The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (D1102414-v1).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests \$1200528

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

4.2 LED

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail
PZT 1X HV	PZT readback	P=55
PZT 1X Sensor	PZT readback	Pass
PZT 1Y HV	PZT readback	ls s
PZT 1Y Sensor	PZT readback	P55 5
PZT 2X HV	PZT readback	Vest
PZT 2X Sensor	PZT readback	PESS
PZT 2Y HV	PZT readback	1555
PZT 2Y Sensor	PZT readback	655
Temp Laser	Temperature control	Pess
Temp Doubler	Temperature control	Pesr

			Pass/Fail		
Cable 1		DUT		2 nd concentrator	
	Cable 2	PDMon	PDMon+4	PDMon	PDMon+4
BNC 1	P-53	-55	Pess	PUSS	Pess
BNC 2	P=55	P=5\$	P355	Pe55	Pess
BNC 3	P-55	Je 5 5	155	125	Pess
BNC 4	Pess	1-55	Pass	1.55	Pess

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (<u>D1102414-v1</u>).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 51200529

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

TP6 (+5V) + 5

TP8 (+15V) + 15

TP3 (-15V) - 15

TP9 (OK) + 3

4.2 LED

Check that the LED on the front panel and the 3 LEDs on the rear panel are lit.

Rear panel LEDs <u>Jes</u>

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail
PZT 1X HV	PZT readback	Y=5 5
PZT 1X Sensor	PZT readback	(255
PZT 1Y HV	PZT readback	Pess
PZT 1Y Sensor	PZT readback	Pass
PZT 2X HV	PZT readback	C-55
PZT 2X Sensor	PZT readback	(-5)
PZT 2Y HV	PZT readback	P-55
PZT 2Y Sensor	PZT readback	Pess
Temp Laser	Temperature control	Pess
Temp Doubler	Temperature control	Pess

			Pass/Fail		
Cable 1		DUT		2 nd concentrator	
	Cable 2	PDMon PDMon+		PDMon	PDMon+4
BNC 1	Pess	less.	Pess	Pess	Pess
BNC 2	Pejs	Pess	Pess	Poss	Pess
BNC 3	6:21	1551	Pess	P-55	Pers
BNC 4	Pess	Piss	Pess	Poss	Pesi

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (D1102414-v1).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 51200530

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

4.2 LED

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail
PZT 1X HV	PZT readback	MSS .
PZT 1X Sensor	PZT readback	Vess
PZT 1Y HV	PZT readback	Pess
PZT 1Y Sensor	PZT readback	Pess
PZT 2X HV	PZT readback	Pers
PZT 2X Sensor	PZT readback	P-SS
PZT 2Y HV	PZT readback	P=25
PZT 2Y Sensor	PZT readback	Pess
Temp Laser	Temperature control	Pass
Temp Doubler	Temperature control	Per

	Pass/Fail					
Cable 1		DUT		2 nd concentrator		
	Cable 2	PDMon	PDMon+4	PDMon	PDMon+4	
BNC 1	Pass	RSS	Pess	RSS	Pess	
BNC 2	Pass	Pess	1-55	8-55	Pass	
BNC 3	Pess	1.55	P. 55	Pr Ss	Pass	
BNC 4	1.55	Pess	8-25	Pc55	1255	

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (D1102414-v1).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 51200531

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

4.2 LED

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail	
PZT 1X HV	PZT readback	P-55	
PZT 1X Sensor	PZT readback	Pass	
PZT 1Y HV	PZT readback	Pess	
PZT 1Y Sensor	PZT readback	Pess	
PZT 2X HV	PZT readback	P255	
PZT 2X Sensor	PZT readback	Pess	
PZT 2Y HV	PZT readback	Poss	
PZT 2Y Sensor	PZT readback	F-S5	
Temp Laser	Temperature control	Poss	
Temp Doubler	Temperature control	Pess	

			Pass/Fail		
Cable 1		DUT		2 nd concentrator	
	Cable 2	PDMon	PDMon+4	PDMon	PDMon+4
BNC 1	1=55	8 = 5 5	Pess	1<55	P=35
BNC 2	Pess	Pess	Pess	P-55	Pesar
BNC 3	P-SS	Pess	Pess	Pess	Pess
BNC 4	Pess	P-55	Pess	Pass	Rss

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (D1102414-v1).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 5/200532

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

4.2 LED

Check that the LED on the front panel and the 3 LEDs on the rear panel are lit.

Front panel LED Yes

Rear panel LEDs (

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail
PZT 1X HV	PZT readback	1650
PZT 1X Sensor	PZT readback	F-55
PZT 1Y HV	PZT readback	P=55
PZT 1Y Sensor	PZT readback	R- 55
PZT 2X HV	PZT readback	Vass
PZT 2X Sensor	PZT readback	Pess
PZT 2Y HV	PZT readback	1-55
PZT 2Y Sensor	PZT readback	G=>5
Temp Laser	Temperature control	PESS
Temp Doubler	Temperature control	V-55

	Pass/Fail				
Cable 1			DUT		ncentrator
	Cable 2	PDMon	PDMon PDMon+4		PDMon+4
BNC 1	8=55	5-55	Pess	Pesi	Pass
BNC 2	Pes 5	Pass	Pess	Sesi	1-55
BNC 3	Pass	1-55	Pe SI	Pass	P.57
BNC 4	Pass	1-55	Pess	Past	Pess

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (D1102414-v1).
- DC power supplies.

3 Documentation

Schematics—<u>D</u>1102045-v1

4 Tests 512(2)533

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

TP6 (+5V) + 5

TP8 (+15V) + 15

TP3 (-15V) - 15

TP9 (OK) + 3

4.2 LED

Check that the LED on the front panel and the 3 LEDs on the rear panel are lit.

Front panel LED <u>Ges</u>

Rear panel LEDs U es

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail
PZT 1X HV	PZT readback	Pass
PZT 1X Sensor	PZT readback	PESS
PZT 1Y HV	PZT readback	Pess
PZT 1Y Sensor	PZT readback	P255
PZT 2X HV	PZT readback	Pess
PZT 2X Sensor	PZT readback	P=55
PZT 2Y HV	PZT readback	P=>5
PZT 2Y Sensor	PZT readback	P-35
Temp Laser	Temperature control	ess
Temp Doubler	Temperature control	Pess

			Pass/Fail		
Cable 1	Cable 2			2 nd co	ncentrator
	Cable 2	PDMon	PDMon+4	PDMon	PDMon+4
BNC 1	Pess	Pass	Pess	Pess	Pess
BNC 2	L-SI	Pest	Pass	Pers	1671
BNC 3	Pess	Pess	1-55	12->5	P-55
BNC 4	Pas	1-55	P->5	Pers	Pers

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (<u>D1102414-v1</u>).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 5/200534

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

4.2 LED

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail	
PZT 1X HV	PZT readback	Pess	
PZT 1X Sensor	PZT readback	Pess	
PZT 1Y HV	PZT readback	Pess	
PZT 1Y Sensor	PZT readback	Pers	
PZT 2X HV	PZT readback	Pess	
PZT 2X Sensor	PZT readback	Pess	
PZT 2Y HV	PZT readback	Pess	
PZT 2Y Sensor	PZT readback	Pess	
Temp Laser	Temperature control	Pess	
Temp Doubler	Temperature control	Pess	

	Pass/Fail				
Cable 1	Cable 2	DUT		2 nd concentrator	
	Cable 2	PDMon	PDMon+4	PDMon	PDMon+4
BNC 1	<u> </u>	Pess	Pess	Pess	P-55
BNC 2	Pres	Pess	Pass	Pess	Pess
BNC 3	Pesi	Pess	Pess	Pers	Pes
BNC 4	Pass	Pess	Pess	P.55	Pass

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (<u>D1102414-v1</u>).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 5202535

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

TP6 (+5V) + 5

TP8 (+15V) + / 5

TP3 (-15V) -/ 5

TP9 (OK) + 3

4.2 LED

Check that the LED on the front panel and the 3 LEDs on the rear panel are lit.

Front panel LED <u>Yes</u>

Rear panel LEDs Ues

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail	
PZT 1X HV	PZT readback	Pess	
PZT 1X Sensor	PZT readback	e55	
PZT 1Y HV	PZT readback	PESS	
PZT 1Y Sensor	PZT readback	Pes 5	
PZT 2X HV	PZT readback	P-SS	
PZT 2X Sensor	PZT readback	Pess	
PZT 2Y HV	PZT readback	1555	
PZT 2Y Sensor	PZT readback	6.55	
Temp Laser	Temperature control	PASS	
Temp Doubler	Temperature control	Pess	

Cable 1	Pass/Fail				
	Cable 2	DUT		2 nd concentrator	
		PDMon	PDMon+4	PDMon	PDMon+4
BNC 1	Pess	P255	Pess	Pess	1011
BNC 2	Pass	P=55	Pe55	Pess	Poss
BNC 3	Pess	Pase	Pess	P=55	Pess
BNC 4	Pass	fiss	Pess	Paus	Pasc

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 2 (<u>D1102045-v1</u>).
 Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.
- 2 test cables DB9 to 4xBNC (<u>D1102414-v1</u>).
- DC power supplies.

3 Documentation

• Schematics—D1102045-v1

4 Tests 512 00536

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between "PD DC 1-4 Out" and "PD DC 5-8 IN". Connect the test cables to "PD DC 1-4 IN" and "PD DC 5-8 OUT".

4.1 Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

4.2 LED

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω .

Concentrator	Signal	Pass/Fail	
PZT 1X HV	PZT readback	Rss	
PZT 1X Sensor	PZT readback	Pas	
PZT 1Y HV	PZT readback	Pass	
PZT 1Y Sensor	PZT readback	RSS	
PZT 2X HV	PZT readback	PESS	
PZT 2X Sensor	PZT readback	Pe 55	
PZT 2Y HV	PZT readback	Pess	
PZT 2Y Sensor	PZT readback	Pass	
Temp Laser	Temperature control	255	
Temp Doubler	Temperature control	Pass	

Cable 1	Pass/Fail				
	Cable 2	DUT		2 nd concentrator	
		PDMon	PDMon+4	PDMon	PDMon+4
BNC 1	lass.	1255	Pess	Pass	1255
BNC 2	P655	Pess	Pass	PESS	Pess
BNC 3	Pess	Pess	Pass	Pers	Pess
BNC 4	Pess	Pass	Pass	Pess	Pisi