

THREE DETECTOR MODULE



User's Guide

Release History

Part Number	Release	Publication Date
L6050010	B	August 2010

Any comments about the documentation for this product should be addressed to:

User Assistance
PerkinElmer Ltd
Chalfont Road
Seer Green
Beaconsfield
BUCKS
HP9 2FX
United Kingdom

Or emailed to: info@perkinelmer.com

Notices

The information contained in this document is subject to change without notice.

Except as specifically set forth in its terms and conditions of sale, PerkinElmer makes no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

PerkinElmer shall not be liable for errors contained herein for incidental consequential damages in connection with furnishing, performance or use of this material.

Copyright Information

This document contains proprietary information that is protected by copyright.

All rights are reserved. No part of this publication may be reproduced in any form whatsoever or translated into any language without the prior, written permission of PerkinElmer, Inc.

Copyright © 2010 PerkinElmer, Inc.

Trademarks

Registered names, trademarks, etc. used in this document, even when not specifically marked as such, are protected by law.

PerkinElmer is a registered trademark of PerkinElmer, Inc.

Table of Contents

Introduction	5
Overview	6
Conventions Used in this Manual.....	7
Notes, Cautions and Warnings.....	7
Safety Practices	11
Overview	12
General Operating Conditions.....	13
Warning Labels	14
Installation	15
Unpacking and Installation.....	16
Software Installation	17
System Description	21
Layout of the Three Detector Module	22
Optical System.....	23
System Performance Specifications	25
Using the Three Detector Module	29
Loading the Detector Module into the Spectrometer	30
Removing the Detector Module from the Spectrometer.....	32
Operating Procedures.....	33
Creating a New Method.....	33
Maintenance	39
Maintaining your Detector Module	40
Daily Checks.....	40
Cleaning the Instrument Covers	41



Introduction

Overview

This user's guide contains the operating instructions for the Three Detector Module.

The Three Detector Module covers a wavelength range of 175–3300 nm. The detector module has a photomultiplier tube (PMT) detector for the UV/Vis range, and an indium gallium arsenide (InGaAs) detector and a lead sulfide (PbS) detector for the near infra-red (NIR) range. The detector module comes as standard in the Lambda 1050 spectrometer and is available as an upgrade to the NIR high-performance Lambda instruments.

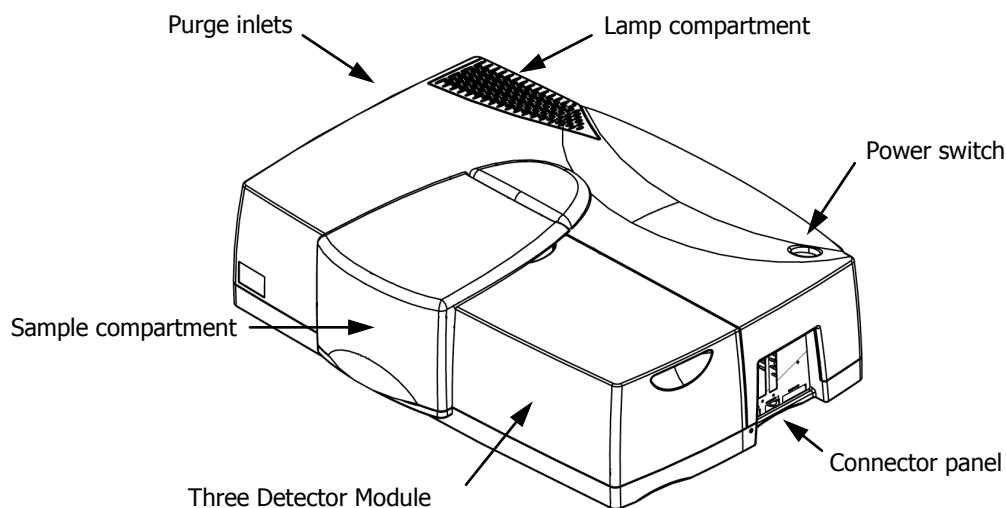


Figure 1 Three Detector Module fitted into a high-performance Lambda spectrometer

The Three Detector Module is available with two specifications of InGaAs detector:

- Wideband (WB), with an InGaAs detector range of 860–2500 nm (L6020326);
- Narrowband (NB), with an InGaAs detector range of 860–1800 nm (L6020327).

The InGaAs detector offers a better signal-to-noise ratio than the PbS detector in the NIR region. The NB InGaAs detector offers a higher signal-to-noise ratio than the WB InGaAs detector, but with a reduced wavelength range.

Conventions Used in this Manual

Normal text is used to provide information and instructions.

Bold text refers to text that is displayed on the screen.

UPPERCASE text, for example ENTER or ALT, refers to keys on the PC keyboard. '+' is used to show that you have to press two keys at the same time, for example, ALT+F.

All eight digit numbers are PerkinElmer part numbers unless stated otherwise.

Unless stated otherwise, in this manual high-performance Lambda spectrometer refers to the Lambda 950 and 1050.

All instructions for the control of the Three Detector Module are written for UV WinLab software version 6.

Notes, Cautions and Warnings

Three terms, in the following standard formats, are also used to highlight special circumstances and warnings.

NOTE: A note indicates additional, significant information that is provided with some procedures.

CAUTION	<i>We use the term CAUTION to inform you about situations that could result in serious damage to the instrument or other equipment. Details about these circumstances are in a box like this one.</i>
D	Caution (Achtung) <i>Bedeutet, daß die genannte Anleitung genau befolgt werden muß, um einen Geräteschaden zu vermeiden.</i>
DK	Caution (Bemærk) <i>Dette betyder, at den nævnte vejledning skal overholdes nøje for at undgå en beskadigelse af apparatet.</i>
E	Caution (Advertencia) <i>Utilizamos el término CAUTION (ADVERTENCIA) para advertir sobre situaciones que pueden provocar averías graves en este equipo o en otros. En recuadros éste se proporciona información sobre este tipo de circunstancias.</i>
F	Caution (Attention) <i>Nous utilisons le terme CAUTION (ATTENTION) pour signaler les situations susceptibles de provoquer de graves détériorations de l'instrument ou d'autre matériel. Les détails sur ces circonstances figurent dans un encadré semblable à celui-ci.</i>
I	Caution (Attenzione) <i>Con il termine CAUTION (ATTENZIONE) vengono segnalate situazioni che potrebbero arrecare gravi danni allo strumento o ad altra apparecchiatura. Troverete informazioni su tali circostanze in un riquadro come questo.</i>
NL	Caution (Opgelet) <i>Betekent dat de genoemde handleiding nauwkeurig moet worden opgevolgd, om beschadiging van het instrument te voorkomen.</i>
P	Caution (Atenção) <i>Significa que a instrução referida tem de ser respeitada para evitar a danificação do aparelho.</i>

**WARNING**

We use the term **WARNING** to inform you about situations that could result in **personal injury** to yourself or other persons. Details about these circumstances are in a box like this one.

D**Warning (Warnung)**

Bedeutet, daß es bei Nichtbeachten der genannten Anweisung zu einer **Verletzung** des Benutzers kommen kann.

DK**Warning (Advarsel)**

Betyder, at brugeren kan blive **kvæstet**, hvis anvisningen ikke overholdes.

E**Warning (Peligro)**

Utilizamos el término **WARNING (PELIGRO)** para informarle sobre situaciones que pueden provocar **daños personales** a usted o a otras personas. En los recuadros como éste se proporciona información sobre este tipo de circunstancias.

F**Warning (Danger)**

Nous utilisons la formule **WARNING (DANGER)** pour avertir des situations pouvant occasionner des **dommages corporels** à l'utilisateur ou à d'autres personnes. Les détails sur ces circonstances sont données dans un encadré semblable à celui-ci.

I**Warning (Pericolo)**

Con il termine **WARNING (PERICOLO)** vengono segnalate situazioni che potrebbero provocare **incidenti alle persone**. Troverete informazioni su tali circostanze in un riquadro come questo.

NL**Warning (Waarschuwing)**

Betekent dat, wanneer de genoemde aanwijzing niet in acht wordt genomen, dit kan leiden tot **verwondingen** van de gebruiker.

P**Warning (Aviso)**

Significa que a não observância da instrução referida poderá causar um **ferimento** ao usuário.



Safety Practices

Overview

This chapter describes the general safety practices and precautions that must be observed when operating the Three Detector Module with your high-performance Lambda spectrometer.

This advice is intended to supplement, not supersede, the normal safety codes in the user's country. It is also a supplement to the PerkinElmer standard Safety and Health Policy. The information provided does not cover every safety procedure that should be practiced. Ultimately, maintenance of a safe laboratory environment is the responsibility of the analyst and the analyst's organization.

Please consult all manuals and CDs supplied with your high-performance Lambda spectrometer before you start working with the Three Detector Module. Carefully read the safety information in this chapter and in the other manuals supplied. When setting up the instrument or performing analyses or maintenance procedures, strictly follow the instructions provided.

General Operating Conditions

Only use your Lambda spectrometer and Three Detector Module indoors and under the following conditions:

Temperature 15 °C to 35 °C


Relative Humidity 80% maximum (non-condensing)

If possible, avoid any adjustment, maintenance and repair of the opened, operating instrument or detector module. If any adjustment, maintenance and repair of the opened detector module is necessary, this must be done by a skilled person who is aware of the hazard involved.

Whenever it is likely that the Three Detector Module is unsafe, make it inoperative. The Three Detector Module may be unsafe if it:

- shows visible damage;
- fails to perform the intended measurement;
- has been subjected to prolonged storage in unfavorable conditions;
- has been subjected to severe transport stresses.

Warning Labels

 WARNING	<p><i>When this label is attached to an instrument it means refer to the manual.</i></p>
---	--

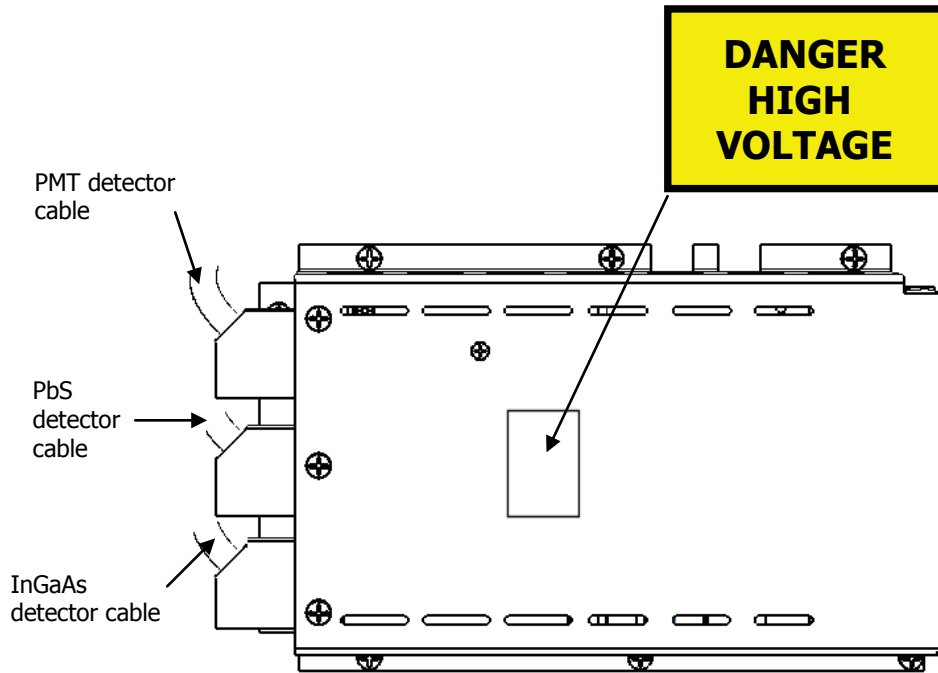


Figure 2 Warning label on the preamplifier board, inside the detector compartment

Installation

Unpacking and Installation

Carefully check the Three Detector Module after unpacking for any damage that may have occurred during shipping. If there is any such damage, file a claim immediately with the freight carrier and contact your local PerkinElmer Service Engineer.

The Three Detector modules require a first-time installation, which will be performed by a PerkinElmer Service Engineer.

NOTE: The installation is instrument-specific. To achieve the performance given in the performance specifications in another instrument, the detector module will require a first-time installation by a PerkinElmer Service Engineer.

The detector module replaces the detector compartment and detector circuitry installed in the spectrophotometer – the detector module has its own detectors and preamplifier board. If the detector board connectors between the detector module and spectrophotometer do not connect properly, damage to the pins may result during subsequent detector module removal and installation. Once the detector module is installed and the aligned, the unit can be loaded safely into the instrument and removed as necessary to facilitate normal spectrometer operations.

The Three Detector Module is enclosed in a rugged plastic housing mounted securely to a solid aluminum base plate. During handling, you should grasp the handle molded into the top panel with your left hand and the handle on the right-hand face of the detector module using your right hand as shown in Figure 3.

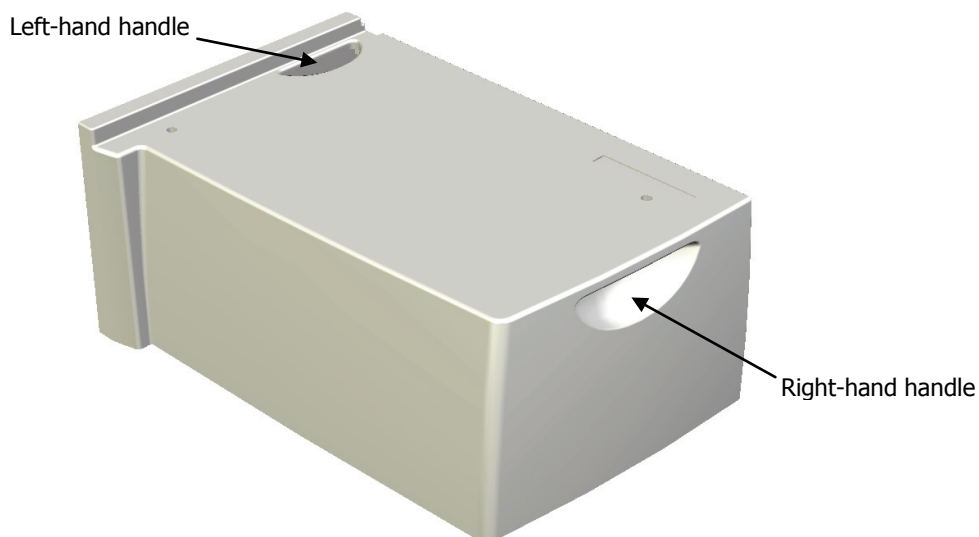


Figure 3 How to hold the detector module

CAUTION

The detector module must only be installed or removed when the instrument is switched off. Failure to observe this will result in permanent damage to your instrument.

Software Installation

- If you are installing the Three Detector Module as part of the UV WinLab software installation, you will be prompted to insert the Accessory CD. Follow the instructions on the screen.

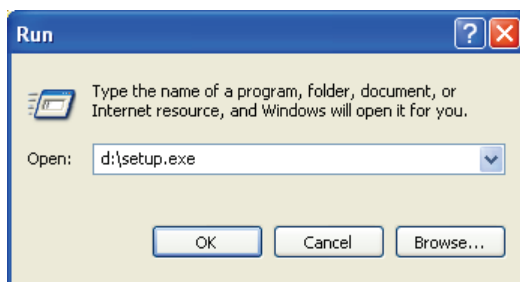
NOTE: For instructions on how to install the UV WinLab software see the *High-Performance Lambda Spectrometers Getting Started Guide* (L6050007).

NOTE: You must be logged on to Windows at Administrator level before installing the software.

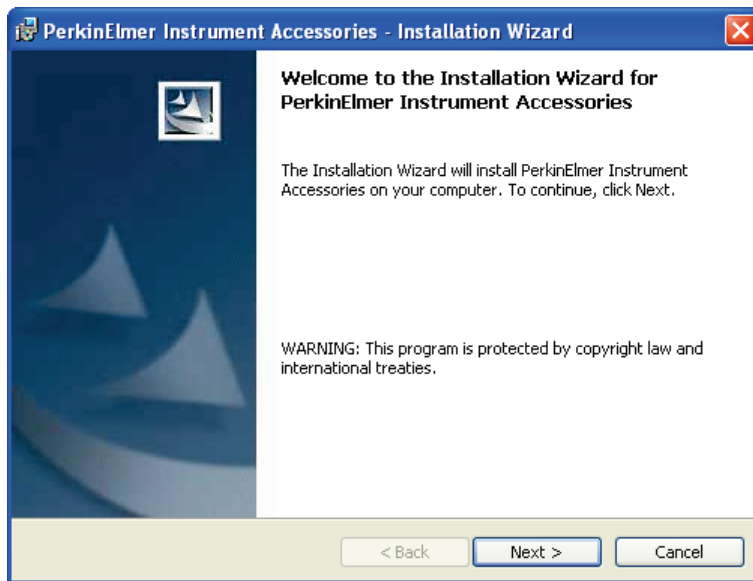
If you have already installed UV WinLab:

1. Insert the Accessory Software CD (L6100130) into your CD drive.
2. If the installation program does not start automatically, from the Start menu select **Run**.

The Run dialog is displayed.

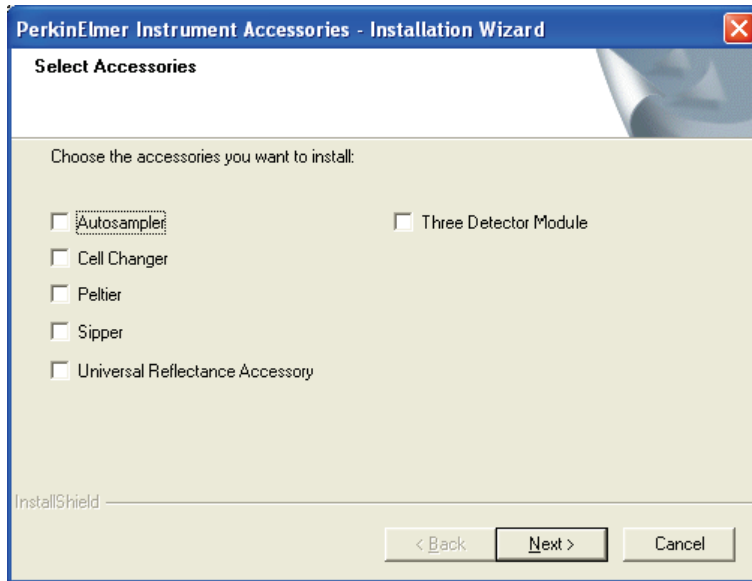


3. Enter **d:\Setup.exe** where d: is the CD drive and then click **OK**. The Welcome to the Installation Wizard dialog is displayed.



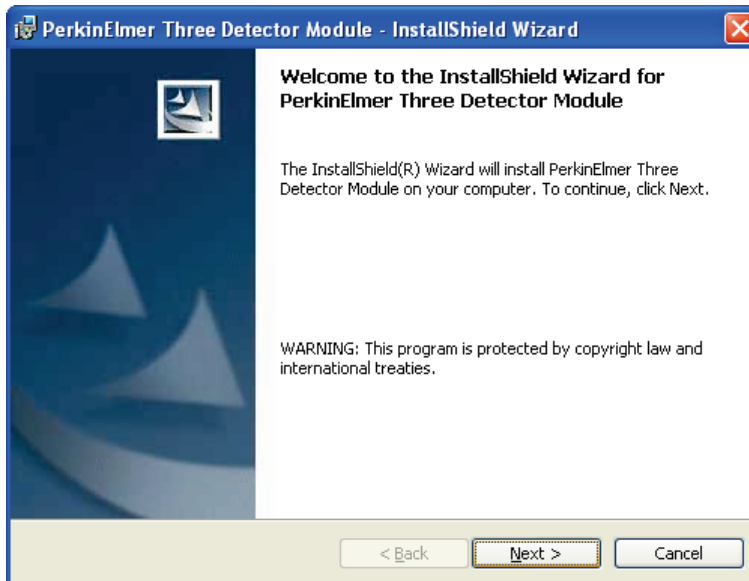
4. Click **Next**.

The Select Accessories page is displayed.



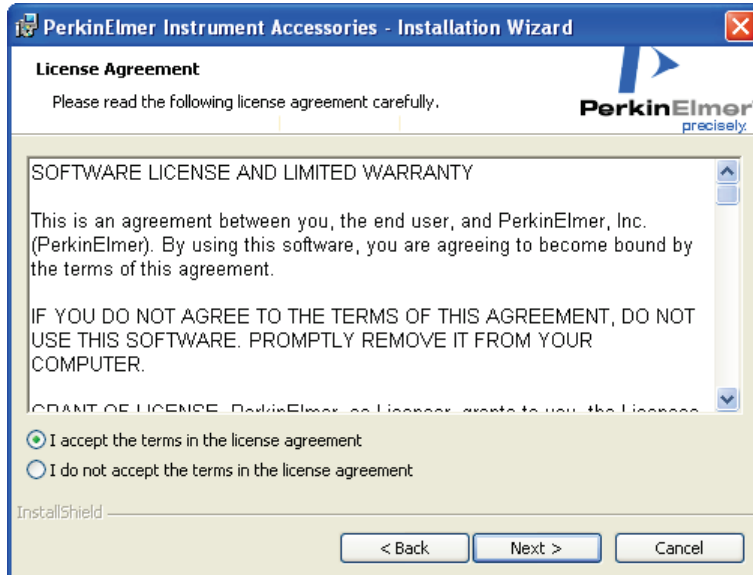
5. Select the **Three Detector Module** check box and then click **Next**.

The Welcome to the Three Detector Module Installation Wizard page is displayed.

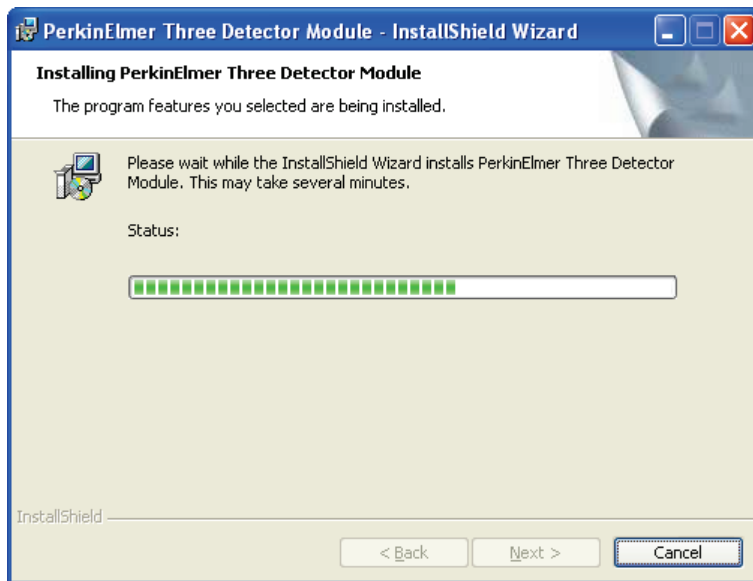


6. Click **Next** to continue.

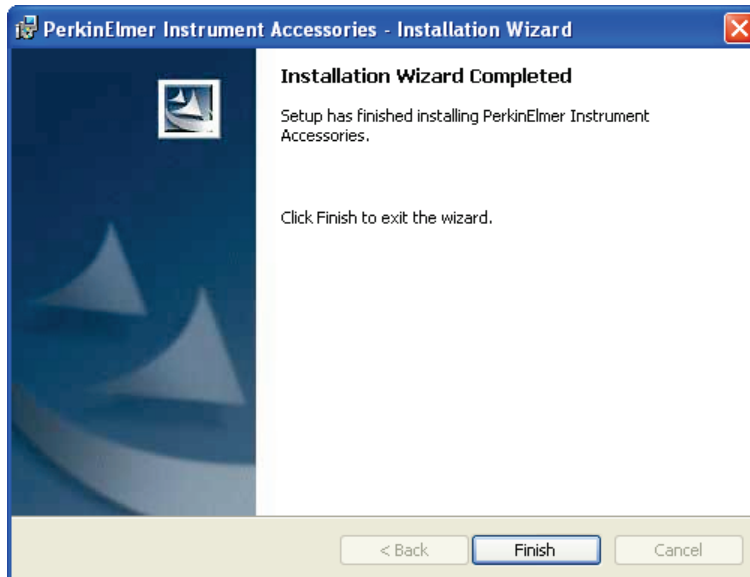
The License Agreement page is displayed.



7. Select **I accept the terms in the license agreement** and then click **Next**.
The Installing PerkinElmer Three Detector Module page informs you of the progress of the installation.



When the software is installed, the Installation Wizard Completed page is displayed.



8. Click **Finish** to exit.
The installation wizard closes.

Your Three Detector Module is now ready for use.

System Description

Layout of the Three Detector Module

The main components of the Three Detector Module are shown in Figure 4.

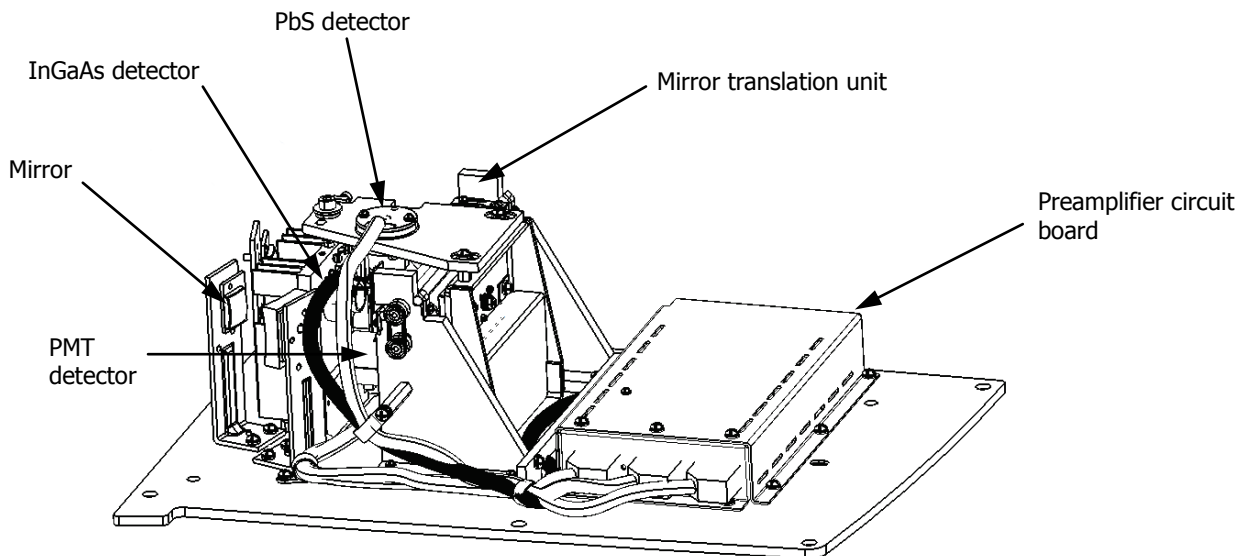


Figure 4 Three detector module with the cover removed

NOTE: There are no user-adjustable or user-maintained parts in the Three Detector Module.

The photomultiplier tube (PMT) detector is used in the UV/Vis range (175–860 nm). In the NIR range you can use either an InGaAs detector or a lead-sulfide (PbS) detector. If you have a narrowband InGaAs detector (1050 NB) you can use it in the range 860–1800 nm. If you have a wideband InGaAs detector (1050 WB), you can use it in the range 860–2500 nm. The PbS detector is used at higher wavelength than the InGaAs detector, in the range 1800–3300 nm or 2500–3300 nm, for the 1050 NB or 1050 WB, respectively.

NOTE: The UV WinLab software enables you to select the wavelength for the change between detectors from within defined wavelength ranges. This facility is useful if a feature of special spectral interest is located at one of the default change wavelengths. For more information, see *Operating Procedures* on page 33.

Optical System

The Three Detector Module optical system is depicted schematically in Figure 5.

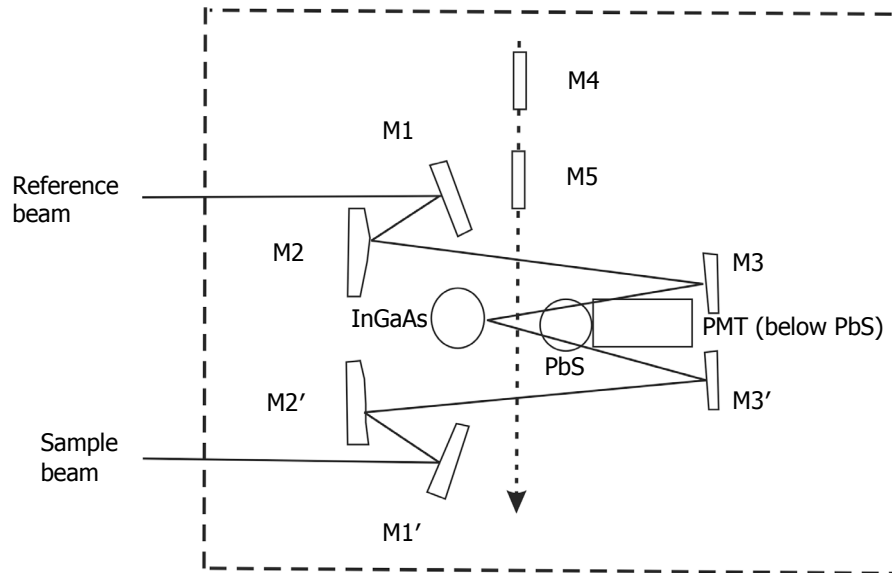


Figure 5 Schematic of the optical system of the Three Detector Module

NOTE: Once installed in the spectrometer, the detector module replaces the detector compartment in the optical system of the instrument. For details of the optical system of the high-performance spectrometers see the *High-Performance Lambda Spectrometers Hardware Guide* (L6050008) on the *High-Performance Lambda Spectrometers User Manuals CD* (L6050009).

The radiation passing alternately through the sample and reference beams is reflected by mirrors M1, M2, M3, and M1', M2', M3', respectively, of the optics in the detector assembly, onto the appropriate detector.

Mirrors 4 and 5 are used to select the appropriate detector. The mirror translation unit has three positions. At position 1, mirror M4 (the aluminum, SiO₂-coated mirror) directs the beam to the PMT detector at the base of the compartment. At position 2, both mirrors are outside of the beam path, and the beam goes to the InGaAs detector. At position 3, mirror M5 (the gold mirror) directs the beam to the PbS detector at the top of the optics compartment. The changeover between the detectors occurs at predefined wavelengths, and is controlled by the software.

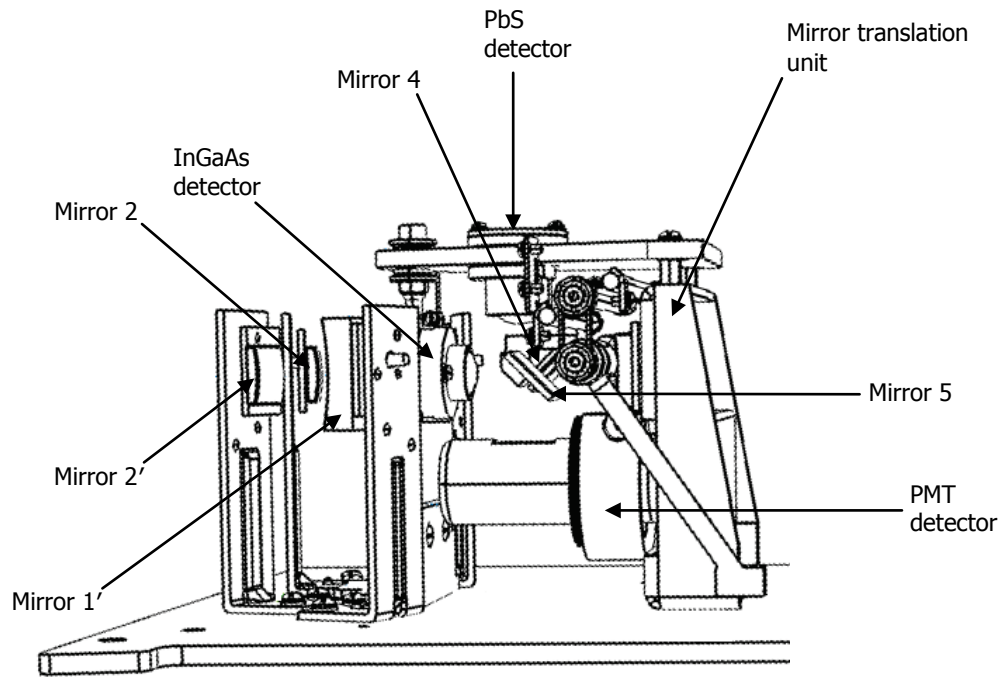


Figure 6 The arrangement of the detectors in the Three Detector Module

System Performance Specifications

The following are the guaranteed performance specifications for the Three Detector Module installed in a Lambda 1050 spectrometer.

Specification	Lambda 1050 NB	Lambda 1050 WB
Principle	Double-beam, double-monochromator, ratio- recording UV/Vis/NIR spectrophotometer with microcomputer electronics, controlled by DELL™ PC or compatible personal computer.	
Optical System	All reflecting optical system (SiO ₂ coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm and 360 Lines/mm NIR blazed at 1100 nm, Littrow mounting, sample-thickness-compensated detector optics.	
Beam Splitting System	Chopper (46+ Hz, Cycle: Dark/Sample/Dark/Reference, Chopper Segment Signal Correction, CSSC).	
Detectors	<p>Photomultiplier R6872 for high energy in the entire UV/Vis wavelength range.</p> <p>Combination of high-performance, Peltier-cooled, Narrowband InGaAs detector covering 860–1800 nm and a high-performance Peltier-cooled PbS detector covering 1800–3300 nm, in the NIR wavelength range.</p>	<p>Photomultiplier R6872 for high energy in the entire UV/Vis wavelength range.</p> <p>Combination of high-performance, Peltier-cooled, Wideband InGaAs detector covering 860–2500 nm and a high-performance Peltier-cooled PbS detector covering 1800–3300 nm, in the NIR wavelength range.</p>
Source	<p>Pre-aligned tungsten-halogen and deuterium.</p> <p>Utilizes a source-doubling mirror for improved UV/Vis/NIR energy.</p>	<p>Pre-aligned tungsten-halogen and deuterium.</p> <p>Utilizes a source-doubling mirror for improved UV/Vis/NIR energy.</p>
Wavelength Range (N ₂ purge required below 185 nm)	175–3300 nm	175–3300 nm
UV/Vis Resolution	≤0.05 nm	≤0.05 nm
NIR Resolution	≤0.20 nm	≤0.20 nm

Specification	Lambda 1050 NB	Lambda 1050 WB
Stray Light		
At 200 nm (12 g/l KCl USP/DAP method)	>2 A	>2 A
At 220 nm (10 g/l NaI ASTM method)	≤ 0.00007 %T	≤ 0.00007 %T
At 340 nm (50 mg/l NaNO ₂ ASTM method)	≤ 0.00007 %T	≤ 0.00007 %T
At 370 nm 50 mg/l NaNO ₂ ASTM method)	≤ 0.00007 %T	≤ 0.00007 %T
At 1420 nm (H ₂ O 1 cm pathlength)	≤ 0.00040 %T	≤ 0.00040 %T
At 2365 nm (CHCl ₃ , 1 cm pathlength)	≤ 0.00050 %T	≤ 0.00050 %T
Wavelength Accuracy	± 0.080 nm UV/Vis ± 0.300 nm NIR	± 0.080 nm UV/Vis ± 0.300 nm NIR
Wavelength Reproducibility		
UV/Vis (Deuterium Lamp Lines)	≤ 0.010 nm	≤ 0.010 nm
NIR (Deuterium Lamp Lines)	≤ 0.040 nm	≤ 0.040 nm
Standard deviation of 10 UV/Vis measurements	≤ 0.005 nm	≤ 0.005 nm
Standard deviation of 10 NIR measurements	≤ 0.020 nm	≤ 0.020 nm
Photometric Accuracy		
Double Aperture method 1 A	± 0.0003 A	± 0.0003 A
Double Aperture method 0.5 A	± 0.0003 A	± 0.0003 A
NIST 1930D Filters 2 A	± 0.0030 A	± 0.0030 A
NIST 930D Filters 1 A	± 0.0030 A	± 0.0030 A
NIST 930D Filters 0.5 A	± 0.0020 A	± 0.0020 A
K ₂ Cr ₂ O ₇ Solution USP/DAP method	± 0.0080 A	± 0.0080 A

Specification	Lambda 1050 NB	Lambda 1050 WB
Photometric Linearity (Addition of filters UV/Vis at 546.1 nm, 2 nm slit, 1 second integration time)		
1.0 A	±0.0060 A	±0.0060 A
2.0 A	±0.0160 A	±0.0160 A
3.0 A	±0.0050 A	±0.0050 A
NIR 1.0 A (1200 nm)	±0.0005 A	±0.0005 A
NIR 2.0 A (1200 nm)	±0.0010 A	±0.0010 A
Photometric Reproducibility (Standard deviation for 10 measurements, 2 nm slit, 1 second integration time)		
1.0 A with NIST 930D Filter at 546.1 nm	≤0.00016 A	≤0.00016 A
0.5 A with NIST 930D Filter at 546.1 nm	≤0.00008 A	≤0.00008 A
0.3 A with NIST 930D Filter at 546.1 nm	≤0.00008 A	≤0.00008 A
Photometric Range		
UV/Vis	8 A	8 A
NIR	8 A	8 A
Photometric Display	Unlimited	Unlimited
Bandpass	0.05–5.00 nm in 0.01 nm increments UV/Vis range 0.20–20.00 nm in 0.04 nm increments NIR range. Fixed resolution, constant energy or slit programming.	0.05–5.00 nm in 0.01 nm increments UV/Vis range 0.20–20.00 nm in 0.04 nm increments NIR range. Fixed resolution, constant energy or slit programming.
Photometric Stability (After warm-up at 500 nm, 0 A, 2 nm slit, 2 second integration time, peak to peak)	≤0.0002 A/h	≤0.0002 A/h
Baseline Flatness (190–3100 nm, 2 nm slit, 0.20 second UV/Vis integration time, no smoothing applied, 0.24 second NIR integration time, no smoothing applied.)	±0.0008 A	±0.0008 A

Specification	Lambda 1050 NB	Lambda 1050 WB
Photometric Noise RMS (2 nm slit, 1 second integration time)		
0 A and 190 nm	≤0.00010 A	≤0.00010 A
0 A and 500 nm	≤0.00005 A	≤0.00005 A
2 A and 500 nm	≤0.00020 A	≤0.00020 A
4 A and 500 nm	≤0.00100 A	≤0.00100 A
6 A and 500 nm	≤0.00500 A	≤0.00500 A
0 A and 1500 nm	≤0.00002 A	≤0.00002 A
2 A and 1500 nm	≤0.00010 A	≤0.00010 A
3 A and 1500 nm (PbS, servo mode)	≤0.00250 A	≤0.00250 A
0 A and 1500 nm (InGaAs)	≤0.00002 A	≤0.00002 A
2 A and 1500 nm (InGaAs)	≤0.00010 A	≤0.00010 A
3 A and 1500 nm (InGaAs, servo mode)	≤0.000025 A	≤0.00010 A
Sample Compartment Instrument (<i>W</i> × <i>D</i> × <i>H</i>)	200 mm × 300 mm × 220 mm	200 mm × 300 mm × 220 mm
Purging		
Optics	YES	YES
Sample Compartment	YES	YES
Instrument Dimensions (<i>W</i> × <i>D</i> × <i>H</i>)	1020 mm × 740 mm × 300 mm	1020 mm × 740 mm × 300 mm
Instrument Weight	77 kg	77 kg
Digital I/O	RS 232 C	RS 232 C
Light Beam	90 mm above the base plate 120 mm beam separation 3–12 mm beam height	90 mm above the base plate 120 mm beam separation 3–12 mm beam height
Instrument Requirements		
Power	90 VAC–250 VAC, 50/60 Hz; 250 VA	90 VAC–250 VAC, 50/60 Hz; 250 VA
Temperature	10–35 °C	10–35 °C
Recommended Humidity	10%–70% relative humidity, non-condensing.	10%–70% relative humidity, non-condensing.

Using the Three Detector
Module

Loading the Detector Module into the Spectrometer

CAUTION

Do not turn power to the instrument on and off quickly as this may damage the power supply.

Wait at least 30 seconds before re-starting.

You must install the detector module in the instrument before turning the instrument power switch on.

NOTE: Before using the system, you will need to install the software. See *Software Installation* on page 17.

To configure the system for Three Detector Module operation:

1. Switch the Lambda spectrometer OFF and disconnect the line power cord.
2. Open the sample compartment cover.
3. To remove the current detector, undo the two retaining screws located under the blanking caps on the top of the detector.
These are accessible using the long posidrive screwdriver supplied with the instrument.
4. Remove the detector compartment cover by carefully lifting vertically using the two hand holds.
5. Lift the Three Detector Module by the handles and place the unit into the detector compartment so that the positioning pins on the detector compartment floor connect with the corresponding holes in the bottom of the detector module base plate.
Make sure the detector preamplifier board connector is fastened to the connector on the detector compartment floor.
6. Secure the detector module to the instrument by tightening the thumb screws at the front left and rear right locations on the base plate.
7. Reconnect the line power cord.
8. Open the sample compartment cover.
9. Make sure that the beam paths are free from obstruction.
This means that no objects (for example, cables) project into the beam paths, no samples are in the sample compartment, and any accessories are properly installed.

NOTE: If the sample compartment is obstructed during the startup procedure, the spectrometer will not initialize correctly.

10. Close the sample compartment.

11. Turn ON the spectrometer power switch located at the top right-hand corner of the instrument.
The switch will light up when there is power to the instrument.
12. Switch on any additional accessories.
13. Wait until all instrument initialization is complete before starting the UV WinLab software.
This will take approximately three minutes from switching the power on.
For best results, allow the instrument and detector module to warm up for at least 30 minutes before proceeding with measurements.

Removing the Detector Module from the Spectrometer

Use the following procedure to disconnect and remove the detector module from the instrument and restore the spectrophotometer to normal configuration:

1. Switch the Lambda spectrometer OFF.
2. Open the sample compartment cover.
3. Loosen the two thumb screws on the detector module base plate through the holes in the detector module enclosure.
4. Lift the detector module out of the instrument and place it on a flat surface.
5. To replace the detector compartment components, lift the detector compartment by the handles and carefully place the unit into the detector compartment so that the positioning pins on the detector compartment floor connect with the corresponding holes in the bottom of the detector module base plate.
Make sure the detector preamplifier board connector is fastened to the connector on the detector compartment floor.
6. Secure the detector compartment to the instrument by tightening the thumb screws at the front left and rear right locations on the base plate.

Operating Procedures

The Three Detector Module is controlled using the UV WinLab software. In the software, a 'Method' acts as a template that holds all of the settings. The first time that you use the detector module you need to create a method. The following section describes how to create and save a simple method that can be used to collect data for one sample over the range 175–3300 nm.

NOTE: The method can be reused any number of times. It is also possible to edit and resave this method to collect larger data sets. When the method has been run, the collected data is saved in a task. For more information see the on-screen UV WinLab Help.

Creating a New Method

To create a method, use the New Method Wizard:

1. Open UV WinLab.
The UV WinLab Explorer Window is displayed.
2. From the File menu select **New**, and then from the sub-menu select **Method**.
The New Method Wizard is displayed.
3. Select **High performance UV/Vis/NIR instrument** from the Type of Instrument drop-down list.
The description field below lists all of the high performance instruments.
4. Click **Next**.
The Select Instrument page of the Wizard is then displayed.
5. Select the type of spectrometer that you are using from the drop-down list, and then click **Next**.
This associates your instrument with the method.

NOTE: Only instruments that have previously been installed are listed.

NOTE: You must add the current instrument to the list if it is not displayed. For a description how to add an instrument to this list, see the on-screen UV WinLab Help.

6. Select **Scan** from the Type of method drop-down list.
The available method types are Scan, Timedrive, Wavelength Quant, Scanning Quant, Wavelength Program and Polarization Scan.
7. Click **Next**.
8. Select the **Three Detector Module** check box from the list of accessories.
This associates the detector module with this method.

- Click **Next**.

The Finish page of the wizard is displayed. **Edit upon completion** is selected by default. This means that the method opens in the workspace once it has been saved.

- Click **Save/Finish**.

The Save Method dialog is displayed.

- Select the location for the new method.

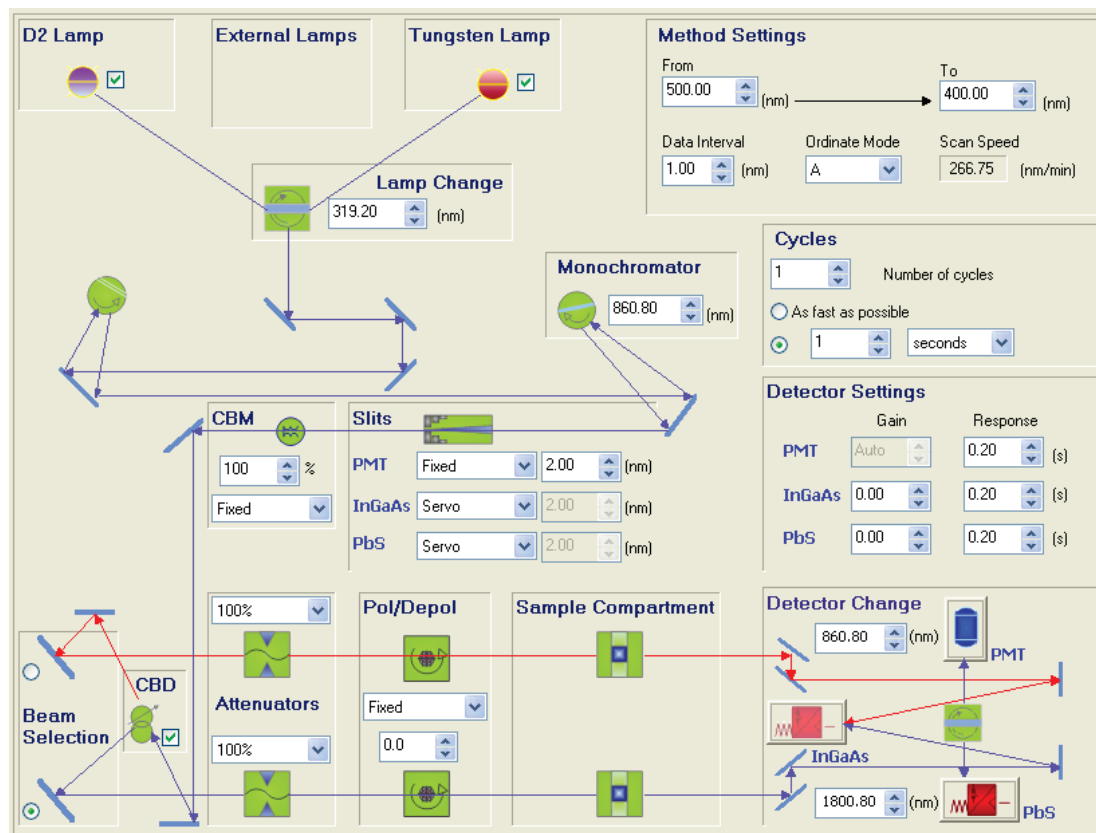
- The method has a default name. Click **OK** to save the method with the default name, or enter a new name and then click **OK**.

If you are using the Enhanced Security (ES) version of UV WinLab a security dialog will be displayed prompting you for your User name, Password, Reason and Comment. Enter the required details and then click **OK**.

The wizard closes and the method is created. If you selected **Edit upon completion**, the method will open within the Workspace.

- Select **Data Collection** from the **Folder List**.

The Data Collection page is displayed.



- Enter the required Method Settings.



The available wavelength range is 175–3300 nm.

The data interval corresponds to the step size between the collected data points. Ensure that the data interval is set to an appropriate value for the scan range you require. If the data interval is very small for a large scan range, the scan will take a long time.

15. Select the ordinate mode from the drop-down list in the Method Settings section.
The options are: **A** (absorbance), **%T** (transmittance), **E1** (energy from sample beam), **E2** (energy from reference beam), or **%R** (reflectance).
If E1 is selected as the Ordinate mode, the sample beam is set as the front beam and the beam selection is disabled. If E2 is selected as the Ordinate mode, the sample beam is set as the rear beam and the beam selection is disabled.

NOTE: Selecting E1 or E2 does not automatically set the slits to Fixed.

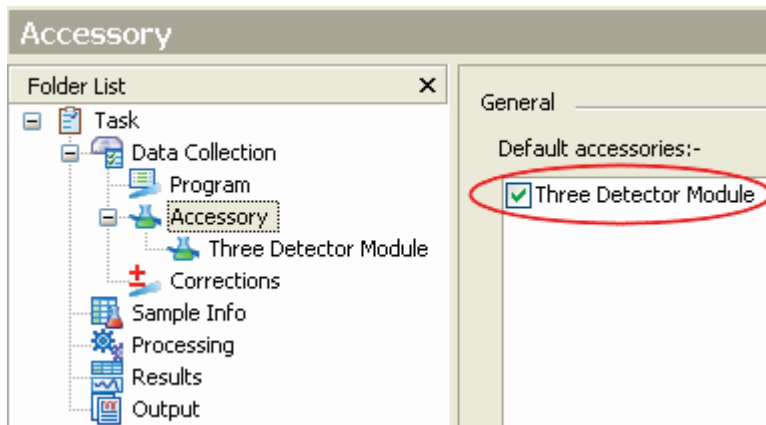
16. In the Detector Settings section, enter or select the detector change points.
The default value for the changeover from PMT to InGaAs is 860.8 nm. The minimum is –20 nm and the maximum is 3350 nm.
The default value for the changeover from InGaAs to PbS is 1800.8 nm for the NB L1050 and 2500.8 nm for the 1050 WB. The minimum is –20 nm and the maximum is 3350 nm.

NOTE: If you press  or  the value increases or decreases by 0.1, respectively. If you keep the button depressed, the value increases or decreases by 10, respectively.

17. If using a Common Beam Depolarizer, ensure that the CBD check box is selected.
18. Select values for the front and rear sample beam attenuators from the drop-down lists.
If the Three Detector Module is installed in a Lambda 1050 instrument the options are: **0%**, **0.1%**, **1%**, **100%**, **Automatic** and **Sample Table**.
If the Three Detector Module is installed in a Lambda 950 instrument, the options are: **0%**, **1%**, **10%**, **100%**, **Automatic** and **Sample Table**.

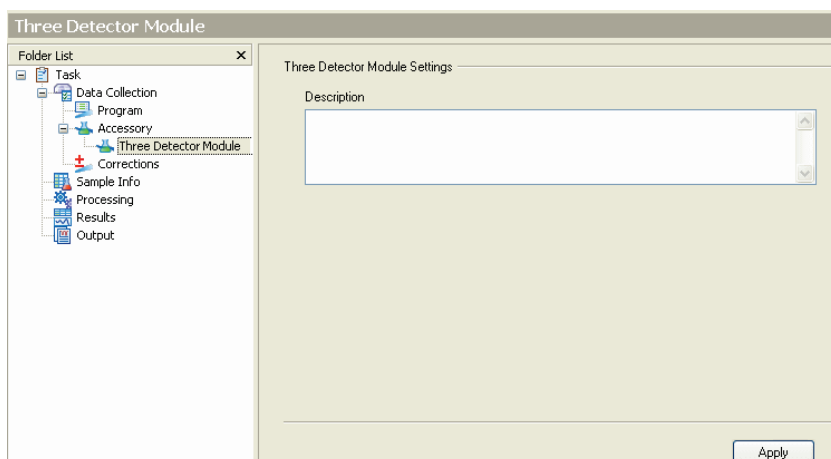
NOTE: These instructions are for UV WinLab version 6. If you have an earlier version of UV WinLab then the detector module will be recognized, but only the PMT and PbS detectors will be available.

19. Select the Accessory page in the Folder List.
The Accessory page lists the accessories that have been detected by the software. If the check box is selected the accessory will be used in the method.




20. Select **Three Detector Module** in the **Folder List**.

The Three Detector Module page is displayed.



21. In the Description box, enter any information as appropriate to describe the current method.
22. Select **Corrections** in the Folder List.
The Corrections page is displayed.
23. Select the corrections you require and then define when they expire.
For more information about baseline corrections see the UV WinLab on-screen Help.
24. Select **Sample Info** in the Folder List.
The Sample Info page is displayed. By default the Sample Table contains one sample. To increase the number of samples, enter the required number in the **Samples** field located at the top left corner of the page.
25. Click **Format Sample Table**.
The Table Builder dialog is displayed. In this case you have 1 sample, but if you want to collect data more than once, then you can collect Measurements on the same sample.
26. Open the Design page and then select **Measurements** from the drop-down list.
Enter 2 for the number of measurements. You can add up to a maximum of 200 measurements for each sample.
27. Select whether to **Sequence by sample** or **Sequence by measurement** and then click **OK**.
Sequence by sample runs the samples in sample order rather than measurement order. For example, if you had 2 samples (S1 and S2) and each sample had 2 measurements (M1 and M2) (that is, S1M1, S1M2, S2M1, S2M2), the samples would be run in the order: S1M1, S1M2, S2M1, S2M2.
Sequence by measurement runs the samples in measurement order rather than sample order. For example, if you had 2 samples (S1 and S2) and each sample had 2 measurements (M1 and M2) (that is, S1M1, S1M2, S2M1, S2M2), the samples would be run in the order: S1M1, S2M1, S1M2, S2M2.

28. If using a Common Beam Depolarizer, select the required option from the drop-down list in the **CBDep** column.
29. From the File menu select **Save Settings** and then select **To method** from the sub-menu.
30. Execute the method by clicking  on the toolbar.



Maintenance

Maintaining your Detector Module



Unauthorized Adjustments and Servicing

Do not attempt to make adjustments, replacements or repairs to this detector module, except as described here. Only a PerkinElmer Service Engineer or similarly trained and authorized person should be permitted to service the instrument. Please contact your local PerkinElmer sales or service office.

There are no user-maintained parts in the detector module.

You should perform only the maintenance procedures described in this chapter. If additional maintenance is required, contact a PerkinElmer Service Engineer.

CAUTION

Before using any cleaning or decontamination methods except those specified here, users should check with PerkinElmer that the proposed method will not damage the equipment.

Daily Checks

The instrument is constructed with high-quality components and requires little maintenance other than to keep it clean and free of dust.

To protect the optical system from dust and fumes, you should keep the spectrometer sample compartment cover closed except for when you are carrying out work in the compartment.

The sample compartment windows should always be installed.

You should observe the following care routine to maintain your instrument in good condition:

- Immediately clean all spilled materials from the affected area and wipe it dry with lint free paper or cloth.
If you have to wipe the sample compartment windows, make sure you do not introduce scratches. The windows are optical components and you should handle them in the same way as high quality cells.
- Do not leave samples, particularly those given to fuming or evaporation, in the sample compartment for longer than necessary.
- If any type of sample handling system is installed and portions of it are left in the sample compartment (such as a sipper and flowcell), make certain that the system is cleaned at the end of the working day.
Generally, such systems should be filled with deionized water when left overnight.

CAUTION

Spills

*Take care not to spill liquids onto the spectrometer.
Expensive damage can result to the optics or electronics if liquids are
spilled and run inside the instrument.*

Cleaning the Instrument Covers

You can clean the outside of the instrument using a damp cloth. Mild detergent may be used, if necessary. Always perform a patch test on an inconspicuous area of the instrument, before you clean the entire instrument.

