



FilterMax F3 FilterMax F5

Multi-Mode Microplate Readers

User Guide

FilterMax F3 and FilterMax F5 Multi-Mode Microplate Readers User Guide

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Safety Information

Information about the safe use of the instrument from Molecular Devices includes an understanding of the user-attention statements in this guide, the safety labels on the instrument, precautions to follow before you operate the instrument, and precautions to follow while you operate the instrument.

Make sure that everyone involved with the operation of the instrument has:

- Received instruction in general safety practices for laboratories.
- Received instruction in specific safety practices for the instrument.
- Read and understood all Safety Data Sheets (SDS) for all materials being used.

Read and observe all warnings, cautions, and instructions. The most important key to safety is to operate the instrument with care.



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

Warnings, Cautions, Notes, and Tips

All warning symbols are framed within a yellow triangle. An exclamation mark is used for most warnings. Other symbols can warn of other types of hazards such as biohazard, electrical, or laser safety warnings as are described in the text of the warning. Follow the related safety information.

The following user attention statements might be displayed in the text of Molecular Devices user documentation. Each statement implies the amount of observation or recommended procedure.



WARNING! A warning indicates a situation or operation that could cause personal injury if precautions are not followed.



CAUTION! A caution indicates a situation or operation that could cause damage to the instrument or loss of data if correct procedures are not followed.



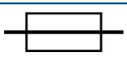
Note: A note calls attention to significant information.



Tip: A tip provides useful information or a shortcut, but is not essential to the completion of a procedure.

Symbols on the Instrument

Each safety label found on the instrument contains an alert symbol that indicates the type of potential safety hazard.

Symbol	Indication
	Consult the product documentation.
	Potential heat hazard.
	Power switch indicates power on.
	Power switch indicates power off.
	Indicates alternating current.
	Indicates direct current.
	Indicates the location of the Protective Ground Terminal.
	Indicates the location of a fuse.
	Required in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union. It indicates that you must not discard this electrical or electronic product or its components in domestic household waste or in the municipal waste collection system. For products under the requirement of the WEEE directive, contact your dealer or local Molecular Devices office for the procedures to facilitate the proper collection, treatment, recovery, recycling, and safe disposal of the device.
	California proposition 65 requires businesses to provide warnings to Californians about significant exposures to chemicals that cause cancer, birth defects, or other reproductive harm.

Electrical Safety

To prevent electrical injuries and property damage, inspect all electrical equipment before use and report all electrical deficiencies. Contact Molecular Devices technical support for equipment service that requires the removal of covers or panels.



WARNING! HIGH VOLTAGE. Within the instrument is the potential of an electrical shock hazard existing from a high voltage source. Read and understand all safety instructions before you install, maintain, and service the instrument.

To prevent electrical shock, use the supplied power cord and connect to a properly grounded wall outlet.

To ensure sufficient ventilation and provide access to disconnect power from the instrument, maintain a 20 cm to 30 cm (7.9 in. to 11.8 in.) gap between the rear of the instrument and the wall.

Power off the instrument when not in use.

Chemical and Biological Safety

Normal operation of the instrument can involve the use of materials that are toxic, flammable, or otherwise biologically harmful. When you use such materials, observe the following precautions:

- Handle infectious samples based on good laboratory procedures and methods to prevent the spread of disease.
- Observe all cautionary information printed on the original containers of solutions before their use.
- Dispose of all waste solutions based on the waste disposal procedures of your facility.
- Operate the instrument in accordance with the instructions outlined in this guide, and take all the required precautions when using pathological, toxic, or radioactive materials.
- Splashing of liquids can occur. Take applicable safety precautions, such as using safety glasses and wearing protective clothing, when working with potentially hazardous liquids.
- Observe the applicable cautionary procedures as defined by your safety officer when using hazardous materials, flammable solvents, toxic, pathological, or radioactive materials in or near a powered-up instrument.



WARNING! Never use the instrument in an environment where potentially damaging liquids or gases are present.

Moving Parts Safety

The instrument contains moving parts that can cause injury. Under normal conditions, the instrument is designed to protect you from these moving parts.



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

To prevent injury:

- Never try to exchange labware, reagents, or tools while the instrument is operating.
 - Never try to physically restrict the moving components of the instrument.
 - Keep the instrument work area clear to prevent obstruction of the movement.
-



WARNING! Do not attempt to access the interior of the instrument unless specifically instructed to do so. The moving parts inside the instrument can cause injury. Do not operate the instrument with any covers or panels removed.

The FilterMax™ F3 Multi-Mode Microplate Reader and the FilterMax™ F5 Multi-Mode Microplate Reader are ideal for a broad range of applications, including drug discovery, genomics, proteomics, and cell-based research. The unique patented design ensures precise performance and sensitivity across all detection modes.

The instrument has two slots where you insert filter slides. One slide is reserved for the excitation filters you use for absorbance and fluorescence measurements. The other slide is reserved for the emission filters you use for fluorescence and some luminescence measurements. Each slide can hold up to six filters.

You can integrate the FilterMax F3 and FilterMax F5 with the StakMax® Microplate Handling System.

FilterMax F3 Multi-Mode Microplate Reader

Available read modes:

- Visible Absorbance (ABS) at wavelengths between 340 nm and 650 nm.
- Fluorescence Intensity (FL) for top reading at wavelengths between 340 nm and 650 nm.
- Glow-type Luminescence (LUM) at wavelengths between 400 nm and 650 nm.

Available read types:

- Endpoint
- Kinetic
- Multiple wavelength
- Linear scan
- Area scan

Other features:

- Read samples in 96-well and 384-well plates
- Linear and orbital shake

FilterMax F5 Multi-Mode Microplate Reader

Available read modes:

- UV and Visible Absorbance (ABS) at wavelengths between 230 nm and 650 nm.
- Fluorescence Intensity (FL) at wavelengths between 230 nm and 700 nm for top reading, or between 300 nm and 650 nm for bottom reading.
- Glow-type Luminescence (LUM) at wavelengths between 400 nm and 700 nm.
- Time-Resolved Fluorescence (TRF) at wavelengths between 340 nm and 700 nm.
- Fluorescence Polarization (FP) at wavelengths between 300 nm and 700 nm.

Available read types:

- Endpoint
- Kinetic
- Multiple wavelength
- Linear scan
- Area scan

Other features:

- Read samples in 6, 12, 24, 48, 96, 384, and 1536-well plates.
- Deuterium light source to extend sensitivity into the deep UV band.
- PathCheck technology
- Read height optimization for top read
- Temperature control



WARNING! The FilterMax F5 uses a deuterium lamp that emits UV radiation. Never view light from the deuterium lamp directly without approved eye wear. Protect skin from exposure to the light emitted by the lamp.

Computer Integration

Each Molecular Devices microplate reader ships with a license key for the SoftMax[®] Pro Data Acquisition and Analysis Software. You install the SoftMax Pro Software on the computer that you use to operate the instrument to provide integrated instrument control, data display, and statistical data analysis.

You should install the SoftMax Pro Software on the computer before you set up the instrument. Please be aware that some updates to the SoftMax Pro Software require a purchase. Contact Molecular Devices before you update the software.

For information about the computer specifications required to run the software, the software installation and licensing instructions, and the directions to create the software connection between the computer and the instrument, see:

- *SoftMax Pro Data Acquisition and Analysis Software - Standard Edition and MiniMax Imaging Edition - Installation Guide*
- *SoftMax Pro Data Acquisition and Analysis Software - GxP Edition - Installation Guide for the Multi Computer Setup*
- *SoftMax Pro Data Acquisition and Analysis Software - GxP Edition - Installation Guide for the Single Computer Setup*

Temperature Control

The FilterMax F5 can maintain the temperature inside the plate chamber at ambient plus $4^{\circ}\text{C} \pm 1^{\circ}\text{C}$ up to 45°C . You use the SoftMax Pro Software to set and control the temperature. See the *SoftMax Pro Data Acquisition and Analysis Software User Guide* or the application help.



Note: The instrument temperature sensors detect the temperature of the air inside the chamber, not the temperature of the samples in the plate. If you use the instrument to warm the samples, you should use a seal or lid on the plate to prevent evaporation of the sample. A seal or lid helps to maintain uniform temperature. Letting the prepared sample equilibrate inside the plate chamber can take an hour or more. You can speed up equilibration by pre-warming the sample and the assay reagents before you place the plate in the chamber. Validate the data quality to determine whether the seal or lid can stay on the plate for the read.



Chapter 2: Setting Up the Instrument

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Before you unpack and set up the instrument, prepare a dry, flat work area that has sufficient space for the instrument, host computer, and required cables. See [Instrument Specifications on page 41](#).

Package Contents

Illustration	Part Number	Description
	Latest Version	SoftMax Pro Software with product key
	YW 000 005	1.5 mm hex key
	YW 000 006	2.0 mm hex key
	GU V3 244	RS-232 9-pin serial connection cable
	VZ 000 012	USB to RS-232 adapter cable If the computer does not have an RS-232 serial port, then connect the supplied USB to RS-232 adapter cable to a USB port on the computer.
	4400-0002 or 4400-0036	Power cord, 115V or Power cord, 230V

For a complete list of the contents of the package, see the enclosed packing list.

Unpacking the Instrument

The packaging is designed to protect the instrument during transportation.

There is a transport lock on the plate drawer to protect the instrument from damage during shipment. You must remove the transport lock before you power on the instrument.



Note: Retain the shipping box and all packaging materials for future transport needs. Do not use tools that can damage the packaging or the instrument.



CAUTION! When transporting the instrument, warranty claims are void if improper packing results in damage to the instrument.

To unpack the instrument:

1. Check the box for damage that occurred during transportation. Inform the supplier immediately and keep the damaged packaging.
2. Open the box lid and remove the accessories box.
3. Use the molded foam packaging to lift the instrument out of the box.
4. Remove the foam packaging and the plastic bag.
5. Move the instrument to a dry, flat area.

Removing Transport Locks

There is a transport lock on the plate drawer to protect the instrument from damage during shipment. You must remove the transport lock before you power on the instrument.

Required Tool

Illustration	Part Number	Description
	YW 000 006	2.0 mm hex key



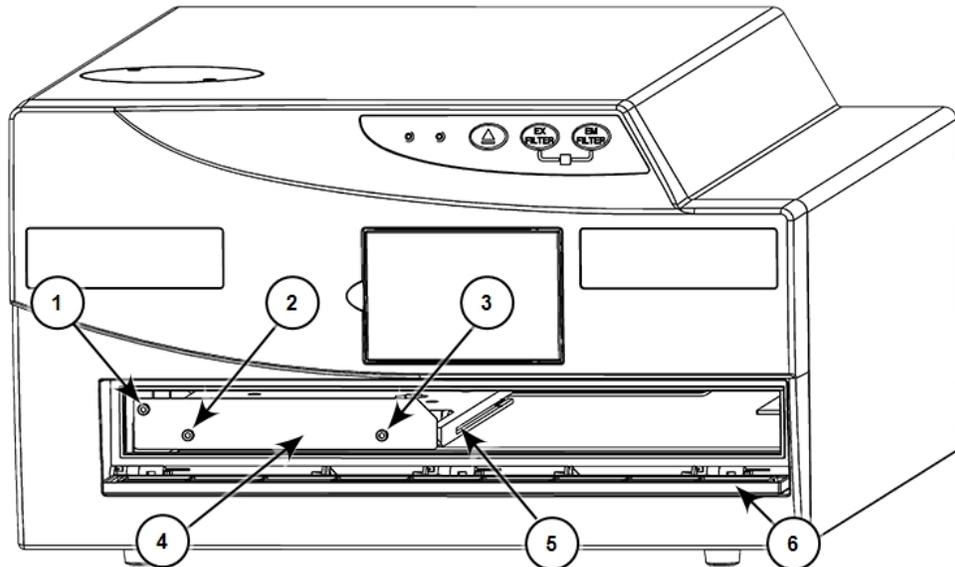
CAUTION! Do not touch or loosen screws or parts other than those specifically designated in the instructions. Doing so could cause misalignment and possibly void the warranty.

To remove the transport lock:

1. Gently pull the yellow tab that protrudes from the plate chamber door to open the door. Hold the door open while you remove the transport lock.



Note: Do not tear the yellow tab. It remains attached to the transport lock to make it easier to open the plate chamber door.



Item	Description
1	Screw #1 fastens the lock to the internal frame of the instrument
2	Screw #2: Fastens the lock to the plate drawer
3	Screw #3: Fastens the lock to the plate drawer
4	Transport lock
5	Plate drawer
6	Plate chamber door opened

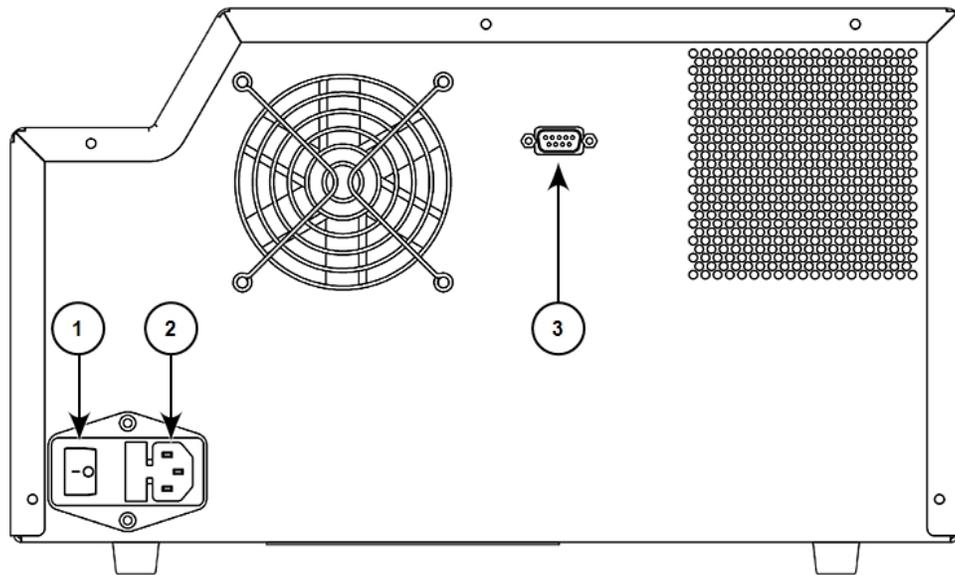
2. Use the 2.0 mm hex key to loosen screw #1 in the upper-left corner of the transport lock until the lock disconnects from the instrument frame. The screw has a retaining washer to prevent removal from the lock.
3. Use the 2.0 mm hex key to loosen screw #2 and screw #3 until the lock disconnects from the plate drawer. The screws have retaining washers that prevent removal from the lock.
4. Gently close the plate chamber door.
5. Save the original carton, foam inserts, accessories box, and transport lock for future shipment.

Connecting Instrument Cables

The power cord and USB cable connect to the ports on the rear of the instrument.

Required Accessories

Illustration	Part Number	Description
	GU V3 244	RS-232 9-pin serial connection cable
	VZ 000 012	USB to RS-232 adapter cable If the computer does not have an RS-232 serial port, then connect the supplied USB to RS-232 adapter cable to a USB port on the computer.
	4400-0002 or 4400-0036	Power cord, 1 meter (3.3 foot)



Item	Description
1	Power Switch
2	Power Port
3	USB Port

To connect the instrument cables:

1. Make sure the power switch on the rear of the instrument is in the Off position. See [Getting Started on page 23](#).
2. Connect one end of the supplied USB cable to the USB port on the rear of the instrument and the other end to a USB port on the computer.
3. Connect the supplied power cord to the power port on the rear of the instrument and then connect the other end to a grounded electrical wall outlet.

Assembling and Maintaining Filters

Filter slides and filters are shipped with the instrument in the package that contains the other instrument tools and parts. Standard filter slides are shipped with the filters installed in the slide. There are two types of filter slides. One slide is reserved for the excitation filters you use for absorbance and fluorescence measurements. The other slide is reserved for the emission filters you use for fluorescence and some luminescence measurements. Each slide can hold up to six filters.

You can order customizable filter slides that you can configured as desired. Excitation and emission filters are different sizes to prevent installation on the wrong type of filter slide. You can install individual excitation filters in any location on an excitation slide and you can install individual emission filters on an emission slide. You should leave the original standard filter slide configurations in the required format for compliance testing. See [Available Standard Filter Slides on page 49](#).



Note: You should not reconfigure standard filter slides.

An excitation or emission filter fits in one of the slots on the filter slide, and is secured by a 1.5 mm hex screw. A 1.5 mm hex key is provided with the instrument.

Excitation and emission filters are different sizes to prevent installation on the wrong type of filter slide.

Minimum and Maximum Filter Dimensions

Filter Type	Diameter	Thickness
Excitation	Minimum: 12.2 mm (0.49 in.) Maximum: 12.7 mm (0.50 in.)	Minimum: 6.0 mm (0.24 in.) Maximum: 9.0 mm (0.35 in.)*
Emission	Minimum: 17.7 mm (0.70 in.) Maximum: 18.0 mm (0.71 in.)	Minimum: 5.0 mm (0.20 in.) Maximum: 9.0 mm (0.35 in.)*

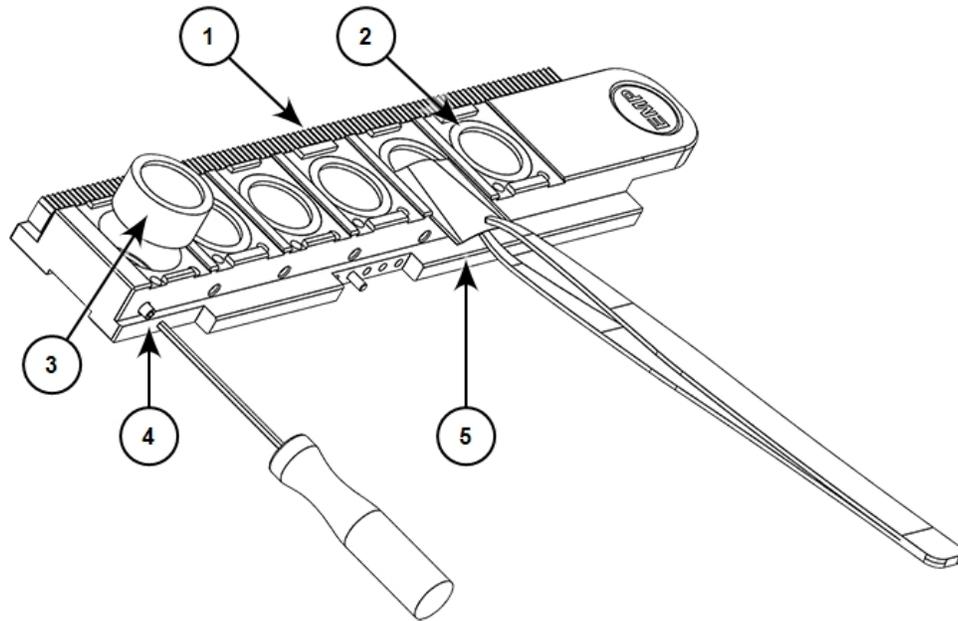
*On a filter slide designed to house a polarization filter, you can use filters up to 10.0 mm (0.39 in.) in slots where no polarization filter is housed. Slides that house polarization filters are designed for use with the FilterMax F5 only.



CAUTION! Handle filter slides by the tab only. Do not touch filter surfaces with fingers. Fingerprints left on filters can cause inaccurate measurement results.

To exchange an excitation or emission filter in a slide:

1. Use the 1.5 mm hex key to loosen, but not remove, the hex screw that secures the filter to the filter slide.



Item	Description
1	Filter slide
2	Filter slot 1
3	Excitation or emission filter
4	1.5 mm hex screw
5	Polarization filter

2. Grasp the filter by the edges and gently pull it free of the slot.
When you remove a filter from a slot that houses a polarization filter, use tweezers to gently slide the polarization filter out far enough to allow the removal of the excitation or emission filter. You should not completely remove the polarization filter from the slide. Slides that house polarization filters are designed for use with the FilterMax F5 only. See [Removing and Installing Polarization Filters on page 19](#).
3. Store the filter in the original packaging supplied with the filter in a low-humidity, dust-free environment.



Note: Clean filters when noticeable contamination, such as dust and fingerprints, are visible on the filter surface. See [Cleaning Filters on page 21](#).

4. Hold the new filter by its edges and gently place it in the slot. Excitation and emission filters are different sizes to prevent installation on the wrong type of filter slide.



Note: Some excitation filters have a heat reflecting coating on one side that must face the light source. An arrow printed on the filter ring indicates the correct direction of light flow through the filter.

To install this type of filter, hold the excitation filter slide vertically by the tab with the gear teeth on top, facing to the left of the instrument. Place the filter in the slot with the arrow pointing from left to right.

When you install a filter in a slot that houses a polarization filter, use tweezers to gently slide the polarization filter back in position over the filter.

5. Use the 1.5 mm hex key to gently tighten the hex screw until the filter is secured to the filter slide.



CAUTION! Do not over tighten the screw. Over tightening can damage the filter and degrade measurement performance.

6. When a new filter changes the slide configuration, note the following information to edit the slide definition in the SoftMax Pro Software before you use the slide in measurements:
 - The wavelength and type of filter. Both are printed on the filter.
 - The slot where you installed the filter. The slot closest to the slider tab is slot 1, and the slot furthest away is slot 6.
 - The filter slide identification number printed on the slide.
7. Update or create the slide configuration in the SoftMax Pro Software. See the *SoftMax Pro Data Acquisition and Analysis Software User Guide* or the application help.



Note: You need to modify the slide configuration in the software when the software does not recognize the slide and when you change the filters installed on the slide.

Removing and Installing Polarization Filters



Note: Slides that house polarization filters are designed for use with the FilterMax F5 only.

The acetate polarization filters you use for Fluorescence Polarization reads slide into place over the excitation and emission filters. Acetate filters are fragile and you must use tweezers to handle them with care. Only experienced users should change polarization filters.

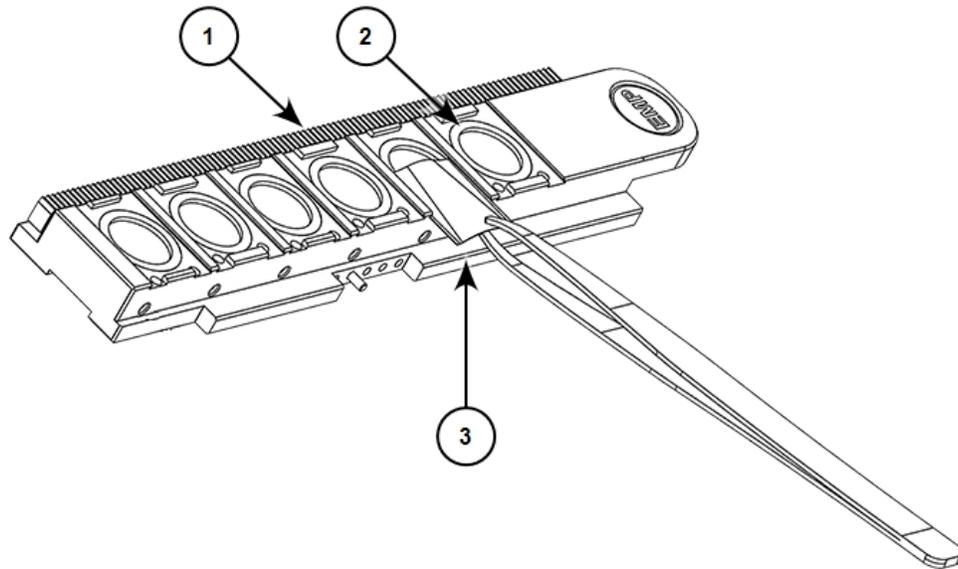
To help ensure that you install polarization filters with the polarization axes oriented correctly, filter positions on the slide are grouped in pairs. The positions in a pair have different height and width dimensions. You can only install a polarization filter with the same dimensions as the desired position in that position. This prevents you from installing two filters with the same polarization axis next to each other.



CAUTION! Handle filter slides by the tab only. Do not touch filter surfaces with fingers. Fingerprints left on filters can cause inaccurate measurement results.

To remove or install a polarization filter:

1. Match the dimensions of the polarization filter with the corresponding filter position on the filter slide.



Item	Description
1	Filter slide
2	Filter slot 1
3	Polarization filter

2. Use tweezers to handle, remove, or install the polarization filter.
 - To install a polarization filter, use tweezers to gently slide the polarization filter into the guide slots over the excitation or emission filter in the slide until the polarization filter is securely in place.
 - To remove a polarization filter, use tweezers to gently pull the polarization filter free of the guide slots.
3. After you remove a polarization filter, place the polarization filter in the protective packaging supplied with the filter.

Cleaning Filters

You can clean excitation and emission filters. To minimize the risk of surface damage, clean the filters only when the surface is noticeably dirty.



CAUTION! Filter surfaces are extremely fragile and should be cleaned only when noticeable contamination, such as dust and fingerprints, are visible on the surface. Filters should be cleaned by experienced users only.

To clean a filter:

1. Place a soft, clean cloth on the work surface to prevent damage if the filter is dropped during cleaning.
 2. Wear powder-free latex gloves or finger cots to reduce the risk of damage to the filter surface and to protect skin from cleaning solvents.
-

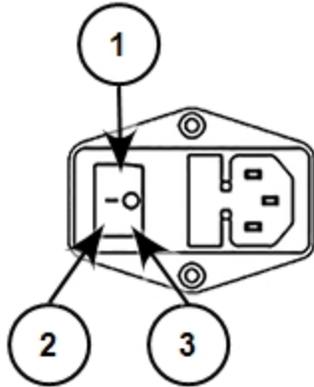


CAUTION! Use only oil-free compressed air, nitrogen, or canned dusters that do not use freon or similar propellants to blow dust from the filter. Other sources of compressed gas can leave a residue on the filter surface.

3. Blow air from a canned duster or bulb-type blower over the filter surface to remove dust. Periodically clean the bulb blower to prevent surface contamination. Alternatively, gently wipe dust from the filter surface with a camel-hair brush. Periodically clean the brush to prevent filter surface contamination.
4. Examine the filter surface.
 - If no contamination remains, return the filter to the filter slide or packaging.
 - If contamination, such as fingerprints, is still present on the surface, apply a drop of spectroscopic grade isopropyl alcohol on an unused cotton swab and then gently sweep the filter surface from edge to edge in a single direction only. This prevents you from dragging debris across the surface multiple times.



Now that you installed the SoftMax Pro Software on the computer, unpacked the instrument, removed the transport lock, and connected the cables, it is time to get started. The power switch and power connection are on the rear of the instrument.



Item	Description
1	Power switch
2	On
3	Off

To ensure sufficient ventilation and provide access to disconnect power from the instrument, maintain a 20 cm to 30 cm (7.9 in. to 11.8 in.) gap between the rear of the instrument and the wall.

To turn the instrument on or off, press the power switch to place the rocker in the on or off position. Each time you turn the instrument on, an initialization procedure moves the optics and plate drawers to their home positions.

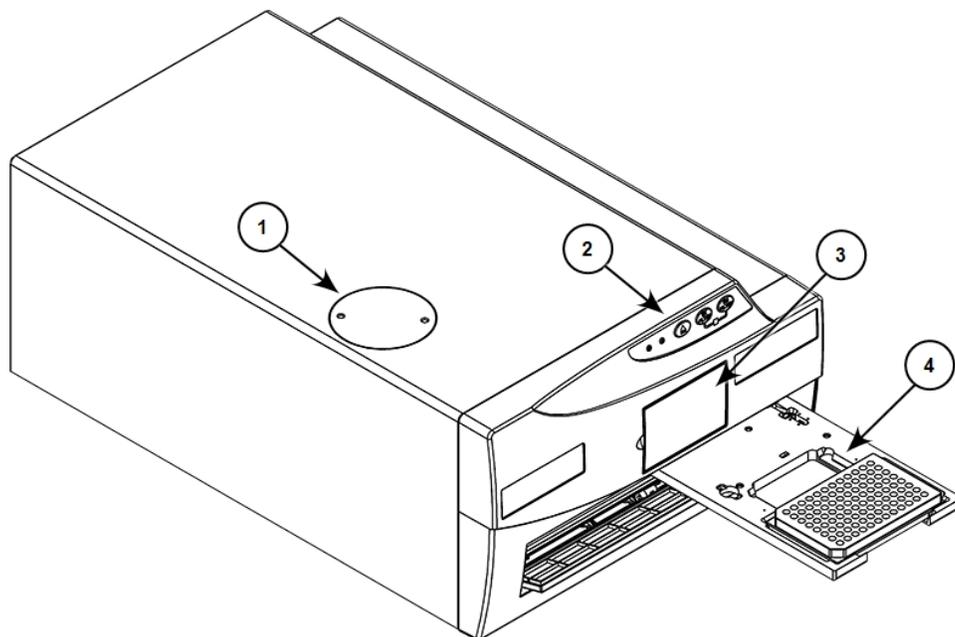
For optimal performance, allow the instrument to warm up for 30 minutes before you do measurements.

When you use the temperature control for the FilterMax F5, it can take longer than 30 minutes to reach the specified temperature. See [Temperature Control on page 11](#).

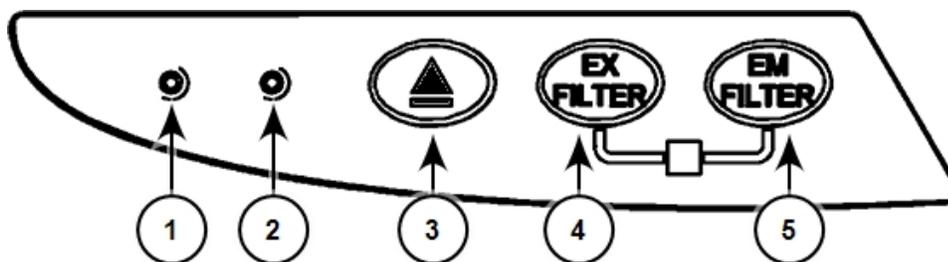
Power off the instrument when not in use.

Front Panel Controls and Indicators

The instrument front panel has three buttons and LED status indicators that provide information about instrument status. The buttons enable you to open and close the plate drawer and eject the filter slides.



Item	Description
1	Deuterium lamp housing cover (FilterMax F5 only)
2	Status LEDs and control buttons
3	Filter compartment
4	Plate drawer



Front Panel Indicators and Controls

Item	Description
1	Green LED
2	Amber LED
3	 - Open and close plate drawer
4	EX FILTER - Eject excitation filter slide
5	EM FILTER - Eject emission filter slide

To stop the instrument in case of emergency, simultaneously press the **EX FILTER** and **EM FILTER** buttons. Both LED indicators turn on and remain lit for the duration of the emergency stop. During an emergency stop, the instrument firmware is disabled to prevent any further operations from being performed until you cancel the emergency stop. To cancel an emergency stop, power the instrument off and then back on.

LED Status Indicators

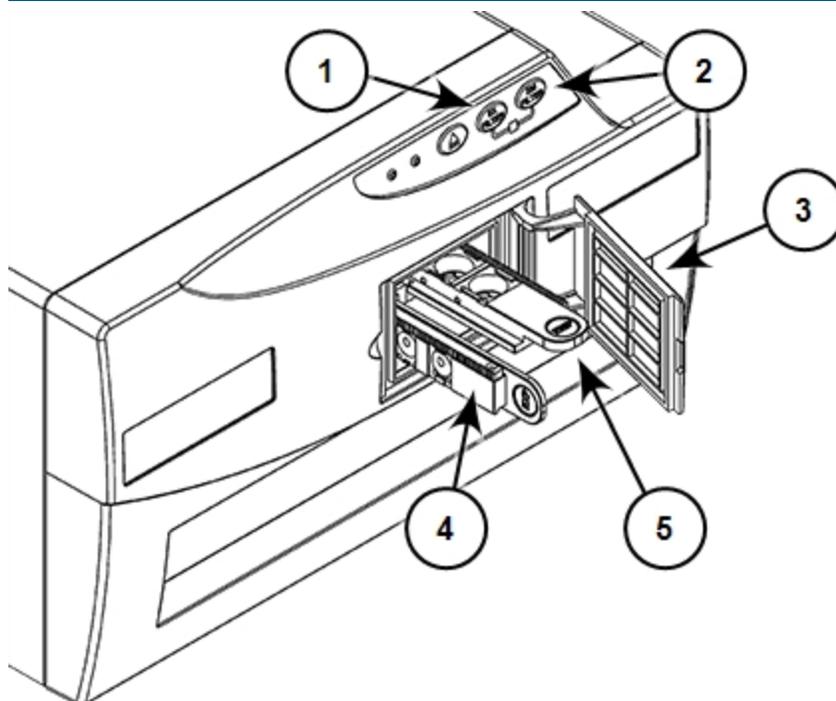
LED Color and Activity	Instrument Status
Green LED solid glow	The instrument is in the ready state.
Green LED blinking	A problem occurred during initialization. The instrument is not ready for operation.
Green LED solid glow, and Amber LED solid glow	The instrument is busy. Wait until the amber LED turns off before you attempt to do operations. This can also indicate that the instrument operations have been halted by an emergency stop. Power the instrument off and then back on to cancel the emergency stop.
Both LEDs not illuminated	The instrument is not ready due to an error that occurred during initialization. View the error message in the software.

Loading and Unloading Filter Slides

The buttons on the instrument front pane enable you to exchange filter slides at any time between reads. Each filter slide has an identification code built into the slide that enables the SoftMax Pro Software to recognize the filter configuration. The software can store up to 31 excitation and 31 emission slide configurations.



CAUTION! Handle filter slides by the tab only. Do not touch filter surfaces with fingers. Fingerprints left on filters can cause inaccurate measurement results.



Filter Compartment

Item	Description
1	EX FILTER - Press to eject the excitation filter slide
2	EM FILTER - Press to eject the emission filter slide
3	Filter compartment door
4	Excitation filter slide
5	Emission filter slide



Note: Slides labeled EXP or EMP can also house polarization filters and are designed for use with the FilterMax F5 only.

To load filter slides:

1. Power on the instrument and wait until the initialization process completes.
2. Open the filter compartment door.
3. Grasp the filter slide by the tab.
 - Excitation filter slides have EX or EXP printed on the slide tab.
 - Emission filter slides have EM or EMP printed on the slide tab.
4. Align the filter slide in the track.
 - For an excitation filter slide, hold it vertically by the tab with the gear teeth on top, facing to the left of the instrument.
 - For an emission filter slide, hold it horizontally by the tab with the gear teeth on the right, facing up.
5. Gently push the filter slide into the filter compartment until the instrument retracts it into position.
6. Close the filter compartment door completely to ensure the accuracy of reads.
7. Click the **Refresh** button in the software.
8. In the SoftMax Pro Software, update or create the slide configuration. See the *SoftMax Pro Data Acquisition and Analysis Software User Guide* or the application help.



Note: You need to modify the slide configuration in the software only if the software does not recognize the slide or if you change the filters installed on the slide.

To unload filter slides:

1. On the instrument front panel:
 - Press **EX FILTER** to eject the excitation filter slide.
 - Press **EM FILTER** to eject the emission filter slide.
2. Open the filter compartment door.
3. Grasp the filter slide by the tab and pull until the slide is free of the geared track.
4. Store the filter slide in the supplied toolbox, in a dust-free area.

Loading and Unloading Plates

You can place plates on the plate drawer in either landscape or portrait orientation. For standard landscape or portrait orientation, place well A1 in the back corner closest to the instrument. To place well A1 in the front corner away from the instrument, specify opposite landscape or opposite portrait in the software. See the *SoftMax Pro Data Acquisition and Analysis Software User Guide* or the application help.

To load or unload a plate:

1. On the front panel of the instrument, press  to open the plate drawer.
2. Place the plate on or remove it from the plate drawer.

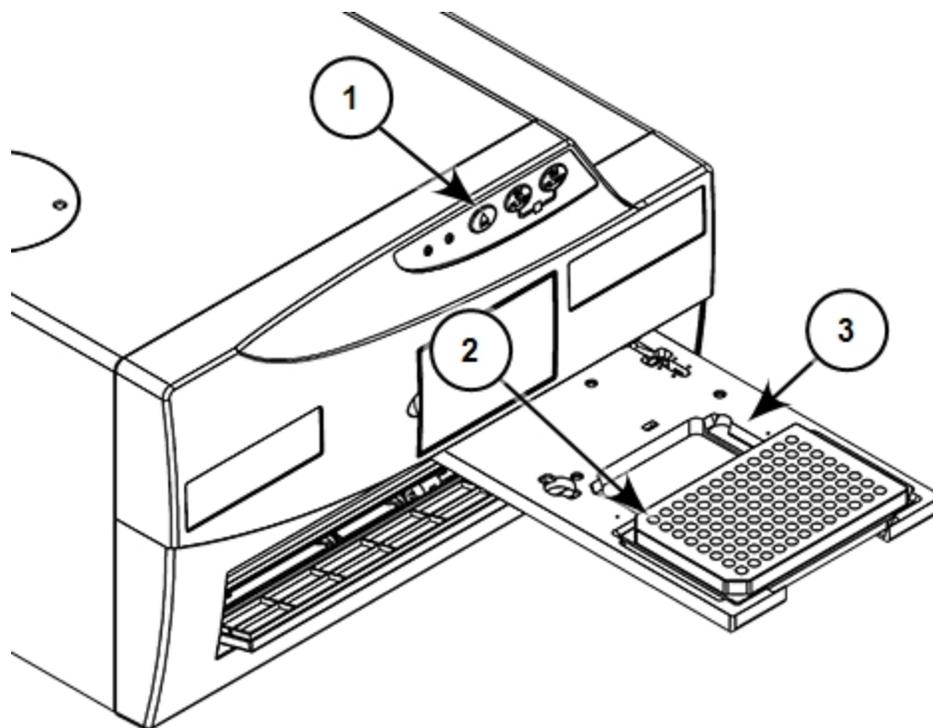


Plate Drawer With Plate Loaded

Item	Description
1	 open and close the plate drawer
2	Well A1 on the plate for landscape orientation
3	Plate drawer

3. Press  to close the plate drawer.

Plate Recommendations

The instrument can read SBS standard plates.

- The FilterMax F3 can read 96-well and 384-well plates.
- The FilterMax F5 can read 6, 12, 24, 48, 96, 384, and 1536-well plates.



Note: When an application specifies a surface treatment, use only plates with the correct treatment.

Select a plate type with properties suited for the application.

- For Absorbance (ABS) reads, use clear, UV-clear, white with clear bottom, or black with clear bottom polystyrene or film plates. Polypropylene or PVC plates do not provide sufficient optical quality.
When reading optical density at wavelengths below 340 nm, use special UV-transparent, disposable, or quartz plates that permit transmission of the far UV spectra.
- For Fluorescence Intensity (FL) top reads, use solid black plates.
- For Fluorescence Intensity(FL) bottom reads use black with clear bottom plates.
- For Time-Resolved Fluorescence (TRF) reads, use solid white plates.
- For Luminescence (LUM) reads, use solid black plates unless the signal is weak enough to require the higher sensitivity of solid white plates. With strong signals, white plates can produce crosstalk.
- For Fluorescence Polarization (FP) reads, use solid black plates.
You should use an unlidDED plate for fluorescence polarization measurements.

The SoftMax Pro Software includes a plate list and you can use the software to define additional plate types with the manufacturer's specifications for well size, spacing, and distance from the plate edge.

The type of plate and the way you handle it can have an effect on the measurement performance of the instrument. Select a plate type with properties suited for the application and for use with multi-mode microplate readers.



CAUTION! To prevent damage to the instrument, the height of the plate must not exceed 22 mm, including the lid if the plate is liddED.

General plate handling guidelines:

- Never touch the clear well bottom of plates.
- Visually inspect the bottom and rim of the plate before use to make sure that they are free of dirt and contaminants.
- Keep unused plates clean and dry.
- Make sure that the strips on strip plates are inserted correctly and level with the frame.
- Do not use V-bottom plates unless the performance has been tested and validated with this instrument. Irregular plastic density in the tip of the well can cause inaccurate measurements.



Perform only the maintenance tasks described in this guide. Contact a Molecular Devices service engineer to inspect and perform a preventive maintenance service on the instrument each year. See [Obtaining Support on page 40](#).

Before operating the instrument or performing maintenance operations, make sure you are familiar with the safety information in this guide. See [Safety Information on page 5](#).

For information on how to replace and clean filter slides and filters, see [Assembling and Maintaining Filters on page 17](#).



CAUTION! Maintenance procedures other than those specified in this guide must be performed by Molecular Devices. When service is required, contact Molecular Devices technical support.

Cleaning the Instrument



WARNING! BIOHAZARD. It is your responsibility to decontaminate components of the instrument before you request service by a service engineer, or you return parts to Molecular Devices for repair. Molecular Devices does not accept items that have not been decontaminated where applicable to do so. If parts are returned, they must be enclosed in a sealed plastic bag that states that the contents are safe to handle and are not contaminated.



WARNING! BIOHAZARD. Always wear gloves when operating the instrument and during cleaning procedures that could involve contact with either hazardous or biohazardous materials or fluids.

Do the following before you clean equipment that has been exposed to hazardous material:

- Contact the applicable Chemical and Biological Safety personnel.
- Review the Chemical and Biological Safety information contained in this guide. See [Chemical and Biological Safety on page 7](#).

Always turn the power switch off and disconnect the power cord from the main power source before using liquids to clean the instrument.

Preventive Maintenance

To ensure optimal operation of the instrument, perform the following preventive maintenance procedures as needed:

- Wipe off visible dust from exterior surfaces with a lint-free cloth to avoid dust build-up on the instrument.
- Wipe up all spills immediately.
- Follow applicable decontamination procedures as instructed by your laboratory safety officer.
- Respond as required to all error messages displayed by the software.
- Contact a Molecular Devices or an approved dealer for annual preventative maintenance. Molecular Devices recommends a yearly preventive maintenance be done on the instrument by a trained and qualified service engineer. See [Obtaining Support on page 40](#).

Replacing Fuses

If the instrument does not seem to be getting power after switching it on, check to see whether the supplied power cord is securely plugged into a functioning power outlet and to the power port on the rear of the instrument.

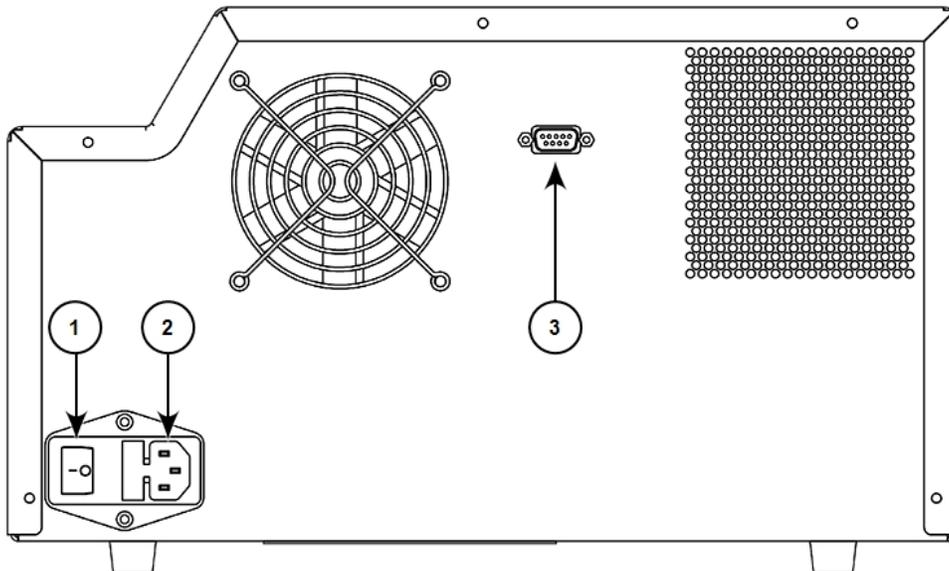
If the power failed while the instrument was on, check that the power cord is not loose or disconnected and that power to the power outlet is functioning properly.

If these checks fail to remedy the loss of power, replace the fuses. You can obtain replacement fuses from Molecular Devices. For fuse specifications and part numbers, see [Physical Specifications on page 46](#).



CAUTION! Do not touch or loosen screws or parts other than those specifically designated in the instructions. Doing so could cause misalignment and possibly void the warranty.

The fuses are located in the fuse carrier on the rear of the instrument.



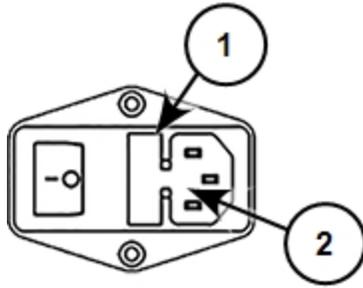
Item	Description
1	Power Switch
2	Power Port
3	Serial Port

To replace the fuses:



WARNING! HIGH VOLTAGE Power off the instrument and disconnect the power cord before you do maintenance procedures that require removal of a panel or cover or disassembly of an interior instrument component.

1. Power off the instrument.
2. Unplug the power cord from the power port.
3. Use a small flat head screwdriver to gently press on the carrier release tab and then pull the fuse carrier to remove it from the instrument.



Release Fuse Carrier

Item	Description
1	Fuse carrier
2	Carrier release tab

4. Gently pull the old fuses from the carrier by hand.
5. Place new fuses into the carrier by hand.
6. Press the fuse carrier into the instrument until the carrier snaps into place.
7. Plug the power cord into the power port.
8. Power on the instrument.



Note: If the instrument still does not power on after you change the fuses, contact Molecular Devices technical support. See [Obtaining Support on page 40](#).

Replacing the Deuterium Lamp in the FilterMax F5

The FilterMax F5 has a deuterium lamp for use in measurements made at wavelengths between 230 nm and 359 nm.

You need to replace the lamp when the SoftMax Pro Software warns that lamp energy is too low to perform measurements.

Required tool

Illustration	Part number	Description
	YW 000 006	2.0 mm hex key
	Provided with the replacement deuterium lamp	2.5 mm x 0.6 mm flat head screwdriver

To replace the deuterium lamp:

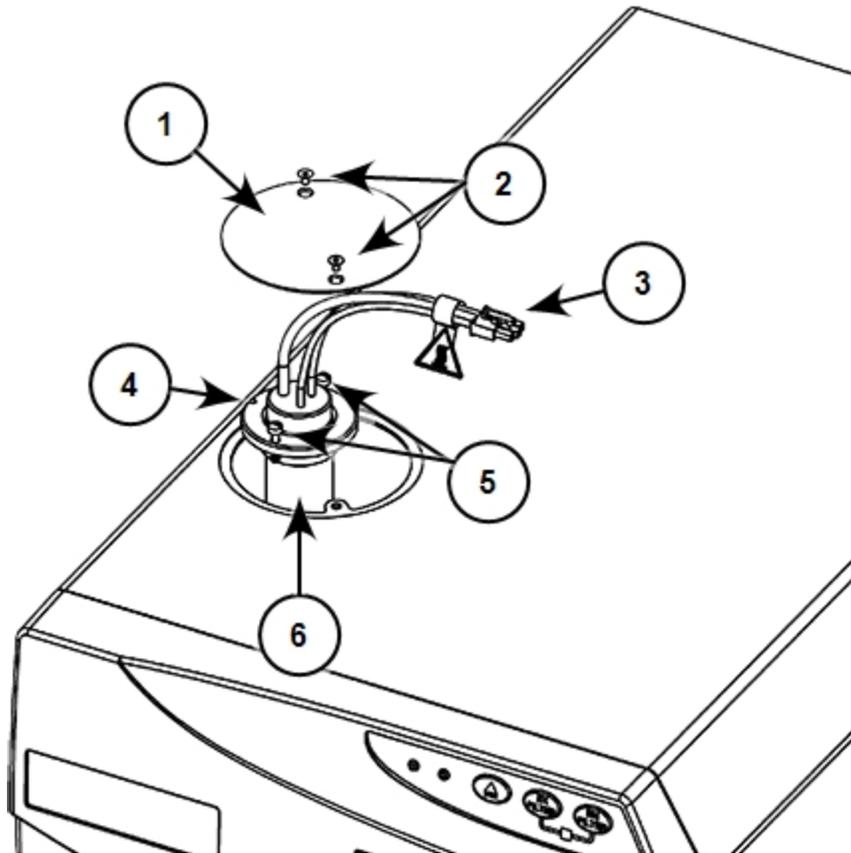


WARNING! BURN HAZARD. Power off the instrument, disconnect the power cord, and wait a minimum of 30 minutes for the deuterium lamp to cool before you perform this maintenance. During operation, the lamp reaches a temperature of approximately 250°C (482°F).

1. Power off the instrument.
2. Unplug the power cord from the power port.
3. Wait a minimum of 30 minutes for the deuterium lamp to cool before you perform this maintenance.

During operation, the lamp reaches a temperature of approximately 250°C (482°F).

- On the top of the instrument case, use the 2 mm hex key to remove the two hex screws that secure the lamp housing cover.



Item	Description
1	Lamp housing cover
2	Hex screws
3	Lamp power cable and connector
4	Alignment notch
5	Flat head screws (captive)
6	Deuterium lamp

- On the lamp power cable connector, press down on the locking latch to unlatch the connector.
- With the clip unlatched, disconnect the lamp power cable from the instrument.
- Use the flat head screwdriver to loosen the flat head screws that secure the deuterium lamp. These captive screws are designed to remain attached to the lamp base.
- After the deuterium lamp cools, remove the lamp and discard it.



CAUTION! Do not touch the glass of the new lamp. Fingerprints on the glass can shorten the life of the lamp.

9. Being careful not to touch the glass bulb with bare hands or fingers, line up the alignment notch in the base of the lamp with the guide on the lamp block to position the new lamp correctly.
10. Use the flat head screwdriver to tighten the flat head screws to secure the deuterium lamp.
11. Reconnect the lamp power cable. Make sure that the locking clip on the connector is latched.



Note: The lamp power cable connector is keyed to prevent incorrect connection.

12. Replace the lamp housing cover and use the hex key to tighten the two hex screws that secure it in place.
13. Reconnect the power cable to the instrument.
14. Power on the instrument.

Packing the Instrument

To minimize the possibility of damage during storage or shipment, the instrument should be repacked only in the original packaging materials. To order replacement packing materials, contact your Molecular Devices representative.

Correctly repacking the instrument includes following applicable decontamination procedures and installing the transport lock on the plate drawer.



CAUTION! When transporting the instrument, warranty claims are void if improper packing results in damage to the instrument.

Store the instrument in a dry, dust-free, environmentally controlled area.

Required Tool

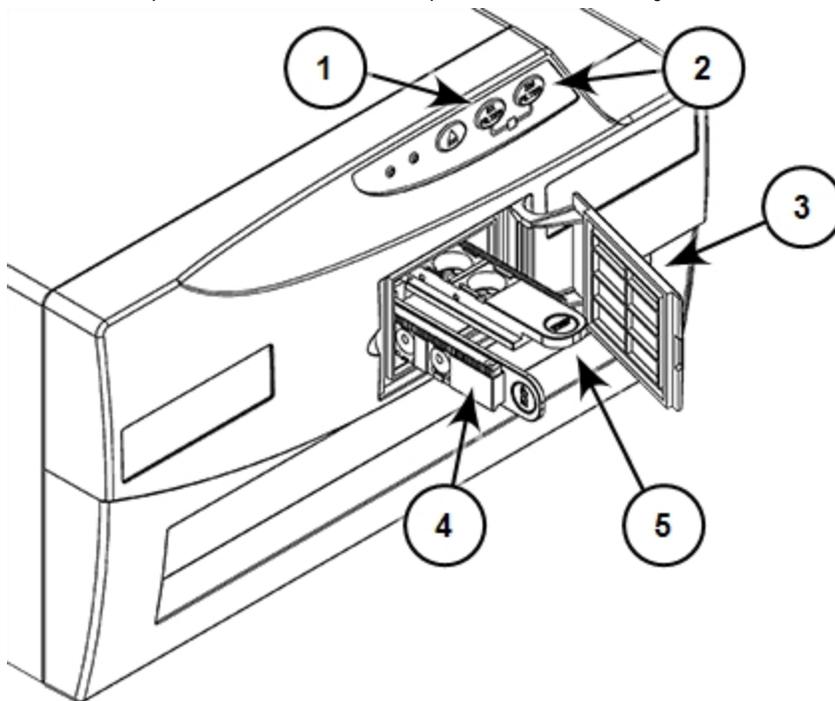
Illustration	Part Number	Description
	YW 000 006	2.0 mm hex key



CAUTION! Do not touch or loosen screws or parts other than those specifically designated in the instructions. Doing so could cause misalignment and possibly void the warranty.

To pack the instrument:

1. Follow applicable decontamination procedures as instructed by your laboratory safety officer.
2. On the front panel of the instrument, press **EX FILTER** to eject the excitation filter slide.



Item	Description
1	Excitation filter slide eject button (EX FILTER)
2	Emission filter slide eject button (EM FILTER)
3	Filter compartment door
4	Excitation filter slide
5	Emission filter slide

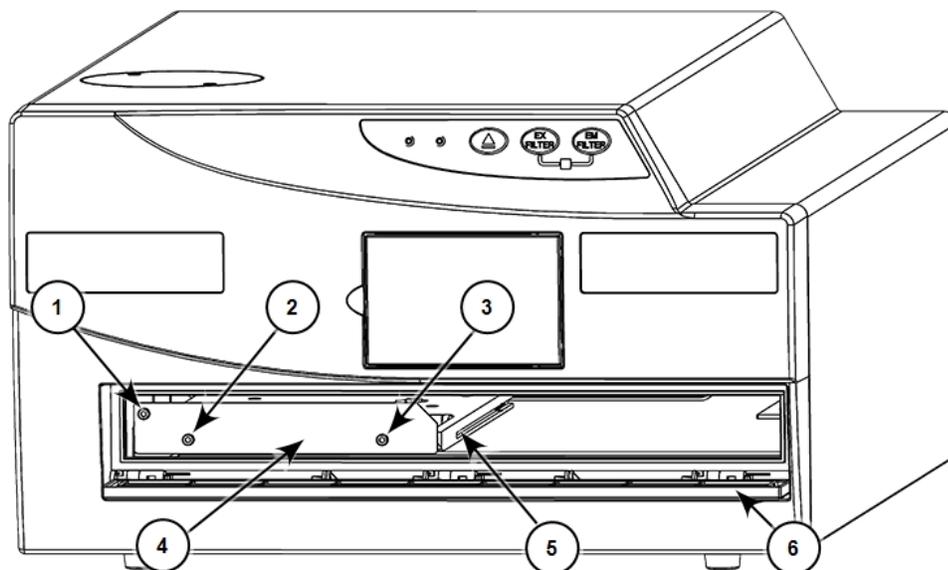
3. Open the filter compartment door.



CAUTION! Handle filter slides by the tab only. Do not touch filter surfaces with fingers. Fingerprints left on filters can cause inaccurate measurement results.

4. Grasp the slide by the tab and pull until the slide is free of the track. Store the slide in the toolbox.
5. On the front panel of the instrument, press **EM FILTER** to eject the emission filter slide.
6. Grasp the slide by the tab and pull until the slide is free of the track. Store the slide in the toolbox.
7. On the front panel of the instrument, press  to move the plate drawer outside of the instrument.
8. Remove the plate from the drawer and leave the plate drawer open.
9. Power off the instrument.

10. Unplug the power cord from the rear of the instrument and from the wall outlet.
11. Disconnect the USB cable from the rear of the instrument and from the computer.
12. Align the holes in the plate drawer transport lock with the holes on the end of the plate drawer.



Item	Description
1	Screw #1 fastens the lock to the internal frame of the instrument
2	Screw #2: Fastens the lock to the plate drawer
3	Screw #3: Fastens the lock to the plate drawer
4	Transport lock
5	Plate drawer
6	Plate chamber door open

13. Use the 2.0 mm hex key to tighten screws #2 and #3 on the transport lock to attach the lock to the plate drawer.
14. Gently push the plate drawer into the instrument and as far to the left as possible until screw #1 lines up with the hole on the internal frame. Hold the plate chamber door open until you fasten the transport lock.
15. Tighten screw #1 to lock the plate drawer in place.
16. Route the yellow tab on the transport lock so that it will pass over the top of the plate chamber door when closed.
17. Gently close the plate chamber door.
18. Wrap the instrument in static-free plastic.
19. Replace the molded foam packaging around the instrument.
20. Place the instrument and accessories box in the original shipping box.
21. Close the box and seal it with packing tape.

Troubleshooting



CAUTION! Maintenance procedures other than those specified in this guide must be performed by Molecular Devices. When service is required, contact Molecular Devices technical support.

If	Then
The green LED is not illuminated.	Inspect the fuses.
The power is on, but the instrument does not operate.	Inspect the fuses.
The fuses look burned or the filaments are broken	Replace the fuses. See Replacing Fuses on page 32 .
The green LED is not illuminated, the power is on, the fuses are okay, and the instrument does not operate.	Contact Molecular Devices technical support. See Obtaining Support on page 40 .
Both the green and the amber LEDs are illuminated.	The instrument is busy. Wait until the amber LED turns off before doing an operation. If an emergency stop was initiated, take the necessary corrective action and then turn the instrument off and back on.
The instrument does not respond to commands from the software.	Make sure that the serial cable is securely connected to the instrument and to the computer. In the SoftMax Pro Software, make sure that the serial port configured for the instrument matches the serial port that connects the instrument to the computer. See the <i>SoftMax Pro Data Acquisition and Analysis Software User Guide</i> or the application help.

Obtaining Support

Molecular Devices is a leading worldwide manufacturer and distributor of analytical instrumentation, software, and reagents. We are committed to the quality of our products and to fully supporting our customers with the highest level of technical service.

Our Support website, support.moleculardevices.com, has a link to the Knowledge Base, which contains technical notes, software upgrades, safety data sheets, and other resources. If you still need assistance after consulting the Knowledge Base, you can submit a request to Molecular Devices Technical Support.

You can contact your local representative or Molecular Devices Technical Support at 800-635-5577 x 1815 (North America only) or +1 408-747-1700. In Europe call +44 (0) 118 944 8000.

To find regional support contact information, visit www.moleculardevices.com/contact.

Please have your instrument serial number or Work Order number, and your software version number available when you call.



WARNING! BIOHAZARD. It is your responsibility to decontaminate components of the instrument before you return parts to Molecular Devices for repair. Molecular Devices does not accept items that have not been decontaminated where it is applicable to do so. If parts are returned, they must be enclosed in a sealed plastic bag stating that the contents are safe to handle and are not contaminated.

Appendix A: Instrument Specifications



This appendix provides specifications for the FilterMax F3 and FilterMax F5.

Measurement Specifications

Absorbance Measurement Specifications

Item	Description
Wavelength range (FilterMax F3)	340 nm to 650 nm
Wavelength range (FilterMax F5)	230 nm to 650 nm
Accuracy	$<\pm 2.0$ nm and ± 10 mOD at 2.0 OD (at 405 nm)
Reproducibility	$<\pm 0.5\%$ and ± 0.005 OD at 2.0 OD (400 nm to 650 nm) $<\pm 0.5\%$ and ± 0.005 OD at 1.0 OD (230 nm to 399 nm)
Measurement range	0 OD to 3.0 OD (>399 nm, specified) 0 OD to 2.5 OD (<400 nm, specified)
Indication range	0 OD to 3.5 OD
Resolution	0.1 mOD from 0 OD to 3.5 OD
Linearity	$<\pm 0.75\%$ and ± 0.010 OD from 0.1 OD to 3.0 OD (>399 nm) $<\pm 0.75\%$ and ± 0.010 OD from 0.1 OD to 2.5 OD (<400 nm)
Filter slide positions	6
Supplied wavelengths (FilterMax F3)	405 nm, 450 nm, 492 nm, 620 nm Additional filters are available.
Supplied wavelengths (FilterMax F5)	260 nm, 340 nm, 405 nm, 450 nm, 595 nm, 620 nm Additional filters are available.
Measurement method	Transmission photometer
Light source	High power LEDs The FilterMax F5 uses a deuterium light source that extends sensitivity into the deep UV band.
Detector	Silicon photodiode
Read modes	single, dual, and multiple wavelength; well scan; kinetic
Shake	orbital and linear: 3 speeds

Fluorescence Intensity Top Measurement Specifications

Item	Description
Wavelength range (FilterMax F3)	Excitation: 340 nm to 630 nm Emission: 390 nm to 650 nm
Wavelength range (FilterMax F5)	Excitation: 230 nm to 650 nm Emission: 390 nm to 700 nm
Detection limit, guaranteed (FilterMax F3)	5 fmol/200 μ L fluorescein (25 pM), black 96-well plate; 1 second integration time 2 fmol/75 μ L fluorescein (26.7 pM), black 384-well plate; 400 ms integration time
Detection limit, optimized (FilterMax F3)	3 fmol/200 μ L fluorescein (15 pM), black 96-well plate; 1 second integration time 0.4 fmol/75 μ L fluorescein (5.3 pM), black 384-well plate; 400 ms integration time
Detection limit, guaranteed (FilterMax F5)	0.8 fmol/200 μ L fluorescein (4 pM), black 96-well plate; 1 second integration time 0.4 fmol/75 μ L fluorescein (5.3 pM), black 384-well plate; 400 ms integration time
Detection limit, optimized (FilterMax F5)	0.3 fmol/200 μ L fluorescein (1.5 pM), black 96-well plate; 1 second integration time 0.1 fmol/75 μ L fluorescein (1.3 pM), black 384-well plate; 400 ms integration time
Measurement range	Up to 500 million RFU
Linear dynamic range	Up to 6 decades in a single plate read
Filter slide positions	6
Supplied wavelengths (FilterMax F3)	Excitation: 360 nm, 485 nm Emission: 465 nm, 535 nm Additional filters are available.
Supplied wavelengths (FilterMax F5)	Excitation: 485 nm, 535 nm Emission: 535 nm, 595 nm, 625 nm Additional filters are available.
Light source	High power LEDs The FilterMax F5 uses a deuterium light source that extends sensitivity into the deep UV band.
Detector	Photomultiplier tube, Single Photon Counting
Integration time per well	10 ms to 10000 ms

Fluorescence Intensity Bottom Measurement Specifications (FilterMax F5)

Item	Description
Wavelength range	Excitation: 300 nm to 630 nm Emission: 390 nm to 650 nm
Detection limit, guaranteed	25 fmol/200 μ L fluorescein (125 pM), black 96-well plate; 1 second integration time 15 fmol/75 μ L fluorescein (200.3 pM), black 384-well plate; 400 ms integration time
Detection limit, optimized	8 fmol/200 μ L fluorescein (40 pM), black 96-well plate; 1 second integration time 4 fmol/75 μ L fluorescein (53.3 pM), black 384-well plate; 400 ms integration time
Filter slide positions	6
Supplied wavelengths	Excitation: 485 nm, 535 nm Emission: 535 nm, 595 nm, 625 nm Additional filters are available.
Light source	High power LEDs and deuterium lamp
Detector	Photomultiplier tube, Single Photon Counting
Integration Time per Well	10 ms to 10000 ms

Luminescence Measurement Specifications

Item	Description
Wavelength range (FilterMax F3)	400 nm to 650 nm
Wavelength range (FilterMax F5)	400 nm to 700 nm
Detection limit, guaranteed (FilterMax F3)	6 fmol/200 μ L ATP (30 pM), white 96-well plate 2 fmol, 50 μ L ATP (40 pM) white 384-well plate
Detection limit, optimized (FilterMax F3)	2 fmol/200 μ L ATP (10 pM), white 96-well plate 0.75 fmol/50 μ L ATP (15 pM), white 384-well plate
Detection limit, guaranteed (FilterMax F5)	6 fmol/200 μ L ATP (30 pM), white 96-well plate 2 fmol/50 μ L ATP (40 pM), white 384-well plate
Detection limit, optimized (FilterMax F5)	2 fmol/200 μ L ATP (10 pM), white 96-well plate 0.75 fmol/50 μ L ATP (15 pM), white 384-well plate
Linear dynamic range	5 decades
Detector	Photomultiplier tube, Single Photon Counting
Integration time per well	10 ms to 10000 ms

Fluorescence Polarization Specifications (FilterMax F5)

Item	Description
Wavelength range	Excitation: 300 nm to 650 nm Emission: 390 nm to 700 nm
Uniformity, guaranteed	3 mP at 10 nM fluorescein, black 96-well plate; 1 second integration time 4 mP at 10 nM fluorescein, black 384-well plate; 400 ms integration time
Uniformity, optimized	1 mP at 10 nM fluorescein, black 96-well plate; 1 second integration time 1.5 mP at 10 nM fluorescein, black 384-well plate; 400 ms integration time
Filter slide positions	6
Supplied wavelengths	Excitation: 485 nm Emission: 535 nm Additional filters are available.
Light source	High power LEDs and deuterium lamp
Detector	Photomultiplier tube, Single Photon Counting
Integration time per well	10 ms to 10000 ms

Time-Resolved Fluorescence (TRF) Specifications (FilterMax F5)

Item	Description
Wavelength range	340 nm to 700 nm
Detection limit, guaranteed	100 amol/200 μ L Europium (0.5 pM), white 96-well plate; 1 second integration time 50 amol/100 μ L Europium (0.5 pM), white 384-well plate; 400 ms integration time
Detection limit, optimized	30 amol/200 μ L Europium, (0.15 pM), white 96-well plate; 1 second integration time 15 amol/100 μ L Europium (0.15 pM), white 384-well plate; 400 ms integration time
Linear dynamic range	5 decades
Filter slide positions	6
Supplied wavelengths	Excitation: 370 nm Emission: 625 nm Note: TRF measurements can be done only with the 370 nm broadband filter supplied by Molecular Devices. Use of this filter is required to achieve the specified performance.
Light source	High power LEDs
Detector	Photo Multiplier, Single Photon Counting
Number of pulses per Well	100 to 1 million

Physical Specifications

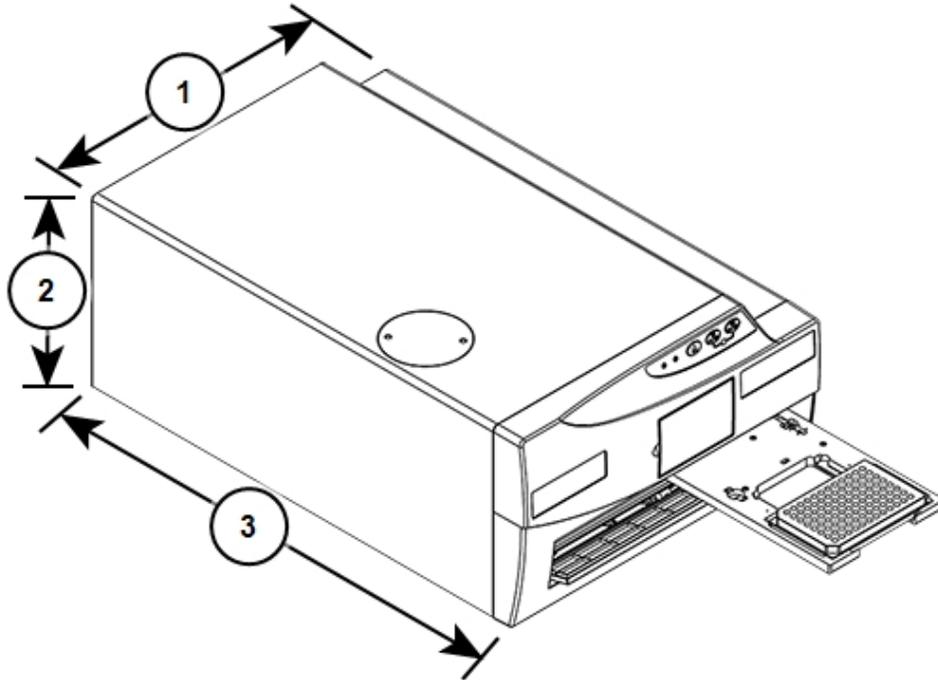
Physical Specifications For The FilterMax F3 and FilterMax F5

Item	Description
Environment	Indoor use only
Power requirements	100 VAC to 240 VAC \pm 10%, 3 amps, frequency range: 50/60 Hz
Dimensions	39 cm W x 24 cm H x 58 cm D (15.4 in. W x 9.5 in. H x 22.9 in. D)
Weight	25 kg (55.1 lbs)
Power disconnect and ventilation clearance (rear)	20 cm to 30 cm (7.9 in. to 11.8 in.) between the rear of the instrument and the wall
Ambient operating temperature	15°C to 40°C (59°F to 104°F)
Ambient storage temperature	-5°C to 40°C (23°F to 104°F) continuous; -20°C to 50°C (-4°F to 122°F) transient (up to 10 hours)
Humidity restrictions	15% to 75% (non-condensing) at 30°C (86°F)
Altitude restrictions	Up to 2000 m (6562 ft)
Air pressure restrictions	54 kPa to 106 kPa (7.8 PSI to 15.4 PSI)
Sound pressure level	Maximum sound pressure: 75 dBA Maximum sound pressure at one meter: 68 dBA
Installation category	II
Pollution degree	2
Fuses	250 V, 3 amp, 5 x 20 mm, slow-blow, UL recognized/CSA/VDE
Data connection	One (1) RS-232, 9-pin serial port

Temperature Control For The FilterMax F5

Item	Description
Temperature range	3°C (5.4°F) above ambient to 45°C (113°F) for visible range (>359 nm) 4°C (7.2°F) above ambient to 45°C (113°F) for UV (deuterium lamp)
Displayed	1°C (1.8°F) increments
Accuracy	\pm 1°C (1.8°F)
Uniformity	<1.5°C (2.7°F)

Appendix B: System Diagram and Dimensions



Dimensions of the FilterMax F3 and FilterMax F5

Item	Description
1	Width: 39 cm (15.4 in.)
2	Height: 24 cm (9.5 in.)
3	Depth: 58 cm (22.9 in.)



Appendix C: Available Standard Filter Slides



The following is a partial list of the standard filter slides that are available from Molecular Devices for the FilterMax F3 and FilterMax F5.



Note: You should not reconfigure standard filter slides.

FilterMax F3 Standard Filter Slides

EX3 Excitation Filter Slide

Position	Wavelength	Read Mode	Status
1	365 nm	FL	Enabled
2	485 nm	FL	Enabled
3	405 nm	ABS	Enabled
4	450 nm	ABS	Enabled
5	492 nm	ABS	Enabled
6	620 nm	ABS	Enabled

EM 3 Emission Filter Slide

Position	Wavelength	Read Mode	Status
1	465 nm	FL	Enabled
2	535 nm	FL	Enabled
3	0 nm	NA	Empty
4	0 nm	NA	Empty
5	0 nm	NA	Empty
6	0 nm	LUM	Enabled

FilterMax F5 Standard Filter Slides

EX 2 Excitation Filter Slide

Position	Wavelength	Read Mode	Status
1	260 nm	ABS	Enabled
2	340 nm	ABS	Enabled
3	405 nm	ABS	Enabled
4	450 nm	ABS	Enabled
5	595 nm	ABS	Enabled
6	620 nm	ABS	Enabled

EXP 1 Excitation Filter Slide (Polarization Capable)

Position	Wavelength	Read Mode	Status
1	535 nm	FL	Enabled
2	485 nm	FL	Enabled
3	485 nm	FP	Enabled
4	0 nm	NA	Empty
5	370 nm	TRF	Enabled
6	0 nm	NA	Empty

EMP 1 Emission Filter Slide (Polarization Capable)

Position	Wavelength	Read Mode	Status
1	595 nm	FL	Enabled
2	535 nm	FL	Enabled
3	535 nm	FP	Enabled
4	535 nm	FP	Enabled
5	625 nm	FL, TRF	Enabled
6	0 nm	LUM	Enabled

FilterMax F5 Standard Filters Available for Purchase

EX 5 Genomic Filter Slide (Part Number 5008590)

Position	Wavelength	Read Mode	Status
1	260 nm	ABS	Enabled
2	280 nm	ABS	Enabled
3	320 nm	ABS	Enabled
4	0 nm	NA	Empty
5	0 nm	NA	Empty
6	0 nm	NA	Empty

EX 6 Genomic Filter Slide With PathCheck (Part Number 5011297)

Position	Wavelength	Read Mode	Status
1	260 nm	ABS	Enabled
2	280 nm	ABS	Enabled
3	320 nm	ABS	Enabled
4	0 nm	NA	Empty
5	900 nm	PathCheck	Enabled
6	998 nm	PathCheck	Enabled

EX 7 PathCheck filter Slide I (Part Number 5011295)

Position	Wavelength	Read Mode	Status
1	0 nm	NA	Empty
2	0 nm	NA	Empty
3	0 nm	NA	Empty
4	0 nm	NA	Empty
5	900 nm	PathCheck	Enabled
6	998 nm	PathCheck	Enabled

Customizable Filter Slides

The following filter slides have no filters installed and are available for you to configure custom filter slides.

Part Number	Filter Slide
5008587	EXP 20 Excitation Filter Slide (polarization capable)
5008586	EMP 20 Emission Filter Slide (polarization capable)
5008588	EX 21 Excitation Filter Slide
5008589	EM 21 Emission Filter Slide



Appendix D: Electromagnetic Compatibility



Regulatory Information for Canada (ICES/NMB-001:2020)

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

ISM Equipment Classification (Group 1, Class A)

This equipment is designated as scientific equipment for laboratory use that intentionally generate and/or use conductively coupled radio-frequency energy for internal functioning, and are suitable for use in all establishments, other than domestic and those directly connected to a low voltage power supply network which supply buildings used for domestic purposes.

Contact Us

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