



SpectraMax® Paradigm® Multi-Mode Detection Platform

Safety Guide

安全手册

5008573 A
September 2010

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Safety Information



WARNING! If the equipment is used in a manner not specified by Molecular Devices, the protection provided by the equipment may be impaired.

Warning, Caution, and Note Definitions

All Warnings in this document include an exclamation point, a lightning bolt, or a light burst symbol framed within a triangle.

The exclamation point symbol is an international symbol which serves as a reminder that all safety instructions should be read and understood before installation, use, maintenance, and servicing is attempted.

When this symbol is displayed in this guide, pay special attention to the specific safety information associated with the symbol.



WARNING! A **WARNING** calls attention to a condition or possible situation that could cause injury to the operator.

CAUTION! A **CAUTION** calls attention to a condition or possible situation that could damage or destroy the product or the operator's work.



Note: A **NOTE** is used to call attention to notable information that should be followed during installation, use, or servicing of this equipment.

Electrical Safety

To prevent electrically related injuries and property damage, properly inspect all electrical equipment prior to use and immediately report any electrical deficiencies. Contact a Molecular Devices service engineer for any servicing of equipment requiring the removal of covers or panels.

High Voltage



WARNING! This symbol indicates the potential of an electrical shock hazard existing from a high voltage source and that all safety instructions should be read and understood before proceeding with the installation, maintenance, and servicing of all modules.

Do not remove system covers. To avoid electrical shock, use supplied power cords only and connect to properly grounded (three-holed) wall outlets. Use only multiplug power strips provided by the manufacturer.

Disposal of Electronic Equipment

It is important to understand and follow all laws regarding the safe and proper disposal of electrical instrumentation.



The symbol of a crossed-out wheeled bin on the product is required in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union. The presence of this marking on the product indicates that:

- the device was put on the European Market after August 13, 2005.
- the device is not to be disposed via the municipal waste collection system of any member state of the European Union.

For products under the requirement of WEEE directive, please contact your dealer or local Beckman Coulter office for the proper decontamination information and take back program, which will facilitate the proper collection, treatment, recovery, recycling, and safe disposal of the device.

Laser Light



WARNING! This symbol indicates that a potential hazard to personal safety exists from a laser source. When this symbol is displayed in this guide, pay special attention to the specific safety information associated with the symbol.

Laser Specifications

The SpectraMax® Paradigm® Multi-Mode Detection Platform is rated a Class 1 Laser Product because it houses one or more Laser Modules whereas the laser light is not accessible.



Figure 1-1 Label on Rear of Instrument

The embedded Laser Module inside the Paradigm base instrument is used for the plate height detection and has the following specifications:

Laser type:	diode laser
Wavelength:	650 nm
Max. output power:	2 mW, cw
Laser Class:	Class 2M (IEC60825-1, ed. 1.2: 2001)
Fan angle:	55° ±5°

The embedded laser module is ON, only if the microplate chamber flap is closed (hardware interlock). The user or the service engineer is not exposed to any radiation from the embedded laser module during operation, maintenance, or service. The closed microplate chamber acts as the protective housing.

Laser or Laser Diodes Inside the Cartridge Modules

Various cartridge modules can have a Laser or Laser Diode (up to Laser Class IV) inside the cartridge modules.

The Paradigm is equipped with a redundant laser safety system. Therefore, the user or the service engineer is not exposed to any radiation of the embedded laser during operation, maintenance, or service.

Chemical and Biological Safety

Normal operation of the SpectraMax Paradigm Multi-Mode Detection Platform may involve the use of materials that are toxic, flammable, or otherwise biologically harmful. When using such materials, observe the following precautions:

- Handle infectious samples according to good laboratory procedures and methods to prevent the spread of disease.
- Observe all cautionary information printed on the original solutions containers prior to their use.
- Dispose of all waste solutions according to your facility's waste disposal procedures.
- Operate the SpectraMax Paradigm Multi-Mode Detection Platform in accordance with the instructions outlined in this guide, and take all the necessary precautions when using pathological, toxic, or radioactive materials.
- Splashing of liquids may occur; therefore, take appropriate safety precautions, such as using safety glasses and wearing protective clothing, when working with potentially hazardous liquids.
- Use an appropriately contained environment when using hazardous materials.
- Observe the appropriate cautionary procedures as defined by your safety officer when using flammable solvents in or near a powered-up instrument.
- Observe the appropriate cautionary procedures as defined by your safety officer when using toxic, pathological, or radioactive materials.
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Note: Observe all warnings and cautions listed for any external devices attached or used during operation of the SpectraMax Paradigm Multi-Mode Detection Platform. Refer to applicable external device user guides for operating procedures of that device.

Moving Parts

To avoid injury due to moving parts, observe the following:

- Never attempt to exchange labware, reagents, or tools while the instrument is operating.
- Never attempt to physically restrict any of the moving components of the SpectraMax Paradigm Multi-Mode Detection Platform.
- Keep the SpectraMax Paradigm Multi-Mode Detection Platform work area clear to prevent obstruction of the movement.

Cleaning

Observe the cleaning procedures outlined in this user guide for the SpectraMax Paradigm Multi-Mode Detection Platform. Prior to cleaning equipment that has been exposed to hazardous material:

- Appropriate Chemical and Biological Safety personnel should be contacted.
- The Chemical and Biological Safety information contained in this guide should be reviewed.

Maintenance

Perform only the maintenance described in this guide. Maintenance other than that specified in this guide should be performed only by service engineers.



Note: It is your responsibility to decontaminate components of the SpectraMax Paradigm Multi-Mode Detection Platform before requesting service by a Molecular Devices service engineer or returning parts to Molecular Devices for repair. Molecular Devices will NOT accept any items which have not been decontaminated where it is appropriate to do so. If any parts are returned, they must be enclosed in a sealed plastic bag stating that the contents are safe to handle and are not contaminated.

Warnings and Cautions for the SpectraMax Paradigm Multi-Mode Detection Platform

Please read and observe all cautions and instructions. Remember, the most important key to safety is to operate the SpectraMax Paradigm Multi-Mode Detection Platform with care.



WARNING! If the equipment is used in a manner not specified by Molecular Devices, the protection provided by the equipment may be impaired.

CAUTION! Warranty claims are void if damage during transport is caused by improper packing.

CAUTION! Keep the box upright. Do not tip or tilt the box or place it on its side.

CAUTION! Keep the instrument upright and level when lifting. Do not tip or shake the instrument to prevent damage to the moving components inside the detector.

CAUTION! The instrument may be damaged if the transport locks are not removed before the instrument is powered on.

CAUTION! MAGNETIC DEVICE. Keep magnetic storage devices or strips, such as hard drives, credit cards, etc., away from the instrument covers.

CAUTION! Turn off main power to the instrument before connecting it to the host computer.



WARNING! Turn off and unplug power to the instrument before changing fuses. Failure to do so can cause electrical shock or equipment damage.



WARNING! Only officially trained service engineers may perform service procedures on the instrument. Contact a Molecular Devices service engineer when service is required.

CAUTION! The transport lock must be installed to prevent the possibility of damage to the microplate carrier during transit.

CAUTION! Settings that vary from the recommended Power Options Properties may introduce a risk of data transfer interruption and a loss of data.

Warnings and Cautions for the Multi-Mode Analysis Software

Please read and observe all cautions and instructions. Remember, the most important key to safety is to operate the SpectraMax Paradigm Multi-Mode Detection Platform and the FilterMax™ Multi-Mode Microplate Readers with care.

The WARNINGS and CAUTIONS found within this document are listed below.



WARNING! If the equipment is used in a manner not specified by Molecular Devices, the protection provided by the equipment may be impaired.

CAUTION! Settings that vary from the recommended Power Options Properties may introduce a risk of data transfer interruption and a loss of data.

CAUTION! Shake low density plates, such as 6-well or 48-well plates, at low speed only. Shaking low density plates at higher speeds may cause liquid in wells to spill.

CAUTION! In any situation (such as when operating the instrument with integrated systems) where automatic loading and ejection of the cartridge carrier may cause a potential equipment collision, we recommend disabling the Automatically load/eject cartridge carrier when running the Multi-Mode Validation Plate feature, and to load and eject the cartridge carrier manually.

CAUTION! The plate height configured must not be less than that of the actual plate. Doing so may cause the FilterMax Multi-Mode Microplate Readers to collide with the plate during a Read Height Optimization. The SpectraMax Paradigm Multi-Mode Detection Platform has an auto-detection to prevent collision. If an incorrect plate height is entered for the SpectraMax Paradigm Multi-Mode Detection Platform an error message appears while running protocols using the defined labware.

CAUTION! Luminescence light levels visible to the human eye may cause damage to the detection system.

安全信息



警告 如果以未经 Molecular Devices 规定的方式使用此设备，则其提供的保护可能被削弱。

警告、小心、附注定义

本文件中的所有“警告”与“小心”讯息均包括带三角框的惊叹号、闪电或光脉冲符号。惊叹号符号是一个国际通用符号，意在提醒用户：有关人员在尝试安装、使用、维护和维修前，应通读并理解所有安全指示。当这个符号在本手册中出现时，请特别留意此符号指明的具体安全信息。



警告 “警告”提醒注意能够使操作员受伤的状况或可能情形。

小心 “小心”提醒注意能够损害或破坏有关产品或操作员工作的状况或可能情形。



附注 “附注”用于表明在本设备安装、使用或维修过程中应该遵循的注意事项。

电气安全

为了防止与电相关的受伤和财产损坏，所有电气设备在使用前需得到适当检查，并且任何电气缺陷需立即报告。如果任何设备维修需要取下盖板或面板，请与 Molecular Devices 维修工程师联系。

高电压



警告 这个符号指明存在高电压源带来的潜在触电危险；在所有模块的安装、维护及修理前应通读和理解全部安全须知。

请勿取下系统盖板。为了避免触电，请只使用附带的电源线，且插入已适当接地的（三孔）墙壁插座。只使用制造商供应的多插座接线板。

电子设备的弃置

理解和遵守关于安全适当弃置电气仪器的全部法律相当重要。



产品上打叉的带轮垃圾筒符号系由欧洲联盟“废弃电子电气设备 (Waste Electrical and Electronic Equipment、缩写 WEEE) 指令”所规定。产品上的此标记表明：

- 该装置于 2005 年 8 月 13 日后进入欧洲市场。
- 该装置不得经由欧洲联盟任何成员国的市政垃圾收集系统弃置。

对于受 WEEE 指令辖制的产品，请向经销商或当地的 Beckman Coulter 办事处查询适当的净化信息和收回计划；该计划有助于对此类装置的适当收集、处理、回收、复用及安全弃置。

激光



警告 这个符号指明存在激光源对个人安全的潜在危害。当这个符号在本手册中出现时，请特别留意此符号指明的具体安全信息。

激光器规格

SpectraMax® Paradigm® 多模探测平台内装一个或多个激光器模块，然而其激光不会外泄，因此评定为 1 类 (Class 1) 激光产品。



图 2.1 仪器背面上的标签

SpectraMax Paradigm 仪器本体内的嵌入式激光器模块用于板高度探测且规格如下：

激光器类型：	二极管激光器
波长：	650 nm
最大输出功率：	2 mW、cw
激光器类别：	2M 类 (Class 2M) (IEC60825-1, 第 1.2 版：2001 年)
风扇角度：	55°±5°

嵌入式激光器模块只有在微孔板室活门已关闭时才会通电 (硬件连锁装置)。用户或维修工程师在操作、维护或维修期间都不会遭到嵌入式激光器模块的任何照射。关闭的微孔板室起着保护罩的作用。

探测盒模块内的激光器或激光二极管

多种探测盒模块内装有激光器或激光二极管 (可达 IV 类激光器)。

Paradigm 装备有冗余激光安全系统。因此，用户或维修工程师在操作、维护或维修期间都不会遭到嵌入式激光器的任何照射。

化学与生物安全

仪器的正常工作可能涉及对有毒、易燃或其他生物有害材料的使用。在使用此类材料时，请采取下列预防措施：

- 请依照优良实验程序和方法处理所有传染性标本，以防疾病的传播。
- 使用溶液时请遵循原装容器上的全部警告信息。
- 依照您所在设施的废物弃置程序弃置所有废液。
- 请依照本手册中概括的指示操作仪器，并且在使用病理、有毒或放射性材料时采取所有必要的预防措施。
- 液体溅洒可能发生；因此在使用潜在危险的液体时，请采取适当的安全预防措施，例如戴护目镜和穿防护服。
- 使用有害材料时务，请采用经过适当封闭的环境。
- 在通电的仪器内或附近使用易燃溶剂时，务请遵守由贵单位安全负责人制定的适用预防程序。
- 使用有毒、病理或放射性材料时，务请遵守由贵单位安全负责人制定的适用预防程序。



附注 在此仪器的工作过程中，请遵守为任何附加或使用的外部装置列明的全部警告和小心讯息。如需有关外部装置的操作程序，请参阅该装置的用户手册。

移动零件

为了避免移动零件造成的伤害，务请遵守下列注意事项：

- 绝对不可试图在仪器工作时更换实验室器皿、试剂或工具。
- 绝对不可尝试用身体限制仪器的任何移动部件。
- 保持仪器工作区无障碍物，以防阻碍移动。

清洁

遵守本用户手册中为的仪器清洁程序。在清洁曾接触危险材料的设备之前：

- 应联系适当的化学与生物安全负责人。
- 应阅读本用户手册中包含的化学与生物安全信息。

维护

只进行本手册描述的维护。未经本手册规定的维护应只由维修工程师完成。



附注 在要求 Molecular Devices 维修工程师维修或将零件退回至 Molecular Devices 进行修理前，您有责任净化仪器的部件。Molecular Devices 将不接受应该净化但未加净化的物品。任何退回的零件都必须装在密封的塑料袋中，并且声明其内装物可安全触摸且未受污染。

SpectraMax Paradigm 探测平台的警告与注意事项

请阅读和遵守所有注意事项和指示。请记住，安全的最关键因素是谨慎操作 SpectraMax Paradigm 探测平台。



警告 如果以未经 Molecular Devices 规定的方式使用此设备，则其提供的保护可能被削弱。

小心 倘若因包装不当而造成运输损坏，则保修要求无效。

小心 请保持机箱直立。请勿前后或左右倾斜机箱或将机箱侧放。

小心 提起时请保持仪器直立和水平。请勿倾斜或摇动仪器，以免损坏探测器中的移动部件。

小心 如果载台锁在仪器通电前没有取下，仪器可能被损坏。

小心 磁性装置。请不要让磁性存储设备或磁条（例如硬盘驱动器、信用卡等等）接近仪器盖板。

小心 将仪器与主计算机连接前，务请关断仪器的主电源。



警告 更换保险丝前将仪器关机并拔下电源插头，否则可能导致触电或设备损坏。



警告 唯有经过正式培训的维修工程师可以对仪器进行维修。需要维修时请与 Molecular Devices 维修工程师联系。

小心 为了防止微孔板载台在转运过程中可能受损，请务必加装载台锁。

小心 与推荐的“电源选项属性”（Power Options Properties）不同的设定值可能带来数据传输中断和数据丢失的风险。

多模软件的警告与注意事项

请阅读和遵守所有注意事项和指示。请记住，安全的最关键因素是谨慎操作 DTX 系列和 SpectraMax Paradigm 多模探测器。

以下为本文件中的“警告”和“小心”讯息。



警告 如果以未经 Molecular Devices 规定的方式使用此设备，则其提供的保护可能被削弱。

小心 与推荐的电源选项属性不同的设置值可能带来数据传输中断和数据丢失的风险。

小心 只用低速摇动低密度孔板，例如 6 孔板或 48 孔板。用过高的速度摇动低密度孔板可能泼洒孔中的液体。

小心 在任何情况下（例如在集成的系统中操作此仪器时），如果探测盒载架的自动装卸可能造成设备碰撞，我们建议在运行 Multi-Mode Validation Plate 功能时停用探测盒载架的自动装卸，而是人工装卸探测盒载架。

小心 配置的孔板高度必须不小于实际孔板的高度，否则可能造成 DTX 系列仪器在读取高度优化过程中与孔板碰撞。SpectraMax Paradigm 具有防止碰撞的自动探测功能；如果在 PARADIGM 探测器中输入了不正确的孔板高度，在使用定义的实验室器皿运行规程时，将会显示一条出错信息。

小心 人眼可见的荧光照度可能损坏探测系统。

