



250B Upgrade Kit for 2000 Series Temperature Test Systems

What does it take to upgrade?

Typical System Upgrade kit consists of:

- S&A 250B Network Analyzer
- PCI GPIB card
- Minimum 500 MHz Pentium III with:
 - * One full PCI slot
 - * +3.3V and +5V power
 - * Windows 98



Why upgrade?

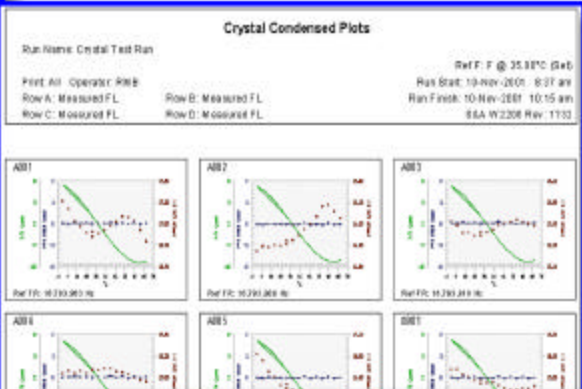
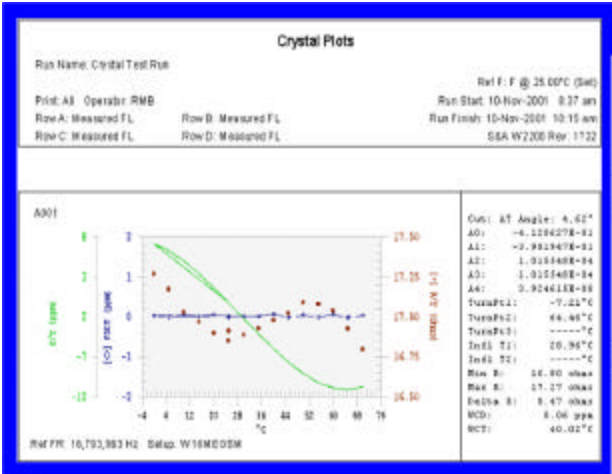
- 1** Higher system throughput improvement due to faster measurement with the 250B Network Analyzer
- 2** Drive Level Dependency (DLD) measurement is approximately 3 times faster with the 250B Network Analyzer
- 3** DLD can be measured and graphed as a function of temperature
- 4** User-friendly Windows system software
- 5** Crystals in each vertical test wheel column are measured before incrementing the wheel, reducing the number of wheel rotations by 50%
- 6** Extensive graphing, QC, and printout capabilities
- 7** Custom printouts can be created using Crystal Reports™ (optional)
- 8** All data is published in Microsoft Access™ compatible data base in real time
- 9** Data can be exported to Microsoft Excel™ for custom data analysis

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SAUNDERS & ASSOCIATES, INC.

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SAMPLE REPORTS

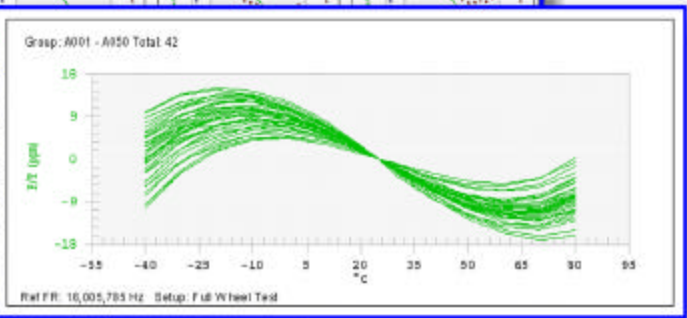


Crystal Tabular

Run Name: Example Run
 Print All Operator:
 Row A: Measured FL
 Row B: Measured FL
 Row C: Measured FL
 Row D: Measured FL

Ref F: F @ 25.00°C (Set)
 Run Start: 26-Oct-2001 8:31 pm
 Run Finish: 26-Oct-2001 8:34 pm
 S&A W2200 Rev: 1122

A001 +2a001+	A002 +2a002+	A003 +2a003+	A004 +2a004+	A005 +2a005+										
Setup: 12megw2	Setup: 12megw2	Setup: 12megw2	Setup: 12megw2	Setup: 12megw2										
Ref F: 12,795,174 Hz	Ref F: 12,795,955 Hz	Ref F: 12,795,917 Hz	Ref F: 12,795,942 Hz	Ref F: 12,795,917 Hz										
°C	FR ppm	R	°C	FR ppm	R	°C	FR ppm	R	°C	FR ppm	R	°C	FR ppm	R
25.01	0.00	4.82	25.03	0.00	18.71	35.02	0.00	12.39	25.01	0.00	11.97	25.03	0.00	11.97
30.01	0.01	5.13	30.01	0.01	21.44	6.00	3.28	12.96	-0.01	3.74	12.49	0.01	3.74	12.49
35.02	0.33	4.98	35.00	6.79	20.77	4.98	3.16	12.82	4.99	3.52	12.39	5.01	3.52	12.39
39.98	0.44	5.03	40.00	5.24	20.39	16.00	2.69	12.93	10.00	2.94	12.39	9.99	2.94	12.39
45.02	0.50	5.03	45.01	3.89	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
50.00	0.36	5.02	50.00	3.89	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
55.00	0.09	5.05	55.01	3.89	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
60.02	-0.12	5.04	60.01	-1.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
65.00	-0.39	5.03	65.00	-3.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
70.02	-0.55	5.04	70.02	-5.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
75.00	-0.52	5.06	75.02	-7.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
80.00	-0.20	5.00	80.00	-9.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
85.00	0.33	4.98	85.00	-11.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39
90.00	1.33	5.05	90.00	-13.00	19.82	16.00	3.27	12.93	14.99	3.12	12.39	14.99	3.12	12.39



Crystal Curvefit Summary

Run Name: Example Run
 Print All Operator:
 Row A: Measured FL
 Row B: Measured FL
 Row C: Measured FL
 Row D: Measured FL

Ref F: F @ 25.00°C (Set)
 Run Start: 26-Oct-2001 4:51 pm
 Run Finish: 26-Oct-2001 6:34 pm
 S&A W2200 Rev: 1122

°C	FR ppm	Curve	Delta	R	°C	FR ppm	Curve	Delta	R				
25.03	0.00	0.00	0.03	18.71	35.02	0.00	0.03	12.39	25.01	0.00	0.03	11.97	
30.01	0.00	0.23	-0.18	21.44	6.00	3.29	3.14	12.96	-0.01	3.74	12.49	0.01	
35.02	0.75	5.30	-0.19	20.77	4.98	3.16	3.08	12.82	4.99	3.52	12.39	5.01	
39.98	0.74	5.45	-0.22	20.39	16.00	2.69	2.94	12.93	10.00	2.94	12.39	9.99	
45.02	0.50	5.14	-0.18	19.82	16.00	3.27	3.12	12.93	14.99	3.12	12.39	14.99	
50.00	0.36	5.19	-0.23	19.29	30.00	1.16	8.89	17.12	35.01	-0.23	0.01	-0.24	19.12
55.00	0.09	5.12	-0.24	18.82	35.01	-0.24	-0.16	18.87	35.01	-0.24	-0.16	18.87	
60.02	-0.12	5.09	-0.21	18.79	35.01	-0.24	-0.16	18.87	35.01	-0.24	-0.16	18.87	
65.00	-0.39	5.06	-0.23	18.82	48.81	-0.94	-1.08	17.12	45.02	-0.52	0.06	45.02	
70.02	-0.55	5.07	-0.24	18.86	45.00	-0.30	-0.30	17.12	50.00	0.09	0.05	50.00	
75.00	-0.52	5.09	-0.23	18.85	55.01	-0.29	-0.29	17.12	60.02	-0.12	0.04	60.02	
80.00	-0.20	5.03	-0.22	18.80	55.01	-0.29	-0.29	17.12	65.00	0.33	0.49	65.00	
85.00	0.33	5.02	-0.20	18.29	60.01	-0.24	-0.24	17.12	70.02	-0.55	0.04	70.02	
90.00	1.33	5.09	-0.20	18.29	65.01	-0.24	-0.24	17.12	75.00	-0.52	0.06	75.00	

Crystal Curvefit Tabular

Run Name: Example Run
 Print All Operator:
 Row A: Measured FL
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Ref F: F @ 25.00°C (Set)
 Run Start: 26-Oct-2001 4:51 pm
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 S&A W2200 Rev: 1122

°C	FR ppm	Curve	Delta	R	°C	FR ppm	Curve	Delta	R				
25.03	0.00	0.00	0.03	18.71	35.02	0.00	0.03	12.39	25.01	0.00	0.03	11.97	
30.01	0.00	0.23	-0.18	21.44	6.00	3.29	3.14	12.96	-0.01	3.74	12.49	0.01	
35.02	0.75	5.30	-0.19	20.77	4.98	3.16	3.08	12.82	4.99	3.52	12.39	5.01	
39.98	0.74	5.45	-0.22	20.39	16.00	2.69	2.94	12.93	10.00	2.94	12.39	9.99	
45.02	0.50	5.14	-0.18	19.82	16.00	3.27	3.12	12.93	14.99	3.12	12.39	14.99	
50.00	0.36	5.19	-0.23	19.29	30.00	1.16	8.89	17.12	35.01	-0.23	0.01	-0.24	19.12
55.00	0.09	5.12	-0.24	18.82	35.01	-0.24	-0.16	18.87	35.01	-0.24	-0.16	18.87	
60.02	-0.12	5.09	-0.21	18.79	35.01	-0.24	-0.16	18.87	35.01	-0.24	-0.16	18.87	
65.00	-0.39	5.06	-0.23	18.82	48.81	-0.94	-1.08	17.12	45.02	-0.52	0.06	45.02	
70.02	-0.55	5.07	-0.24	18.86	45.00	-0.30	-0.30	17.12	50.00	0.09	0.05	50.00	
75.00	-0.52	5.09	-0.23	18.85	55.01	-0.29	-0.29	17.12	60.02	-0.12	0.04	60.02	
80.00	-0.20	5.03	-0.22	18.80	55.01	-0.29	-0.29	17.12	65.00	0.33	0.49	65.00	
85.00	0.33	5.02	-0.20	18.29	60.01	-0.24	-0.24	17.12	70.02	-0.55	0.04	70.02	
90.00	1.33	5.09	-0.20	18.29	65.01	-0.24	-0.24	17.12	75.00	-0.52	0.06	75.00	

Crystal Setup File Parameters

Run Name: Example Run
 Print All Operator:
 Row A: Measured FL
 Row B: Measured FL
 Row C: Measured FL
 Row D: Measured FL

Ref F: F @ 25.00°C (Set)
 Run Start: 26-Oct-2001 4:51 pm
 Run Finish: 26-Oct-2001 6:34 pm
 S&A W2200 Rev: 1122

Setup: 12megw2
 Reference F: 12,795,900 Hz CL: 8.00 pF Power: 100.00 uW Into 12.00 Ohm Resonance: FR/T

STATDC	FS	CO	ES	Q	CL	L	FR	TEMP	R/T
ppm	pF	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
10.8	8.0	29.5	17.0	33.00	17.0	33.00			
-10.8	8.0								

STATS	WCD	R/T	CVT	ASCL
Ohms	ppm	Ohms	ppm	ppm
	25.0			

A001 +2a001+	Fail	FR Lo	-56.7°	4.6°	4.8	11.9	01.3°	7.26°	17	25.01	4
		0.2	-9.1	8.1	AT	0.60					
A002 +2a002+ <td>Pass</td> <td>4.3</td> <td>2.7</td> <td>10.7</td> <td>S4</td> <td>12.0</td> <td>12.55</td> <td>124</td> <td>25.03</td> <td>-5</td> <td></td>	Pass	4.3	2.7	10.7	S4	12.0	12.55	124	25.03	-5	
		3.5	8.2	21.4	AT	4.47					
A003 +2a003+ <td>Pass</td> <td>1.3</td> <td>2.6</td> <td>12.4</td> <td>02</td> <td>12.2</td> <td>12.65</td> <td>122</td> <td>25.02</td> <td>-4</td> <td></td>	Pass	1.3	2.6	12.4	02	12.2	12.65	122	25.02	-4	
		1.2	-9.2	11.6	AT	1.91					
A004 +2a004+ <td>Pass</td> <td>1.1</td> <td>2.7</td> <td>12.0</td> <td>00</td> <td>12.1</td> <td>12.73</td> <td>121</td> <td>25.01</td> <td>-3</td> <td></td>	Pass	1.1	2.7	12.0	00	12.1	12.73	121	25.01	-3	
		1.8	-9.2	11.0	AT	2.64					

Crystal Failures Only

Run Name: Example Run
 Print All Operator:
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Ref F: F @ 25.00°C (Set)
 Run Start: 26-Oct-2001 4:51 pm
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 S&A W2200 Rev: 1122

Crystal	Stat	Setup File Parameters	Crystal Data	Curvefit Parameters
A001	+2a001+	Full FR Low		

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