



W-2200 Upgrade Kit for Transat TC-100 Temperature Chamber

What does it take to upgrade?

Typical System Upgrade kit consists of:

- S&A 250B Network Analyzer
- S&A 2451 Switch Controller
- S&A PCI TTL I/O Card
- Minimum 500 MHz Pentium III with:
 - * One full PCI slot
 - * +3.3V and +5V power
 - * *Windows 98*®
- Printer



Why upgrade?

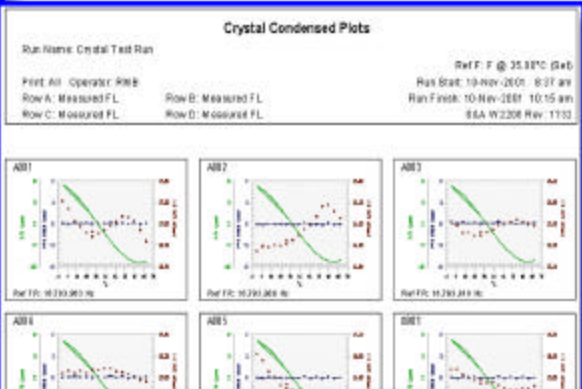
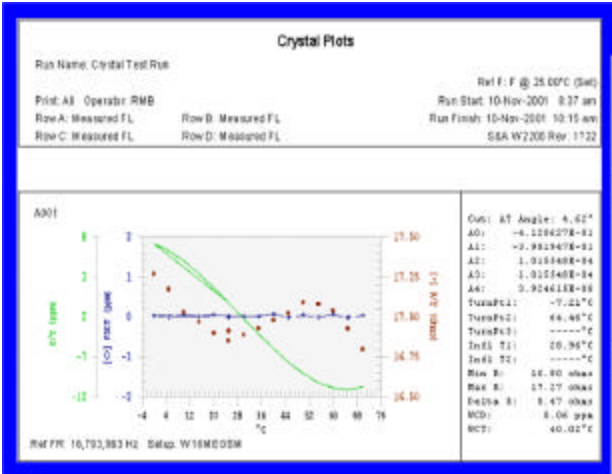
- 1** Measurement speed is about 4 times faster
- 2** Extensive graphing, grouping, QC, and printout capabilities
- 3** User-friendly *Windows*® system software
- 4** DLD can be measured and graphed as a function of temperature
- 5** Crystals in each vertical test wheel column are measured before incrementing the wheel, reducing the number of wheel rotations by 50%
- 6** Uses existing crystal test wheels and measurement test head
- 7** All data is published in *Microsoft Access*™ compatible data base in real time
- 8** Data can be automatically exported to *Microsoft Excel*™ for custom data analysis
- 9** Continuous software support and development

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SAUNDERS & ASSOCIATES, LLC

2520 E. Rose Garden Lane - Phoenix, Arizona 85050 USA (602) 971-9977 FAX (602) 971-5522
E-Mail sales@saunders-assoc.com - World Wide Web <http://www.saunders-assoc.com>

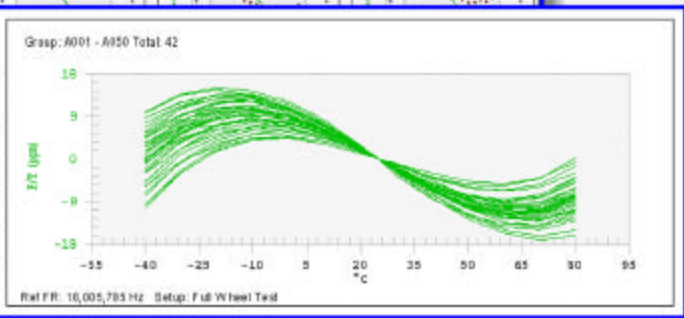
SAMPLE REPORTS



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 8:34 pm
Run Finish: 26-Oct-2001 8:34 pm
S&A W2200 Rev: 1722

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: 12,795,855 Hz	Ref F: 12,795,917 Hz	Ref F: 12,795,942 Hz	Ref F: 12,795,967 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	25.02	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	30.00	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	10.00	5.24	20.39	10.00	2.69	12.93	10.00	2.94	12.39	9.99	2.94	12.39
15.02	0.50	5.03	15.01	5.24	20.39	15.00	2.69	12.93	15.00	2.94	12.39	14.99	2.94	12.39
20.00	0.36	5.03	20.00	5.24	20.39	20.00	2.69	12.93	20.00	2.94	12.39	19.99	2.94	12.39
25.00	0.09	5.05	25.01	5.24	20.39	25.00	2.69	12.93	25.00	2.94	12.39	24.99	2.94	12.39
30.02	-0.12	5.04	30.01	-0.12	5.04	30.01	-0.12	5.04	30.01	-0.12	5.04	30.01	-0.12	5.04
34.99	-0.39	5.03	35.00	-0.39	5.03	35.00	-0.39	5.03	35.00	-0.39	5.03	35.00	-0.39	5.03
40.02	-0.55	5.04	40.02	-0.55	5.04	40.02	-0.55	5.04	40.02	-0.55	5.04	40.02	-0.55	5.04
45.03	-0.52	5.06	45.02	-0.52	5.06	45.02	-0.52	5.06	45.02	-0.52	5.06	45.02	-0.52	5.06
49.99	-0.20	5.00	49.99	-0.20	5.00	49.99	-0.20	5.00	49.99	-0.20	5.00	49.99	-0.20	5.00
54.99	0.33	4.98	55.00	0.33	4.98	55.00	0.33	4.98	55.00	0.33	4.98	55.00	0.33	4.98
59.99	1.33	5.05	59.99	1.33	5.05	59.99	1.33	5.05	59.99	1.33	5.05	59.99	1.33	5.05



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: 1722

Sub	A0	A1	A2	A3	A4	TurnP1	TurnP2	TurnP3	Int T: 1	Int T: 2	Max R	Ref R	WCD	WCT	DCT
038	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02
044	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02
049	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02
049	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02

Crystal Curvefit Tabular
Run Name: Example Run
Print: All Operator:
Row A: Measured FL
Row B: Measured FL
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Row D: Measured FL

Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
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S&A W2200 Rev: 1722

Sub	A0	A1	A2	A3	A4	TurnP1	TurnP2	TurnP3	Int T: 1	Int T: 2	Max R	Ref R	WCD	WCT	DCT
038	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02
044	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02
049	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02
049	-4.787982E-02	-2.991947E-02	1.911840E-04	1.911840E-04	2.924613E-08	12.96	64.44	-----	26.94	-----	24.80	17.37	8.47	1.06	40.02

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
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S&A W2200 Rev: 1722

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

STATDC	PS	CO	SS	Q	CL	L	PR2	TEMP	R/T
ppm	pF	ppm	Hz	Hz	ppm	uH	uW	°C	ppm
10.8	8.0	29.6	12.0	33.09	17.0	11.00	-----	-----	-----
-10.8	8.0	-----	-----	-----	-----	-----	-----	-----	-----

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

A001 +2a001+	Fail	FR	Lo	-16.7	4.6	4.8	11.9	11.2	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>54</td> <td>12.0</td> <td>12.55</td> <td>124</td> <td>25.03</td> <td>-5</td> <td>-----</td> <td>-----</td>	Pass	4.3	2.7	10.7	54	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> <td>-----</td>	Pass	1.3	2.6	12.4	02	12.2	12.65	122	25.02	-4	-----	-----
1.2	-9.2	11.8	AT	1.91	-----	-----	-----	-----	-----	-----	-----	-----
A004 +2a004+ <td>Pass</td> <td>1.1</td> <td>2.7</td> <td>12.0</td> <td>88</td> <td>12.1</td> <td>12.73</td> <td>121</td> <td>25.01</td> <td>-8</td> <td>-----</td> <td>-----</td>	Pass	1.1	2.7	12.0	88	12.1	12.73	121	25.01	-8	-----	-----
1.8	-9.2	11.9	AT	2.64	-----	-----	-----	-----	-----	-----	-----	-----

Crystal Failures Only
Run Name: Example Run
Print: All Operator:
Row A: Measured FL
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Row D: Measured FL

Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
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S&A W2200 Rev: 1722

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

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