

Installation and Verification Guide

HP 71450B/1B/2B Optical Spectrum Analyzers

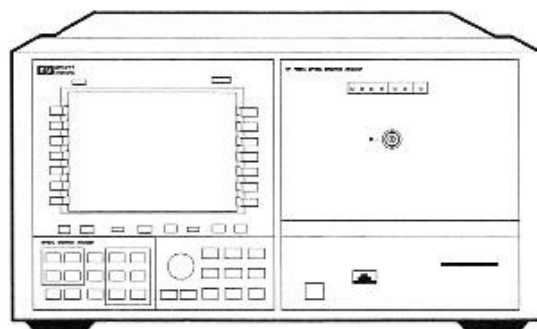


Printed in USA

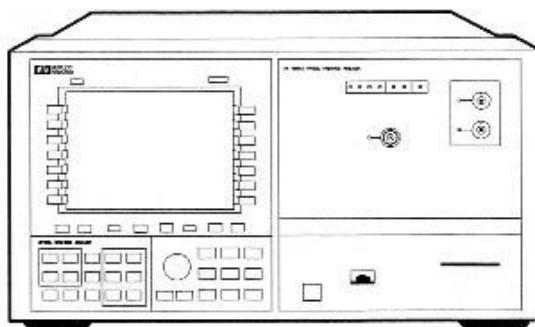
Installation and Operation Verification of the Optical Spectrum Analyzer

The HP 71450B/1B/2B Optical Spectrum Analyzer Systems

The HP 71450B/1B/2B are preconfigured systems that include either an IIP 70950B, HP 70951B, or HP 70952B optical spectrum analyzer module, an HP 70004A, and an optical spectrum analyzer keypad. The HP 70950B/1B/2B optical spectrum analyzer modules may be installed either in an existing HP 70004A display or in an IIP 70001A mainframe.



**HP 71450B
OPTICAL SPECTRUM
ANALYZER SYSTEM**

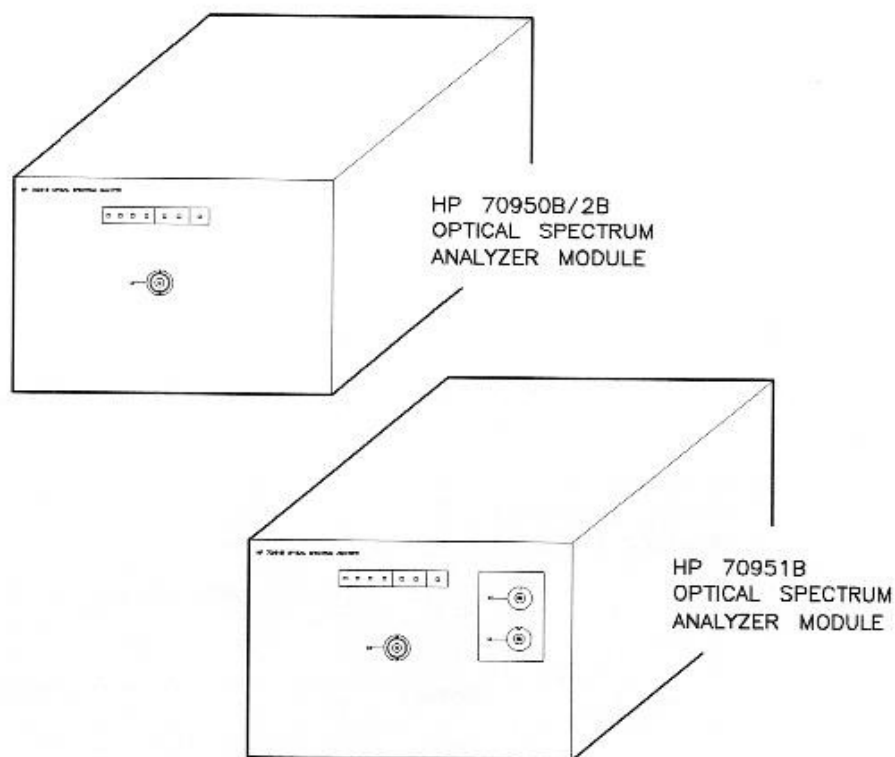


**HP 71451B
OPTICAL SPECTRUM
ANALYZER SYSTEM**

dkb40

The HP 70950B/1B/2B Optical Spectrum Analyzer Modules

The HP 70950B, HP 70951B, and HP 70952B are 4/8-width modules that must be inserted into either an HP 70004A or an HP 70001A mainframe. An optical spectrum analyzer keypad is shipped with both the modules. If you are using a monochrome display (or no display at all), certain features (such as color) will not be available.



dkb-41

Contents

1. Installation	
Introduction	1-1
Installation at a Glance	1-2
Installing the IIP 71450B/1B/2B Optical Spectrum Analyzer System	1-4
Installing an HP 70950B/1B/2B Optical Spectrum Analyzer Module	1-6
Step 1. Prepare to Install the Optical Spectrum Analyzer Module.	1-6
Step 2. Check the Address of the Optical Spectrum Analyzer Module.	1-7
Step 3. Check the System's HP-MSIB Addresses.	1-8
Step 4. Install the Optical Spectrum Analyzer Module in the HP 70001A Mainframe or the HP 70004A Display.	1-10
Optional: Changing the HP-MSIB Address of the Optical Spectrum Analyzer Module	1-12
Optional: Installing the Optical Spectrum Analyzer's Keypad in the Display	1-13
Optional: Mounting the System in a Rack	1-14
Optional: Connecting the Optical Spectrum Analyzer System to Another Display or Mainframe	1-16
Optional: Displaying the Time and the Date	1-17
Optional: Changing the Time and the Date	1-18
2. If You Have a Problem During Installation	
Introduction	2-1
Problems Requiring Additional Technical Resources	2-1
What to Expect When You Turn on the Optical Spectrum Analyzer	2-2
If the Optical Spectrum Analyzer Will Not Turn On	2-3
If the Front-Panel LEDs Do Not Light When the Optical Spectrum Analyzer is Turned On	2-5
If the Optical Spectrum Analyzer Front-Panel ERR LED Remains Lit or Blinks after the Self-Test	2-6
If Errors Are Reported on the Display	2-7
If the Optical Spectrum Analyzer Front-Panel HP-1B LEDs Remain Lit after the Self-Test	2-8
If the Display HP-MSIB or the Mainframe I/O CHECK Indicator Light Remains Lit	2-10
If the Mainframe CURRENT Indicator Light Remains Lit	2-11
If the Optical Spectrum Analyzer Needs to be Returned for Service	2-12
To return the instrument for service	2-12
Sales and service offices	2-16

3. Installation Reference	
Introduction	3-1
Optical Spectrum Analyzer Accessories	3-2
HP-MSIB Cables	3-2
Connector Interfaces	3-2
Memory Cards	3-2
Tools	3-3
Miscellaneous Parts and Supplies	3-3
Power Cables	3-3
Serial Number and Option Labels	3-5
Serial Number Labels	3-5
Option Labels	3-5
ESD Information	3-6
Reducing ESD Damage	3-7
Static-Safe Accessories	3-7
4. Operation Verification Testing	
Introduction	4-1
Step 1. Set up the Hardware for Operation Verification Testing	4-3
Step 2. Install the Software on an SRM or HFS Hard Disk	4-4
Step 3. Load the Software	4-6
Step 4. Select the Optical Spectrum Analyzer's Model	4-7
Step 5. Enter the Optical Spectrum Analyzer's Test Information	4-8
Step 6. Select Where You Want to Output the Test Results	4-9
Step 7. Verify the Test Equipment	4-10
Step 8. Verify the Accessories	4-12
Step 9. Run the Operation Verification Tests	4-13
Optional: Selecting the Optical Spectrum Analyzer's Address	4-14
Optional: Adding Options	4-15
Optional: Modifying the Temperature Setting	4-16
Optional: Modifying the Humidity Setting	4-17
Optional: Selecting the Line Frequency	4-18
Optional: Changing the Default Equipment	4-19
Step 1. Print the Default Equipment List	4-19
Step 2. Exit the Operation Verification Software	4-19
Step 3. Load the TSCRIPT_MS File	4-19
Step 4. Edit the Test Equipment and HP-IB Address Lists	4-20
Step 5. Edit the Required Test Equipment Lists	4-21
Step 6. Save the TSCRIPT_MS File's Edits	4-21
Optional: Running the Operation Verification Tests from a Flexible Disk Drive	4-22
5. Operation Verification Test Reference	
Introduction	5-1
System Requirements	5-2
Computer Hardware	5-2
Operating System	5-3
Computer Keyboard Compatibility and Mouse Operation	5-4
Using an HP 46021A Keyboard with a Series 300 Computer	5-4
Using an HP 98203C Keyboard with a Series 300 Computer	5-4
Using a Mouse with a Series 300 Computer	5-5
Recommended Test Equipment	5-5

Precision Resistor and RC Network	5-8
6. Operation Verification Test Descriptions	
Introduction	6-1
Automated Test Procedures	6-3
Wavelength Accuracy (Automated)	6-4
Equipment	6-4
Equipment Setup	6-4
Description	6-5
In Case of Failure	6-5
Resolution Bandwidth Accuracy	6-6
Equipment	6-6
Equipment Setup	6-6
Description	6-6
In Case of Failure	6-6
Absolute Amplitude Accuracy	6-7
Equipment	6-7
Equipment Setup	6-7
Description	6-8
In Case of Failure	6-8
Scale Fidelity	6-9
Equipment	6-9
Equipment Setup	6-9
Description	6-10
In Case of Failure	6-10
Flatness Verification	6-11
Equipment	6-11
Equipment Setup	6-11
Description	6-12
In Case of Failure	6-13
Sensitivity	6-14
Equipment Setup	6-14
Description	6-14
In Case of Failure	6-14
Dynamic Range (Automated)	6-15
Equipment	6-15
Equipment Setup	6-15
Description	6-16
In Case of Failure	6-16
Current Source, Option 001	6-17
Equipment	6-17
Equipment Setup	6-17
Description	6-18
In Case of Failure	6-18
White Light Output Power, Option 002	6-19
Equipment	6-19
Equipment Setup	6-19
Description	6-20
In Case of Failure	6-20
Polarization Dependent Loss System Accuracy, Option 003	6-21
Equipment	6-21

Equipment setup	6-21
Description	6-22
In Case of Failure	6-23
Manual Test Procedures	6-24
Wavelength Accuracy (Manual)	6-25
Equipment	6-25
Equipment Setup	6-25
Procedure	6-26
Dynamic Range (Manual)	6-27
Equipment	6-27
Equipment Setup	6-27
Procedure	6-27
Flatness (Manual)	6-29
Equipment	6-29
Equipment Setup	6-29
Procedure	6-31
Manual Operational Checks for the HP 70951B Optical Spectrum Analyzer	
Module	6-32
Transimpedance Input Check	6-33
Equipment	6-33
Equipment Setup	6-33
Procedure	6-33
In Case of Failure	6-35
Monochromator Output/Photodetector Input Check	6-36
Equipment	6-36
Equipment Setup	6-36
Procedure	6-36
In Case of Failure	6-37

Index

Figures

2-1. Optical Spectrum Analyzer Front Panel (HP 71451B Shown)	2-2
2-2. Line Voltage Selector	2-3
2-3. Line Fuse Removal and Replacement	2-4
2-4. Optical Spectrum Analyzer Front Panel LEDs (HP 71451B Shown)	2-5
2-5. Optical Spectrum Analyzer Error Information (HP 71451B Shown)	2-6
2-6. Optical Spectrum Analyzer Displayed Errors (HP 71451B Shown)	2-7
2-7. Optical Spectrum Analyzer HP-IB LEDs (HP 71451B Shown)	2-8
2-8. HP-MSIB and I/O CHECK Indicator Lights	2-10
2-9. Current Indicator Light	2-11
2-10. Packaging Materials for HP 70950B/1B/2B Modules	2-13
2-11. Packaging Materials for HP 71450B/1B/2B Systems	2-14
3-1. Module Serial-Number and Option Labels	3-5
3-2. Static-Safe Workstation	3-6
4-1.	4-7
4-2.	4-8
4-3.	4-9
4-4.	4-10
4-5.	4-12
4-6.	4-13
4-7.	4-13
4-8.	4-14
4-9.	4-15
4-10.	4-15
4-11.	4-16
4-12.	4-17
4-13.	4-18
4-14.	4-18
5-1. Precision Resistor and RC Network Schematic Diagram	5-8
6-1. Wavelength Accuracy Test Setup 1	6-4
6-2. Wavelength Accuracy Test Setup 2	6-4
6-3. Resolution Bandwidth Accuracy Test Setup	6-6
6-4. Absolute Amplitude Accuracy Calibration Setup	6-7
6-5. Absolute Amplitude Accuracy Test Setup	6-8
6-6. Scale Fidelity Test Setup	6-9
6-7. Flatness Calibration Setup	6-11
6-8. Flatness Test Setup	6-12
6-9. Sensitivity Test Setup	6-14
6-10. Dynamic Range Test System Alignment Setup	6-15
6-11. Dynamic Range Test Setup	6-16
6-12. Current Source Calibration Setup	6-17
6-13. Current Source Test Setup	6-18
6-14. White Light Output Power Test Setup 1	6-19

6-15. White Light Output Power Test Setup 2	6-20
6-16. PDL System Accuracy Test Setup	6-21
6-17. Manual Wavelength Accuracy Test Setup	6-25
6-18. Manual Dynamic Range Test Setup	6-27
6-19. Manual Flatness Test Setup 1	6-29
6-20. Manual Flatness Test Setup 2	6-30
6-21. Transimpedance Input Check Setup	6-33
6-22. Monochromator Output/Photodetector Input Check Setup	6-36

Tables

3-1. Power Cables	3-4
3-2. Static-Safe Accessories	3-7
4-1. Test Equipment Variable Names	4-20
5-1. Required Computer Hardware	5-2
5-2. Required BASIC 5.13 Language Extensions	5-3
5-3. Equivalent Keys for the Operation Verification Tests	5-4
5-4. Recommended Test Equipment	5-6
5-5. Precision Resistor and RC Network Parts List	5-8
6-1. Knob Settings for the Polarization Controller	6-22