

# APPLICATION NOTE

## Using ITC5510 GPIB Software With An ITC55x00 Tester

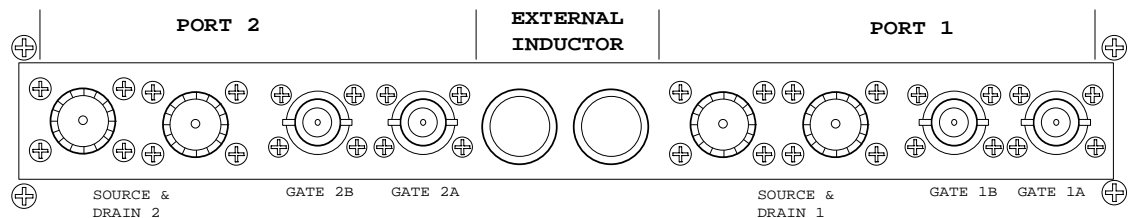
### Purpose

This Application Note describes how to setup an ITC55x00 tester so it is compatible with an ITC5510 tester, running ITC5510 GPIB software. This note allows customers to verify the GPIB operation of an ITC55x00 tester and to run production testing while their GPIB program is being updated to the new ITC55x00 GPIB command set.

It is possible to use the ITC5510 GPIB command set to operate and control an ITC55x00 tester but it is not recommend as a long-term solution. The ITC55x00 testers provide dual port testing and many other functions that require additional GPIB commands. Using the ITC5510 GPIB command set severely limits the ITC55x00 tester's capabilities and should only be considered as a short-term solution.

### ITC55x00 Cable Connections

Cable are connected to an ITC55x00 tester much like they are for an ITC5510. The only exception is that the ITC55x00 has two identical test ports while the ITC5510 only has one test port. For this application note, Port 1 is used; however, Port 2 may also be used.



**Figure Error! No text of specified style in document.-1:** Typical ITC55x00 Right Side Connector Panel

Connect the Testers Source, Drain, Gate1A, and Gate 1B cables to the DUT tester just as the ITC5510 was connected.

# ITC55x00 Tester Setup

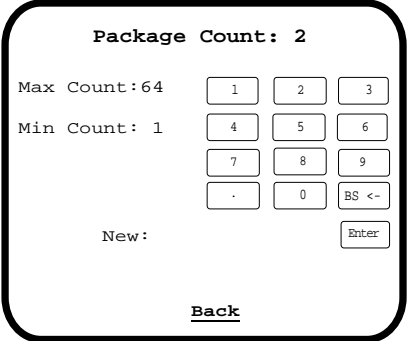
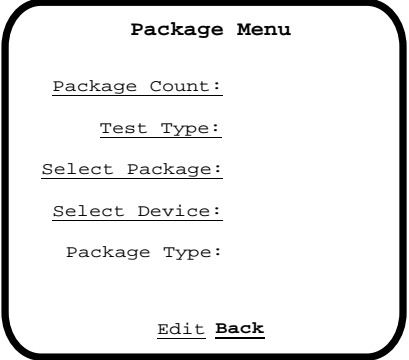
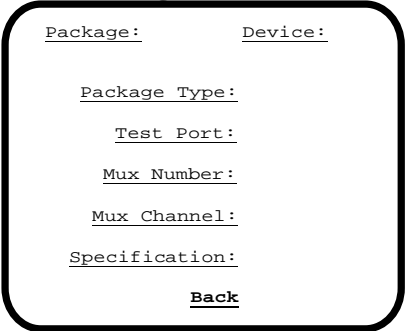
In order for the ITC55x00 to emulate an ITC5510 operating under the ITC5510 GPIB command set, some test parameters must be entered via the ITC55x00’s LCD.

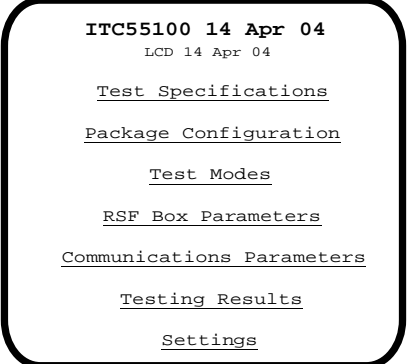
### Conditions:

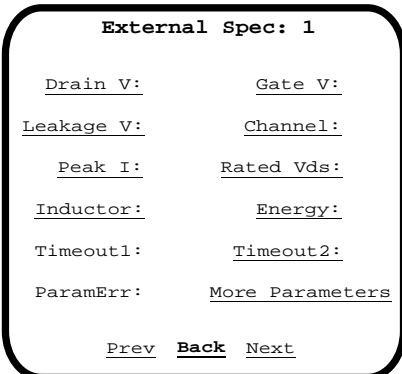
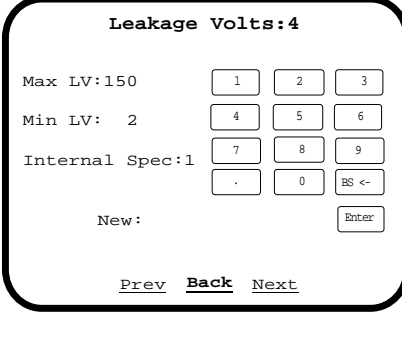
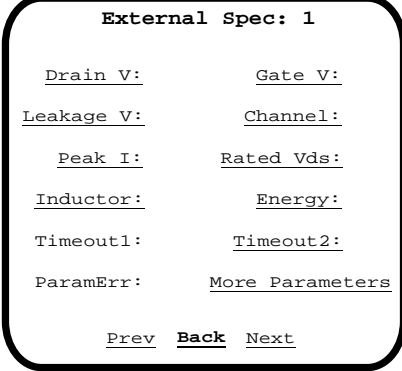
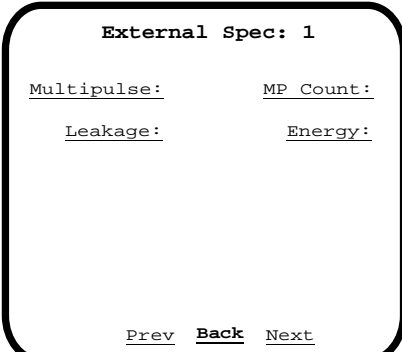
1. ITC5510 GPIB commands can only modify an ITC55x00 External Spec 1.
2. For an ITC55x00 to be 100% compatible with the ITC5510 GPIB command set, the ITC55x00 must be manually configured for single DUT connected to Port 1 or Port 2 and External Spec 1 is set as the test specification.
3. The ITC55x00 must be set for the correct inductor load box.
4. The handler can be powered from an internal power supply if required.
5. Leakage Mode, Pre, Post, Both, or Off, and the desired leakage test voltage must be manually setup in External Spec 1 before starting the test. Once the Leakage values are set, they will remain set as long as Field #4 of the ITC5510 GPUB command string doesn’t change them. (This should not happen as Field #4 is a spare field in the ITC5510 GPIB command set.
6. Trailing Commands are not needed with single letter commands. Examples are ‘s’, ‘r’, and ‘t’. It is not recommended that parameters be used on the same line as the ‘t’ command.

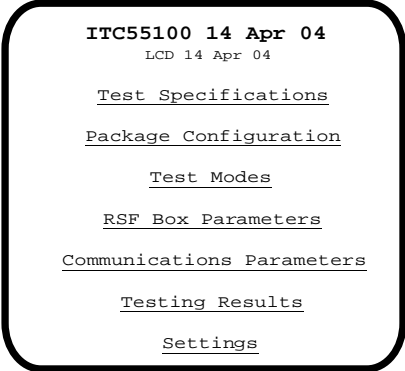
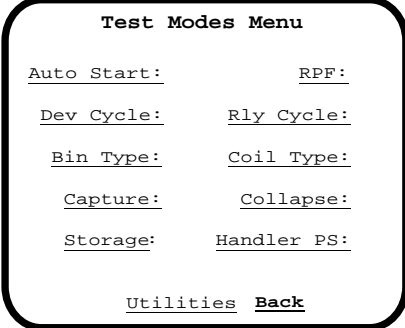
## ITC55x00 Tester Setup Procedure

Setting The Package Type	
<p>1. Touch <u>Package Configuration</u> on the ITC55X00 Start Up Screen to display the Package Menu screen.</p>	<p><b>ITC55100 14 Apr 04</b>                      LCD 14 Apr 04</p> <p><u>Test Specifications</u></p> <p><u>Package Configuration</u></p> <p><u>Test Modes</u></p> <p><u>RSF Box Parameters</u></p> <p><u>Communications Parameters</u></p> <p><u>Testing Results</u></p> <p><u>Settings</u></p>
<p>2. Package Count is set to “1”.</p> <p>3. Touch <u>Package Count</u> to display the Package Count input screen.</p>	<p><b>Package Configuration</b></p> <p><u>Package Count:</u></p> <p><u>Test Type:</u></p> <p><u>Select Package:</u></p> <p><u>Select Device:</u></p> <p>Package Type:</p> <p><u>Edit</u> <b>Back</b></p>

<b>Setting The Package Type</b>	
<p>4. Touch "1" and then Enter to place a "1" next to "New:"</p> <p>5. Touch "<u>Back</u>" to return to the <u>Package Configuration</u></p>	
<p>6. Touching <u>Test Type</u> allows you to toggle between "Device", "Package" and "All". Select "Device" to allow testing of a single device in the package.</p> <p>7. <u>Select Package</u> is not active in production because package count is always set to "1".</p> <p>8. <u>Select Device</u> toggles between "Device A" and "Device B" in our example. Set to "Device A" because the package type must be a "Single" device.</p> <p>9. <u>Package Type</u> should read "Single" To do this touch <u>Edit</u> at the bottom of screen to display the Package Edit screen.</p>	
<p>10. <u>Package Type</u> toggles between "Single", "Dual" and "Quad". In this example we need to set it to "Single". At the top of the screen <u>Package:</u> should have "1" next to it and <u>Device:</u> will not toggle between "A" and "B" when touched.</p> <p>11. <u>Test Port</u> toggles between port "1" (towards the rear of the tester) and port "2" (towards the front of the tester).</p> <p>12. Select Port "1" for Device A</p> <p>13. Set <u>MUX Number</u> and <u>MUX Channel</u> to "1".</p> <p>14. Touch <u>Specification</u> and toggle to "External Spec 1".</p> <p>15. Touch Back to on the Package Edit screen and then Back on the Package Configuration screen to return to the Start-Up Screen.</p>	

<b>Editing An External Specification</b>	
<p>1. Touch <u>Test Specifications</u> on the ITC55X00 Start Up Screen to display Internal Spec: 1 edit screen.</p>	

<b>Editing An External Specification</b>	
<p>2. Touch <u>Next</u> until External Spec 1 is displayed. (Only External Spec 1 can be modified by the ITC5510 GPIB command set.)</p> <p>3. “External Spec 1” must be edited to enter the parameters needed to test Device A in the single package.</p> <p>4. Edit all parameters to agree with the DUT test requirements.</p>	
<p>5. Touch <u>Leakage V</u> on the External Spec:1 screen to display the Leakage Volts: screen.</p> <p>6. Set the desired Pre, Post, or Both Leakage voltage.</p> <p>7. Touch <u>Back</u> to return to the “External Spec 1” screen.</p> <p><b>NOTE:</b> The Leakage Regulator voltage can be set from 2V up to the Drain voltage set for the DUT. Leakage currents greater than 1.0mA will be detected, the maximum leakage current during a leakage test will be in the range 4.0mA to 8.0mA.</p>	
<p>8. Touch <u>More Parameters</u> to display a second External Specs 1 parameters screen.</p>	
<p>9. Toggle <u>Leakage</u> to “Pre, Post, Both, or Off”. (In Both mode the tester will do the leakage test before and after the avalanche test.)</p> <p>10. Touch <u>Back</u> to return to first “External Spec 1” screen and then touch Back to return to the Start-Up screen</p>	

<b>Select A Load Box/Bin Type/Handler Power Supply</b>	
<p>1. Touch <u>Test Modes</u> on the ITC55X00 Start Up Screen to display the Test Modes screen.</p> <p>2. Touch the <u>Coil Types</u> to toggle through the possible ITC Inductive Load boxes. Select the load box connected to the tester.</p> <p><b>NOTE:</b> Toggles between the following Inductor Boxes: 5514, 5514IR, 5515, 5516, 55140, and External.</p> <p><b>NOTE:</b> If an External coil is used, the operator must be sure that the Inductor and Energy values match the external inductor.</p>	 <p><b>ITC55100 14 Apr 04</b> LCD 14 Apr 04</p> <p><u>Test Specifications</u></p> <p><u>Package Configuration</u></p> <p><u>Test Modes</u></p> <p><u>RSF Box Parameters</u></p> <p><u>Communications Parameters</u></p> <p><u>Testing Results</u></p> <p><u>Settings</u></p>
<p>3. Touch <u>Bin Type</u> and toggle to the 5510 L or P. The selected bin type also changes the appearance of the <u>Testing Results Totals</u> screen described later in this chapter.</p> <p><b>NOTE:</b> L is selected if the handler requires a voltage level binning signal. Select P if the handler requires a pulsed binning signal.</p> <p>4. Touch <u>Handler PS</u> and toggle between Enable or Disable.</p> <p><b>NOTE:</b> If Enabled, the tester's handler interface circuitry is powered by the tester's internal power supply. If Disabled, the handler interface circuitry is power by the handler's power supply.</p> <p>5. Touch <u>Back</u> to return to the tester's Start-Up screen.</p>	 <p><b>Test Modes Menu</b></p> <p><u>Auto Start:</u> <u>RPF:</u></p> <p><u>Dev Cycle:</u> <u>Rly Cycle:</u></p> <p><u>Bin Type:</u> <u>Coil Type:</u></p> <p><u>Capture:</u> <u>Collapse:</u></p> <p><u>Storage:</u> <u>Handler PS:</u></p> <p><u>Utilities</u> <u>Back</u></p>

## GPIB Commands

The ITC55x00 and the ITC5510 Listener Mode command are almost identical. The differences are noted in the following table.

LISTENER MODE DATA FORMAT							
A1050,	00300,	00015,	00050,	00025,	00012,	00250,	CR LF
<p>A = Test Command (Test Command Description) Second Digit = polarity 1 = N-Channel 4 = P-Channel Digits 3, 4, 5 = Drain Voltage: 050 = 50 volts Inductor Value = 3 mH (See Energy/Inductance Description) Gate Voltage = 15 V (See Gate Voltage Description)</p> <p><b>ITC55x00 Only</b> Leakage Voltage (30015 = Pre and Post leakage performed at 15 volts.)</p> <p>First Digit Values: 0 = Off 1 = Pretest 2 = Posttest 3 = Both Digits 2, 3, 4, 5 = Leakage Voltage Value: 0015 = Leakage Voltage (See Leakage Voltage Description) Peak Current = 2.5 Amps (See Peak Current Description) Multi-Pulse = 12 Pulses (See Multi-Pulse count Description) Rated Vds = 250 V (See Rated Vds Description) Primary Delimiter (See Delimiters Description)</p>							

For more details, refer to the GPIB appendix in your tester manual.

ITC5510 and the ITC55x00 GPIB command set provide the same return format:

TALKER MODE DATA FORMAT			
	00000,	10000,	CR LF
Blank			
1 = Test Result			
Rest = Blank			
Primary Delimiter			

### Blank

The first block in the string is all zeros followed by the comma delimiter.

### Test Result or Alarm

The first digit of the second block in the string is a value that corresponds to the test result:

Code	Description
1	Pass
2	Kelvin Fail
3	Leakage Fail
4	Peak Current Fail
5	Avalanche Fail
6	Parameter Value Out of Range
7	High Speed Switch Error
8	Speed Error
9	Collapse

The ITC5510 GPIB command set only recognizes codes 1 through 6.

**Use This Page For Notes.**