

AC/DC/IR Hipot Tester

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 1M Ω to 50G Ω
- Ground continuity check (GC)
- Standard RS-232 interface
- Open short check(OSC) function
- GFI shutdown of the instrument when current imbalance > 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



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

Complete Dielectric Testing Solution

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

The Chroma Hipot Tester 19050 series provides 3 models to choose from. The 19052 includes AC/DC/IR Hipot testing and insulation resistance (IR) measurements. The 19053 provides 8 scan channels for IR measurement, and the 19054 provides 4 scan channels for IR measurement in a single compact unit.

The Chroma Hipot Tester 19070 series provides 2 models to choose from. 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 an open circuit between the instrument and the DUT or if there is a breakdown inside the DUT before testing for electrical safety.

Flashover (ARC) Detection

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

Ground Continuity Check (GC)

All of the 19050 series testers have a ground continuity check feature to determine if the resistance between the ground blade of the 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 exists for more than a few milli-seconds to protect users.

Quick Discharge

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



Chroma



MAIN FUNCTIONS

FLASHOVER DETECTION (ARC)

Fast transients in Voltage or Current occurring while Hi-Pot testing are called Electrical Flashover. Normally, with AC line frequency (50Hz/60Hz) or DC Hi-Pot testing, the leakage current is the same 50Hz/60Hz or DC (charge current excepted). As shown in Figure 1, leakage current varies smoothly.

In contrast, when electrical discharge occurs due to poor insulation materials, electrode gaps, surface clearances, etc., fast transients in leakage current become apparent, as shown in Figure 2. This is a phenomenon of poor withstanding. Most of Electrical Safety regulations mention a necessity for a Withstand Strength Test. Nevertheless, general Hi-Pot testers only detect the RMS value of leakage current, without the capability to detect Flashover. Therefore, a Hi-Pot tester equipped with the FLASHOVER detection function is necessary.

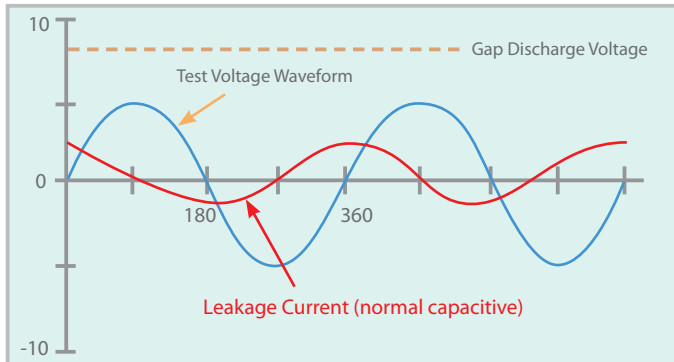


Figure 1 : Normal Leakage Current Waveform

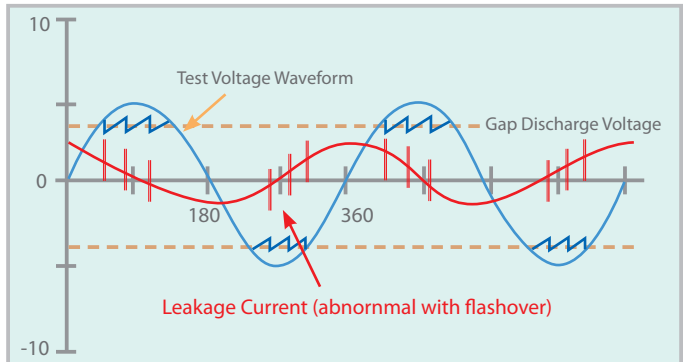
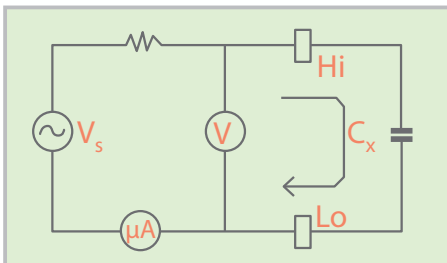


Figure 2 : Leakage Current Waveform when flashover occurred

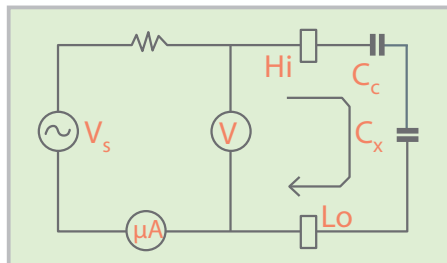
OPEN/SHORT CHECK (OSC)

The O.S.C function is used to check whether the connection is open or is a short circuit between the instrument and the DUT (equipment under test) before the Electrical Safety Test begins. If the connection between the instrument and DUT is bad, like a bad lead or relay oxidation, the test will also PASS. In some cases, the DUT is short before testing. Testing continually leads to instrument failure due to it suffering the high load current. Therefore, we check the open and short circuit to ensure the test effectively and protect the instruments.

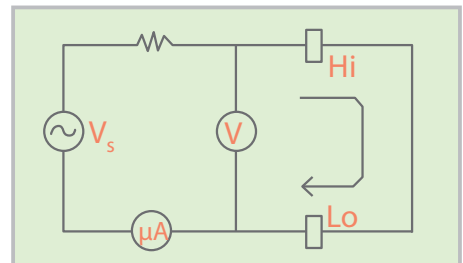
Normally, DUT have capacitive loads (C_x) from tens to thousands of pF. If the connection is open, a capacitance will appear and total capacitive load will be lower than that of normal conditions. If the DUT is shorting, total capacitive load is higher than that of normal conditions. Therefore, we can measure the value of the capacitive load to check whether the contact is good or not.



Normal Condition



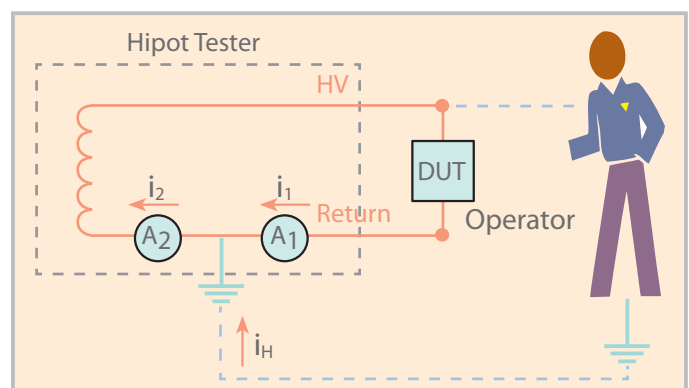
If Circuit Opened :
 $C = C_c * C_x / (C_c + C_x) \ll C_x$



If Circuit Shorted :
 $C \gg C_x$

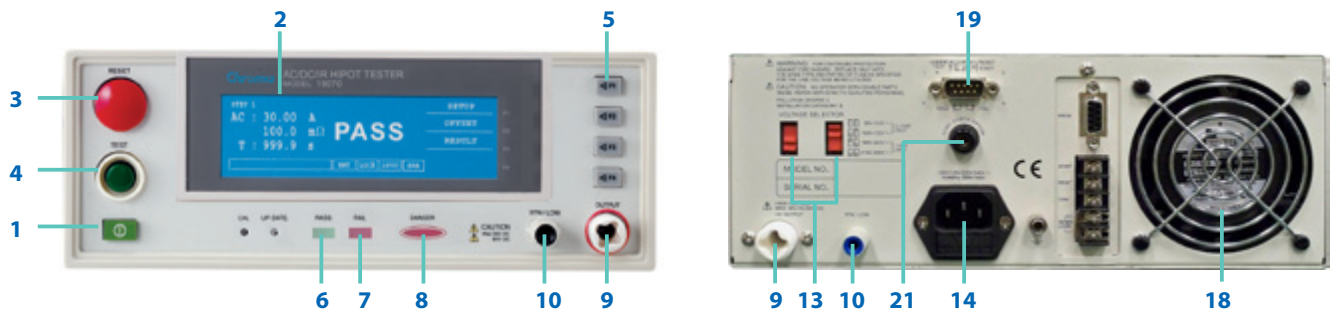
GROUND FAULT INTERRUPT (GFI)

Requirements for test environments indicate that test equipment must be equipped with an auto interrupt device, so Chroma developed a built in Ground Fault Interrupt (GFI) function. When the current meters A1 and A2 detect difference ($i_2 - i_1 = i_H$) between the values i_1 and the actual i_2 test current over high, the instrument can cut the power transiently in order to protect a human body safely. It is not only compliant with the safety standard but also provides more safeguards for test personnel.

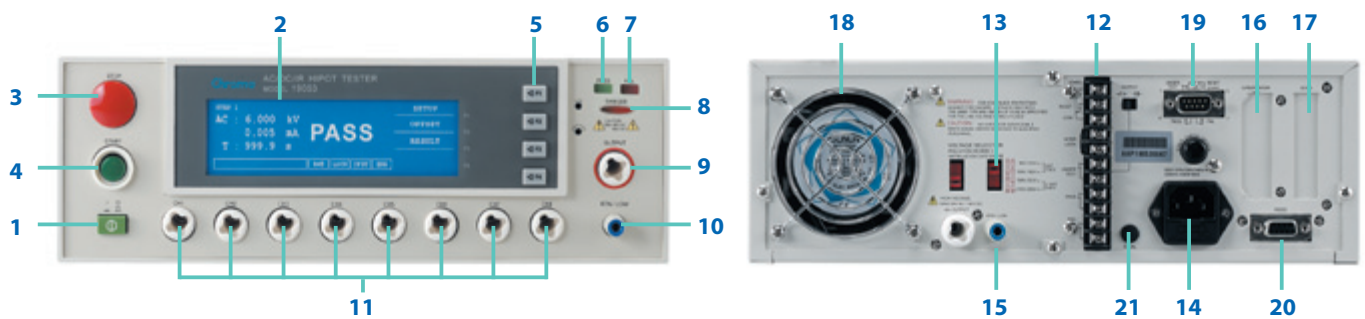


PANEL DESCRIPTION

19073



19053



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

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
- Various electronic components tests

ORDERING INFORMATION

- | | |
|---|--|
| 19071 : AC Hipot Tester | 19052 : Hipot Tester (AC/DC/IR) |
| 19073 : AC/DC/IR Hipot Tester | 19053 : Hipot Tester (AC/DC/IR/ 8CH SCAN) |
| A190701 : Remote Control Box | 19054 : Hipot Tester (AC/DC/IR/ 4CH SCAN) |
| A190702 : 40kV Test Probe | A190344 : HV Gun (SP02) |
| A190704 : Start Switch | A190508 : GPIB Interface |
| A190706 : 19" Rack Mount Kit | A190512 : Auto Control TR. Scan Box |
| A190708 : ARC Verification Fixture | A190517 : 19" Rack Mount Kit |

SPECIFICATIONS

Model			19071	19073	19052	19053	19054	
Mode			ACV		ACV / DCV / IR		ACV / DCV / IR / SCAN	
Scanner Unit			-		-		8 ports,±phase	
Withstanding Voltage Test								
Output Voltage			AC : 0.05 ~ 5kV, DC : 0.05 ~ 6kV					
Load Regulation			≦ (1%+5V)					
Voltage Resolution			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			± (1.5% of reading + 5 counts)		± (1% of reading + 5 counts)			
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% of reading + 5 counts)			
IR Range			-		1MΩ~50GΩ		1MΩ~10GΩ	
Resistance Accuracy	≥ 500V	1.00MΩ ~ 25.00MΩ		-		± (4% of reading + 5 counts)	± (5% of reading + 2% of full scale)	
		22.0 MΩ ~250.0MΩ		-			± (5% of reading + 5% of full scale)	
		0.220GΩ ~1.000GΩ		-			± (10% of reading + 2% of full scale)	
		1.000GΩ ~2.500 GΩ		-		± (15% of reading + 5% of full scale)		
		2.20GΩ ~10.00GΩ		-		± (15% of reading + 1% of full scale)		
	≤ 500V	10.00GΩ ~50.00GΩ		-		± (7% of reading + 5 counts)	± (10% of reading + 2% of full scale)	
		0.10 MΩ ~25.00MΩ		-			± (10% of reading + 5% of full scale)	
		22.0MΩ ~250.0MΩ		-			± (10% of reading + 5% of full scale)	
	0.220 GΩ ~1.000GΩ		-				± (10% of reading + 5% of full scale)	
Flashover (ARC) Detection								
Setting Mode			Programmable setting					
Detection Current			AC : 1mA ~ 20mA, 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			1~5Ω ± 0.2Ω, ON/OFF		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			10 steps or 60 groups for total 60 memory		99 steps or 99 groups for total 500 memory			
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.

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