

Solartron 1250

PROCEDURE FOR A FUNCTIONAL CHECK

HTTP://WWW.AMETEKSI.COM/SUPPORT-CENTER/SOLARTRON-ANALYTICAL/USER-TESTS





NOTE: Before beginning the test, if working with a unit that has both front and rear connections, please ensure that the cables are connected to the rear connections and that rear inputs are selected within the FRA. Please check this prior to steps #4 & #12 by selecting "ANALYZER MENU", followed by "ANALYZER 1" (before step 4, analyzer 2 before step 12), then "INPUT", "REAR".

This is a basic test procedure used to ensure that the generator and input channels are working on the FRA in question. The following steps outline the procedure for performing a basic bench test on the Solartron Analytical 1250:

□ Step 1: Press "SELF TEST" key, followed by "INIT". Relays will click, and an "Initialized" message will appear on the display.



□ Step 2: Press "GENERATOR MENU", followed by "FREQ", followed by "1", followed by "ENTER" (sets frequency to 1Hz).





SELECT	7	8	g CLEAR
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	FUNCTION	PT	
	DATA OUTPUT	0	
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□ Step 3: Press "AMPL", followed by "1", followed by "ENTER" (sets amplitude to 1Volt).

□ Step 4: Press "DISPLAY/PLOTTER MENU", followed by "SOURCE", followed by "SELECT" until ch.1 is displayed, followed by "ENTER" (sets display to show analyzer 1 result).

Solartron SI1250 PREQUENCY RESPONSE ANALYZER DISPLAY SOURCE CO-ORDS ERROR	SELECT I J VARABLE STATUB VEWFLE LCOAL BREAK	self hast 7 8 9 CLEAR 4 5 6 EXP 1 2 3 +/- . 0 ENTER
OBNERATOR MENU ANALYSER ME STOP STOP START STOP SINGLE REC OFF POWER ON	DISPLAY/ PLOTTER STOP PLOT	FUNCTION PROUBAM LEARN DATA OUTPUT PAUBE/ CONTINUE EXECUTE

□ Step 5: Press "CO-ORDS", followed "SELECT" until R/theta is displayed, followed by "ENTER" (sets display to show R / theta).





Step 6: Place a BNC short circuit on GENERATOR LO. A similar model to the one shown below can be purchased at <u>http://www.newark.com/pomona/3839/bnc-dust-cap-</u> brass/dp/77B2417?MER=bn_level5_4NP_LastViewed_1.



Step 7: Link GENERATOR HI to input CHANNEL 1 HI on the back panel of the 1250 with bnc to bnc lead.



- □ Step 8: Press "GENERATOR START", followed by "RECYCLE".
- □ Step 9: Display should show a frequency of 1Hz @ approximately 1Volt (+/-0.4V) @ approximately 0 deg phase (+/-2 deg phase).





Step 10: Link GENERATOR HI to CHANNEL 1 LO with bnc to bnc lead.



□ Step 11: Display should show a frequency of 1Hz @ approximately 1Volt (+/-0.4V) @ approximately - 180 deg phase (+/-2 deg phase).

FREQUENCY RESPONSE ANALYZER	BELECT			self lest
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STOP STOP START STOP SINULE RECYCLE STOP HOLD START	STOP	DATA OUTPUT	PAUSE/ CONTINUE	EXECUTE
POWER ON ON				

□ Step 12: Press "Display/Plotter Menu" followed by "Source" followed by "Select" until ch. 2 is displayed, followed by enter (sets display to show analyzer 2 result).





solartron SI1250	0 Incy response analyzer					soff leaf
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	and and a	CONTINUE		TUMINO	CONTINUE	
OFF ON						

□ Step 13: Press "GENERATOR START", followed by "Recycle".

Step 14: Link GENERATOR HI to CHANNEL 2 HI with bnc to bnc lead.



□ Step 15: Display should show a frequency of 1Hz @ approximately 1 Volt (+/-0.4V) @ approximately 0 deg phase (+/-2 deg phase).





Step 16: Link GENERATOR HI to CHANNEL 2 LO with bnc to bnc lead.



□ Step 17: Display should show a frequency of 1Hz @approximately 1Volt (+/-0.4V) @ approximately - 180 deg phase (+/-2 deg phase).

Solartron SI1250 FREQUENCY RESPONSE ANALYZER	soff test
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	STATUS VEWFLE 1 2 3 +/- LOCAL BREAK . 0 ENTER
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OFF ON	

□ Step 18: Set frequency to 10KHz- After pressing "GENERATOR MENU", followed by "FREQ" in step 2, type in "10". Then use the "SELECT" to change setting to KHz, and press "ENTER". Resume from step 3 of the previously outlined test.





Repeat the steps ar	nd check results as listed below:
Results for steps 4-8:	Freq = 10 KHz, Amp = 1.0 +/-0.4 V, Phase = 0 +/-2 deg phase
Results for step 10:	Freq = 10 KHz, Amp = 1.0 +/-0.4 V, Phase = -180 +/-2 deg phase
Result for steps 12-14:	Freq = 10 KHz, Amp = 1.0 +/-0.4 V, Phase = 0 +/-2 deg phase
Result for step 16:	Freq = 10 KHz, Amp = 1.0 +/-0.4 V, Phase = -180 +/-2 deg phase

Step 19: As a final check, Press "SELF TEST", then "ENTER" four times. The first time "ENTER" is pressed, lights will move down the display. The second time "ENTER" is pressed, lights will move across the screen left to right. The third time "ENTER" is pressed, the alphabet, along with numbers and symbols will display on the screen. The final time "ENTER" is pressed, it is requested that all keys be pressed (44). After completion, you should see "TEST PASS" on the display.



□ Step 20: Complete the test by pressing "SELF TEST", then "INIT".







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Solartron 1250E/A/B & 1254A

CONNECTIONS/COMMUNICATIONS-ZPLOT

HTTP://WWW.AMETEKSI.COM/SUPPORT-CENTER/SOLARTRON-ANALYTICAL/USER-TESTS







When working with the Solartron Analytical 1250E/A/B or the 1254A Frequency Response Analyzer, as with all Solartron FRAs, it is important to run a connections and communications check to ensure that the equipment is ready to use with the chosen computer. The 1250/1254A can operate with ZPlot, SMaRT Impedance Measurement, CellTest, or MultiStat software, depending on the electrochemical or materials interface used. The 1250/1254A will be tested standalone using ZPlot software. The following is a guide to ensure proper connections and communications:

Powering Up the Instrument

- 1. Does the instrument power up?
 - 1.1 To confirm, after pressing the power switch in the front lower left corner of the 1250/1254A FRA, the display on the front panel of the apparatus should become active and read "Power Restored". Additionally, fans on the back of the equipment should begin running.
 - 1.2 **Note:** The 1250B does not have a display, so instrument power up is indicated by the fans only.
 - 1.3 If the instrument does not power up:
 - a. Confirm that the outlet is working with other electrical instruments.
 - b. Try another power cable.

c. Check the fuse in the rear panel of the 1250/1254A.The fuse can be found and checked as shown in Figure 1, below. Should the fuse be blown, replace and retry. If the fuse fails again, please contact help at AMETEK[®]/Solartron Analytical at http://www.ameteksi.com/contact-us/contact-technical-support.



Figure 1



ZPlot Software-FRA Communications

*Required software key, as shown below, must be inserted in a USB port on the PC (Figure 2)!



Figure 2

2. Is the FRA communicating with your PC?

2.1. To verify communications, download the latest version of ZPlot software from http://www.ameteksi.com/products/software/zplot-software.

a. Open the ZPlot program. Click "Setup", then "ZPlot" (Figure 3).

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Fin	al Freque	ncy (Hz)	0.1	Ste	ps/De	ecade	✓ Int	erval 10)	

Select instrument types and gpib addresses

Figure 3



b. Record the setting of the "Pstat/Gstat or Interface" type and the GPIB address (Figure 4).

🔏 ZPlot (12	55+1287) —	
File Setup	Setup ZPlot X	
🗁 🔒 🖷	Analyzer:	
Ctrl I: Swe Ctrl E: Swe	Type Solartron 1250/1254 (2 channel) GPIB Board 0 ● GPIB Address 10 ◆	trl I: Vs. Time rl E: Vs. Time
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	OK Cancel Help	_



c. Set the "Pstat/Gstat or Interface:" type to "Manual Interface" (Figure 5). This will ensure that any error messages seen in the subsequent tests are related to the FRA.

🔏 ZPlot (1	255+1287) —	
File Setup	Setup ZPlot X	
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Ctrl I: Swe Ctrl E: Swe	Type Solartron 1250/1254 (2 channel) GPIB Board 0 ● GPIB Address 10 ●	trl I: Vs. Time rl E: Vs. Time
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	Multiple PAR 263/263A	
	PAR 283	
	AMEL 5000	
	GPIB B SAI 890B/890C	
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	Test Gpib C ZPlot 1 x • ZPlot 2 x	
	OK Cancel Help	
		-

Figure 5



d. Make sure that a National Instruments USB-GPIB adapter is connected from the PC to the GPIB connector on the rear panel of the 1250. **Note:** The 1250 should be the only instrument connected for this test. Click "Test GPIB". If connections have failed, the following error message will appear (Figure 6).

🔏 ZPlot (12	55+1287) —	
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	Test Coih	
	C ZPlot 1.x C ZPlot 2.x	
	OK Cancel Help	
Т	est GPIB communications with the instruments	

Figure 6

e. After clicking "OK", a dialogue box will appear that indicates the active GPIB addresses (Figure 7).



Figure 7

*This message is important, because it lists the GPIB address that should be input into the setup. *



f. Click "OK", then use the up/down arrows or enter a number to select the GPIB address that was displayed in the previous dialogue box (Figure 8).

🔏 ZPlot (1	255+1287) —	-		\times
File Setup	Setup ZPlot	\times		
Ctrl I: Swe Ctrl E: Swe	Analyzer: Type Solartron 1250/1254 (2 channel)		द्वि trl I: Vs. Ti rl E: Vs. Ti	me me
Polarizati DC Poter AC Ampl	Pstat/Gstat or Interface:		Potential vailable	
Frequence Initial Frequ Final Frequ				
	Multiplexer: Type None GPIB Board Image: Comparison of the second secon	[
	Test Gpib C ZPlot 1.x C ZPlot 2.x			
	OK Cancel <u>H</u> elp]		

Figure 8

g. Click "Test GPIB". The address of the instrument should now match the address in the software, and the message below should appear (Figure 9). This indicates that the connection is established, and the 1250 is ready to use with ZPlot software.

Informati	on X
()	Gpib/Instrument Test Passed.
	ОК

Figure 9

h. Finally, reset the Pstat/Gstat Interface and GPIB address back to its original setting (Figure 4) before clicking "OK" to exit ZPlot setup.



If Communications Still Not Achieved, Verify the Following:

3.1 Is a National Instruments USB-GPIB in use? The USB-GPIB must be this brand.

3.2 Are the GPIB cables connected completely? If these are not screwed in completely, there may be difficulties with communications to the PC.

- 3.2 Is another piece of equipment being used in conjunction with the 1250/1254A (for example, a potentiostat or a materials interface)?
 - a. If so, the GPIB addresses for the two instruments may have been swapped, typically this gives "Error 01" messages on the instrument front panel when the "Test GPIB" button is clicked:

-If using ZPlot software, select "Setup", the "ZPlot", as shown in Figure 2. Change the GPIB addresses for the analyzer and the Pstat/Gstat or Interface to match the appropriate numbers as in Figure 3.

b. Another possibility is that the instruments may have been set to the same GPIB addresses (this will also give "Error 01" messages when the "Test GPIB" button is clicked). Check the switches on the rear panel of the instruments to make sure that the switches have different address settings – the five switches on the left set the GPIB address. Always select an EVEN address on the switches. If the switch settings are changed you will need to turn the instrument off and on for it to configure to the new address.



*Re-run the tests with the ZPlot software after switching the numbers to verify the connection.





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