190512 : Auto Control TR. Scan Box  
 A190508 : GPIB Interface  
 A190510 : Printer Interface  
 A190344 : HV Gun (SP02)  
 A150517 : 19" Rack Mount Kit

## SPECIFICATIONS

Model	19071	19073	19052	19053	19054	
Mode	AC	AC/DC/IR	AC/DC/IR	AC/DCV/IR/SCAN	ACV/DCV/IR/SCAN	
Scanner Unit	-	-	-	8 ports,±phase	4 ports,±phase	
<b>Withstanding Voltage Test</b>						
Output Voltage	AC : 0.05 ~ 5kV, DC : 0.05 ~ 6kV					
Load Regulation	1% of setting + 5V					
Voltage Regulation	2V					
Voltage Accuracy	1% of setting + 5 count					
Cuto 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., o					
Fall Time	0.1 ~ 999 sec., o					
Dwell Time	0.1 ~ 999 sec., o					
Waveform	Sine wave					
<b>Insulation Resistance Test</b>						
Output Voltage	-	DC : 0.05 ~ 1kV	DC : 0.05 ~ 1kV	DC : 0.05 ~ 1kV		
Voltage Resolution	-	2V	2V	2V		
Voltage Accuracy	-	5% of setting + 5 count	1.5% of setting + 5 count	1.5% of setting + 5 count		
IR Range	-	1M ~50G	1M ~50G	1M ~10G		
Resistance Resolution	-	0.1M	0.1M	0.1M		
Resistance Accuracy	500V	1M ~1G	-	4% of setting + 5 count	5% of setting + 5 count	5% of setting + 5 count
		1G ~10G	-	7% of setting + 5 count	10% of setting + 5 count	10% of setting + 5 count
		10G ~50G	-	12%5% of setting + 5 count	15% of setting + 5 count	15% of setting + 5 count
	100V	1M ~1G	-	10% of setting + 5count	10% of setting + 5 count	10% of setting + 5 count
<b>Flashover (ARC) Detection</b>						
Setting Mode	Programmable setting					
Detection Current	AC : 1mA ~ 15mA, DC : 1mA ~ 5mA		AC : 1mA ~ 15mA, DC : 1mA ~ 10mA			
<b>Secure Protection Function</b>						
Fast Output Cut-o	0.4ms after NG happen					
Ground Fault Interrupt	0.5mA ±0.25mA AC, ON/OFF					
Panel Operation Lock	Present password					
Continuity Check	1 ± 0.2 , ON/OFF					
<b>GO/NG Judgment Window</b>						
Indication, Alarm	GO : Short sound, Green LED ; NG : Long sound, Red LED					
Data Hold	Least tests data memories					
Memory Storage	50 instrument setups with up to 20 test steps					
<b>Remote &amp; Interface</b>						
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).			
<b>General</b>						
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.

致茂電子股份有限公司

HEADQUARTERS

No. 66, Hwa-Ya 1st Rd.,

Hwa-Ya Technology Park,

Kuei-Shan Hsiang,

Taoyuan County 33383

Taiwan

Tel: +886-3-327-9999

Fax: +886-3-327-8898

http://www.chromaate.com

E-mail: chroma@chroma.com.tw

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.

11F NARA Building II 2-2-8

Shinyokohama, Kouhokuku,

Yokohama City 222-0033

Kanagawa, Japan

Tel: +81-45-470-2285

Fax: +81-45-470-2287

http://www.chroma.co.jp

U.S.A.

CHROMA SYSTEMS

SOLUTIONS, INC.

25612 Commercentre Drive

Lake Forest, CA 92630-8830

Tel: +1-949-600-6400

Fax: +1-949-600-6401

Toll Free: +1-866-600-6050

http://www.chroma.com

E-mail: sales@chromausa.com

EUROPE

CHROMA ATE EUROPE B.V.

Morsestraat 32, 6716 AH Ede,

The Netherlands

Tel: +31-318-648282

Fax: +31-318-648288

http://www.chroma.eu.com

E-mail: sales@chromaeu.com

Distributed by:

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