Agilent BioTek Epoch

Absorbance Microplate Spectrophotometer

INSTRUCTIONS FOR USE

ERRATA NOTICE: This document contains references to BioTek. Please note that BioTek is now Agilent. For more information, go to www.agilent.com/lifesciences/biotek.

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For In Vitro Diagnostic Use

Contents

Preface

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Intended Use Statement

The Epoch is an absorbance microplate spectrophotometer and intended to be used for the examination of clinical specimens to analyze their characteristics in relation to a variety of analytes including in human serum and cells.

Incident Reporting

Any serious incident that has occurred in relation to the device shall be reported to the manufacturer and the competent authority, or appropriate regulatory body, in the country or region in which the user is established.

Quality Control

It is considered good laboratory practice to run laboratory samples according to instructions and specific recommendations included in the assay package insert for the test to be conducted. Failure to conduct Quality Control checks could result in erroneous test data.

Safety Notices

Pay special attention to the following safety notices in all product documentation.

WARNING A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

CAUTION A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

Warnings and Precautions

Electrical Hazards

WARNING **Internal Voltage.** Always turn off the power switch and unplug the power supply before cleaning the outer surface of the instrument.

WARNING **Power Rating.** The instrument's power supply or power cord must be connected to a power receptacle that provides voltage and current within the specified rating for the system. Use of an incompatible power receptacle may produce electrical shock and fire hazards.

WARNING **Electrical Grounding.** Never use a plug adapter to connect primary power to the external power supply. Use of an adapter disconnects the utility ground, creating a severe shock hazard. Always connect the power cord directly to an appropriate receptacle with a functional ground.

WARNING **Service.** Only qualified technical personnel should perform service procedures on internal components.

CAUTION **Power Supply.** Use only the power supply shipped with the instrument, and operate it within the range of line voltages listed on it.

Chemical/Environmental

WARNING **Potential Biohazards.** Some assays or specimens may pose a biohazard. Adequate safety precautions should be taken as outlined in the assay's package insert. Always wear safety glasses and appropriate protective equipment, such as chemical-resistant rubber gloves and apron.

WARNING **Liquids.** Avoid spilling liquids on the instrument; fluid seepage into internal components creates a potential for shock hazard or instrument damage. If a spill occurs while a program is running, stop the program and turn off the instrument. Wipe up all spills immediately. Do not operate the instrument if internal components have been exposed to fluid.

CAUTION **Liquids.** Do not immerse the instrument, spray it with liquid, or use a dripping-wet cloth on it. Do not allow water or other cleaning solution to run into the interior of the instrument. If this happens, contact Technical Support.

CAUTION **Environmental Conditions.** Do not expose the instrument to temperature extremes. For proper operation, temperature near the instrument should remain within the range in the ***Specifications*** section of this document. Performance may be adversely affected if temperatures fluctuate above or below this range

CAUTION **Sodium Hypochlorite.** Do not expose any part of the instrument to the recommended diluted sodium hypochlorite solution for more than 20 minutes. Prolonged contact may damage the instrument surfaces. Be certain to rinse and thoroughly wipe all surfaces.

CAUTION **Lubricants.** Do not apply lubricants to moving parts. Lubricant on components in the carrier compartment will attract dust and other particles, which may cause the instrument to produce an error.

Components

WARNING **Accessories.** Only accessories that meet the manufacturer's specifications shall be used with the instrument.

CAUTION **Shipping Hardware.** All shipping hardware must be removed before operating the instrument and reinstalled before repackaging the instrument for shipment.

CAUTION **Spare Parts.** Only approved spare parts should be used for maintenance. The use of unapproved spare parts and accessories may result in a loss of warranty and potentially impair instrument performance or cause damage to the instrument.

CAUTION **Service.** Only qualified technical personnel should perform service procedures on internal components.

Intended Product Use

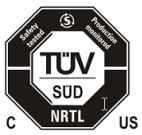
WARNING **Software Quality Control.** The operator must follow the manufacturer's assay package insert when modifying software parameters and establishing reading methods. It is considered good laboratory practice to run laboratory samples according to instructions and specific recommendations included in the assay package insert for the test to be conducted. Failure to conduct quality control checks could result in erroneous test data.

WARNING **Data Reduction.** No limits are applied to the raw measurement data. Data exported via computer control must be analyzed by the operator. The performance characteristics of the data reduction software have not been established with any laboratory diagnostic assay. Users must evaluate this instrument and PC-based software in conjunction with their specific assay(s). This evaluation must include the confirmation that performance characteristics for the specific assay(s) are met.

WARNING **Unspecified Use.** Failure to operate equipment according to the guidelines and safeguards specified in the product user documentation could result in a hazardous condition.

CAUTION Use of labware other than described in this document can result in positioning errors during program execution.

Symbols

	Caution
	Warning; Biological hazard
	Disposal Notice: Dispose of the instrument according to Directive 2012/19/EU, “on waste electrical and electronic equipment (WEEE)” or local ordinances
	Consult instructions for use or consult electronic instructions for use
	*In vitro* diagnostic medical device
	CE Marking — indicates compliance with the requirements of the In Vitro Diagnostic Regulation (2017/746)
	Authorized representative in the European Community/European Union
	Manufacturer
	Date of manufacture
	Catalogue number
	Serial number
	TÜV SÜD Certification Mark – Type tested; production monitored
IP20	Ingress Protection - Product protected against solid objects up to 12 millimeters. Not protected from liquids.
	This product complies with environmental protection use period as defined in People’s Republic of China Electronic Industry Standard SJ/T11364-2006. Toxic or hazardous substances will not leak or mutate under normal operating conditions for 40 years.
UK CA	UK Conformity Assessed marking is a certification mark that indicates conformity with the applicable requirements for products sold within Great Britain.

	Temperature limit
	Humidity limitation
	Unique device identifier
	Model number
	Importer

Conformance to Standards

The Epoch meets the requirements of the following standards:

2014/35/EU – Low Voltage Directive

2014/30/EU – EMC Directive

2017/746 – In Vitro Diagnostic Regulation

2011/65/EU (with exemptions) and (EU) 2015/863 – RoHS Directives

2012/19/EU – WEEE Directive as amended by (EU) 2018/849

2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery

Standard	Description
IEC QC 080000	IEC Quality Assessment System for Electronic Components (IECQ System) - Hazardous Substance Process Management (HSPM) System Requirements
UL 61010-1	UL Standard for Safety Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements
EN 61010-1	Safety Requirements for Electrical Equipment For Measurement, Control, and Laboratory Use – Part 1: General Requirements
EN 61010-2-081	Safety Requirements for Electrical Equipment For Measurement, Control, and Laboratory Use – Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes
EN 61010-2-101	Safety Requirements for Electrical Equipment For Measurement, Control, and Laboratory Use – Part 2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment
CAN/CSA C22.2 No. 61010-1	Safety Requirements for Electrical Equipment For Measurement, Control, and Laboratory Use – Part 1: General Requirements
CAN/CSA C22.2 No. 61010-2-081	Safety Requirements for Electrical Equipment For Measurement, Control, and Laboratory Use – Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes
CAN/CSA C22.2 No. 61010-2-101	Safety Requirements for Electrical Equipment For Measurement, Control, and Laboratory Use – Part 2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment

EMC Information and Technical Description

The Epoch conforms to:

Emissions:

EN55011/CISPR 11, Class A
CFR Title 47 FCC Part 15 Subpart B, Class A
ICES-001, Issue 5, Class A (CAN ICES-001(A)/NMB-001(A))
ACMA AS/NZS CISPR 11, Class A

Immunity:

EN/IEC 61326-1 and 61326-2-6
ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL AND LABORATORY USE
PART 2-6: PARTICULAR REQUIREMENTS FOR (IVD) MEDICAL EQUIPMENT

Ingress Protection Code

IP 20. Protected against solid foreign objects of 12.5 mm diameter and greater. No protection against water.

Disposal

Dispose of the instrument according to Directive 2012/19/EU, “on waste electrical and electronic equipment (WEEE)” or local ordinances.

Installation

Important Information

CAUTION **Shipping Hardware.** All shipping hardware must be removed before operating the instrument and reinstalled before repackaging the instrument for shipment.

- This chapter contains installation and setup tasks for the Epoch and accessories. Perform the tasks in the order presented.
- Save all packaging materials. Be sure to use packaging materials supplied by the manufacturer when shipping the reader. Using other forms of commercially available packaging, or failing to follow the repackaging instructions, may void your warranty.
- During the unpacking process, inspect the packaging, reader, and accessories for shipping damage. If the reader is damaged, notify the carrier and your Agilent representative. Keep the shipping boxes and the packaging materials for the carrier's inspection.

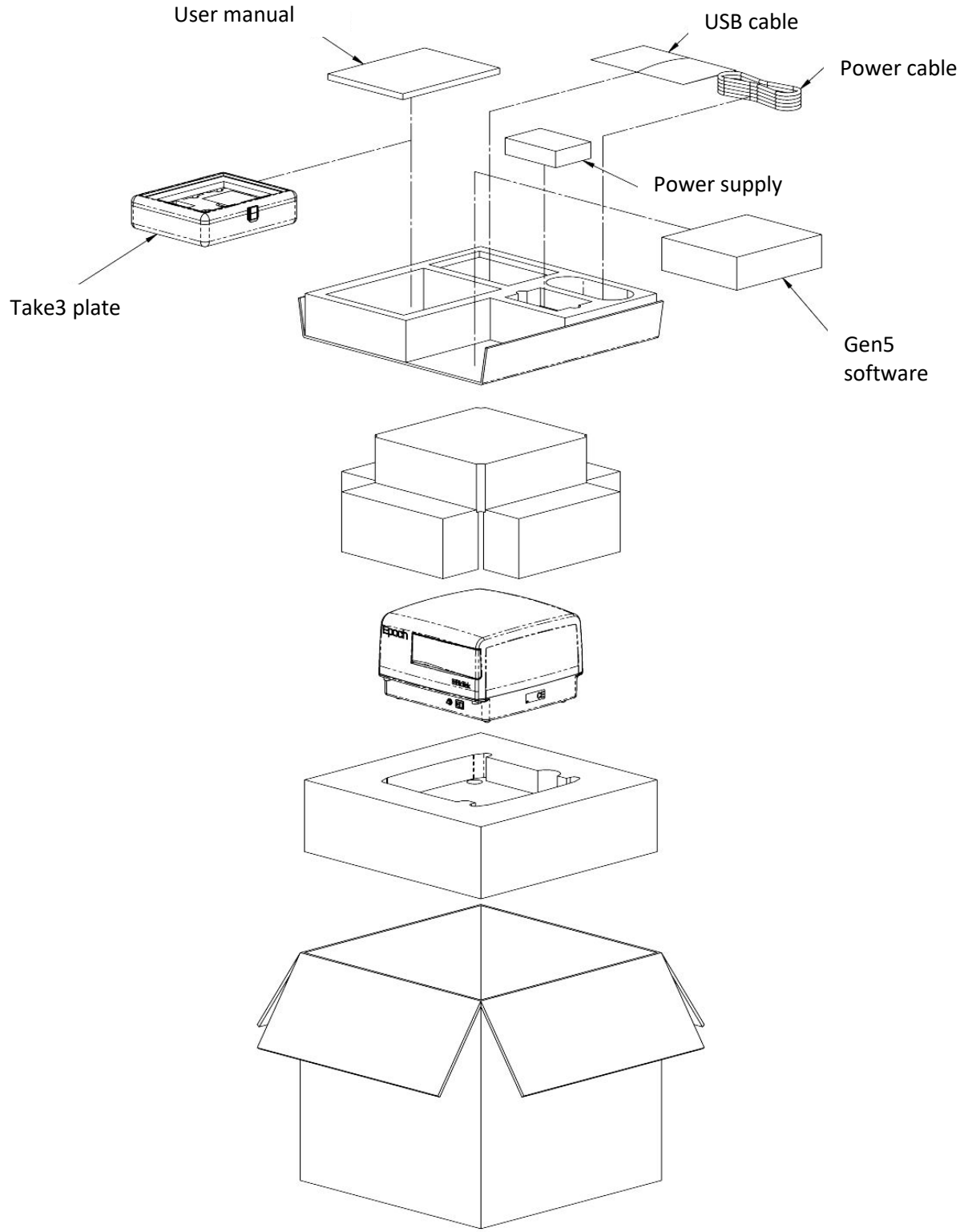
Package Contents

- Epoch instrument model per the sales order
- *Epoch User Manual* on USB flash drive
- Power supply
- Power cord
- USB cable
- Software and optional accessories per the sales order, unless shipped separately

Models

Part Number	Features
EPOCH-SI	Microplate Spectrophotometer.
EPOCHH-SI	Microplate Spectrophotometer for high-altitude sites.
EPOCHR-SI	Microplate Spectrophotometer. BioStack and 3rd party compatible.
EPOCHRH-SI	Microplate Spectrophotometer for high-altitude sites. BioStack and 3rd party compatible.

Unpack the Box



Save the packaging, in case you need to ship the instrument for service/repair.

Remove the Shipping Hardware

CAUTION **Shipping Hardware.** All shipping hardware must be removed before operating the instrument and reinstalled before repackaging the instrument for shipment.

1. See Figure 1. Remove the shipping screw, o-ring, and rubber plug.
2. See Figure 2. Install the plug in the hole where the shipping screw was originally located, and insert the screw and o-ring in the hole where the plug was originally located. The plug prevents light from entering the reading chamber during operation.

Figure 1

Figure 2

Select an Appropriate Location

Install the reader on a level, stable surface in an area where an operating temperature between 18°C and 40°C can be maintained.

The reader is sensitive to extreme environmental conditions. Avoid:

- Excessive humidity. Condensation directly on the sensitive electronic circuits can cause the instrument to fail internal self-checks. The humidity must be in the range described in the *Specifications* section.
- Excessive ambient light. Bright light may affect the reader's optics and readings, reducing its linear range.
- Dust. Readings may be affected by extraneous particles in the microplate wells. A clean work area is necessary to ensure accurate readings.

Install the Power Supply

WARNING **Power Rating.** The instrument's power supply or power cord must be connected to a power receptacle that provides voltage and current within the specified rating for the system. Use of an incompatible power receptacle may produce electrical shock and fire hazards.

WARNING **Electrical Grounding.** Never use a plug adapter to connect primary power to the external power supply. Use of an adapter disconnects the utility ground, creating a severe shock hazard. Always connect the power cord directly to an appropriate receptacle with a functional ground.

CAUTION **Power Supply.** Use only the power supply shipped with the instrument, and operate it within the range of line voltages listed on it.

1. Connect the power cord to the external power supply.
2. Locate the power inlet on the rear of the reader.
3. Plug the rounded end of the power supply's cord into the power inlet.
4. Plug the other end of the power cord into an appropriate power receptacle.

Prepare the Host Computer

Follow instructions supplied with Gen5 to install the necessary software.

- Ensure the computer meets the minimum system requirements as described in the *Gen5 Instructions for Use*.
- You must have administrator privileges to install Gen5. Log in to Windows as "Administrator" or consult your IT department for assistance.

Connect the Host Computer and Reader

1. Turn off the computer.
2. Using the supplied USB cable, connect the square end of the cable to the USB port on the rear of the reader.
3. Connect the other end of the cable to an available USB port on the computer.
4. Turn on the computer.

Turn on the Reader

1. Locate the power on/off switch on the front of the instrument, next to the carrier eject button. The power on/off switch has a green, internal LED lamp that is illuminated when the power is on. The carrier eject button, when pressed, ejects the carrier out of the reader or pulls the carrier back inside the reader to the carrier home position.
2. Turn on the power. The reader will perform an internal self-test and carrier homing sequence. The carrier will eject outside the reader, then retract to its home position inside the reader before it ejects again. Ensure that the reader performs the carrier homing sequence and that the LED light is illuminated while the power is on.

   If the test is successful, the reader is ready for use. If the test fails, contact Technical Support.

Establish Communication

On the host computer, start Gen5 and log in if prompted.

1. From the main screen, select **System > Instrument Configuration** and click **Add**.
2. Set the Reader Type to **Epoch**.
3. Perform one of the following steps, as applicable:
   - Select Plug & Play.
   - Set the Com Port to the computer's COM port to which the reader is connected.
4. To verify that Gen5 can communicate with the instrument, click **Test Comm**.

Troubleshooting

If the communication attempt is successful, Gen5 displays a success message. Return to the main screen. If the communication attempt is not successful, try the following:

- Is the reader connected to the power supply and turned on?
- Is the communication cable firmly attached to both the reader and the computer?

- Did you select the correct Reader Type/instrument in Gen5?
- Try a different COM Port or use Plug & Play.
- Did you install the USB driver software?

If you remain unable to get Gen5 and the reader to communicate with each other, contact Technical Support.

Verify Performance

Refer to the *Instrument Testing* section for Absorbance Test procedures.

Repackaging and Shipping Instructions

Please read the information provided below before preparing the Epoch for shipment.

- Contact Technical Support before returning equipment for service.
- Decontamination prior to shipment is required by the U.S. Department of Transportation regulations.
- If the Epoch has been exposed to potentially hazardous material, decontaminate it to minimize the risk to all who come in contact with the instrument during shipping, handling, and servicing. The Maintenance chapter contains decontamination instructions.
- Ensure the microplate carrier is empty. Spilled fluids can contaminate the optics and damage the instrument.
- Install the shipping hardware (see next section).
- The instrument's packaging design is subject to change. If the instructions in this document do not apply to the packaging materials you are using, contact Technical Support for guidance.
- Be sure to use packaging materials supplied by the manufacturer. Other forms of commercially available packaging are not recommended and can void the warranty.
- If the packaging materials have been damaged or lost, or if the same set has been used more than four times, order replacement part number 7203003.
- The shipping box, accessories box, foam caps, and other items are included as a whole set under this part number and cannot be ordered separately.

Install the Shipping Hardware

CAUTION **Shipping Hardware.** All shipping hardware must be removed before operating the instrument and reinstalled before repackaging the instrument for shipment.

1. If you have not already done so, retract the microplate carrier.
2. Turn off the reader, and unplug the power supply from the power outlet and from the power supply connector on the back of the reader. Remove the USB cable from the reader.
3. Using a screwdriver, remove the shipping screw and o-ring from the reader, and, using your fingers, remove the plug from the reader.
4. Insert the plug in its original hole and use the screwdriver to re-install the shipping screw and o-ring in its original position.

Repackage the Instrument and Accessories

Refer to the drawing on page 12.

1. Place the foam cap into the bottom of the shipping container. Note the orientation of the foam cap in the box.
2. Place the accessories box back into the shipping container.
3. Place the reader inside the original plastic bag and carefully lower the reader into the two foam caps in the bottom of the box. Note the orientation of the reader in the box.
4. Place two foam caps over the reader.
5. Bundle the power cord and place it into the accessories box as shown.
6. Place the power supply and USB cable in the accessories box.
7. Close the top of the box and secure it with shipping tape.

Getting Started

Gen5 software supports all Epoch reader models. This section provides brief instructions for creating a protocol and running an experiment. For more information, refer to publications provided with Gen5 and the Gen5 help system (**Help > Help Topics**).

In Gen5, a **protocol** contains instructions for controlling the reader and (optionally) instructions for analyzing the data retrieved from the reader. At a minimum, a protocol must specify the procedure you wish to run. After creating a protocol, create an **experiment** that references the protocol. You will run the experiment to read plates and analyze the data.

1. In the Gen5 Task Manager, select **Protocol > Create New**.
2. Open the Procedure dialog. If prompted to select a reader, select **Epoch** and click **OK**.
3. Select a Plate Type.

Gen5 stores measurements and other characteristics for individual plate types in a database. It is essential that you select (or define) the plate type to match the assay plate. Otherwise, results may be invalid. See the "Plate Type Database" topic in the Gen5 Help for instructions.

4. Add steps to the procedure for reading the plate. Click **Validate** to verify that the reader supports the defined steps, and then click **OK**.
5. Optionally, perform any of these steps to analyze and report the results:
   - Open the Plate Layout dialog and assign blanks, samples, controls, and/or standards to the plate.
   - Open the Data Reduction dialog to add data reduction steps. Categories include Transformation, Well Analysis, Curve Analysis, and Qualitative Analysis.
   - Create a report or export template via the Report/Export Builders.
6. Select **File > Save** and give the protocol an identifying name.
7. In the Gen5 Task Manager, select **Experiment > Create using an existing protocol**.
8. Select the desired protocol and click **OK**.
9. Select a plate in the menu tree and click  .
10. When the read is complete, measurement values appear in Gen5. Select the desired data set from the Data list.
11. Select **File > Save** and give the experiment an identifying name.

Maintenance

Warnings and Precautions

WARNING **Internal Voltage.** Always turn off the power switch and unplug the power supply before cleaning the outer surface of the instrument.

WARNING **Liquids.** Avoid spilling liquids on the instrument; fluid seepage into internal components creates a potential for shock hazard or instrument damage. If a spill occurs while a program is running, stop the program and turn off the instrument. Wipe up all spills immediately. Do not operate the instrument if internal components have been exposed to fluid.

CAUTION **Liquids.** Do not immerse the instrument, spray it with liquid, or use a dripping-wet cloth on it. Do not allow water or other cleaning solution to run into the interior of the instrument. If this happens, contact Technical Support.

CAUTION **Lubricants.** Do not apply lubricants to moving parts. Lubricant on components in the carrier compartment will attract dust and other particles, which may cause the instrument to produce an error.

WARNING **Potential Biohazards.** Wear protective gloves when handling contaminated instruments. Gloved hands should be considered contaminated at all times; keep gloved hands away from eyes, mouth, nose, and ears.

Mucous membranes are considered prime entry routes for infectious agents. Wear eye protection and a surgical mask when there is a possibility of aerosol contamination. Intact skin is generally considered an effective barrier against infectious organisms; however, small abrasions and cuts may not always be visible. Wear protective gloves when handling contaminated instruments.

Schedule

Task	Frequency
Clean exposed surfaces	As needed
Decontamination	Before shipment, storage, or disposal

Clean Exposed Surfaces

A regular cleaning regimen is recommended to keep the instrument free from dust and particulates that can cause erroneous readings. Exposed surfaces may be cleaned (not decontaminated) with a cloth moistened (not soaked) with water or water and a mild detergent.

1. Turn off and unplug the instrument from the power supply.
2. Moisten a clean, lint-free disposable cloth with water, or with water and mild detergent, then thoroughly wring it out so that liquid does not drip from it. **Do not soak the cloth.**
3. Wipe the plate carrier and all exposed surfaces of the instrument.
4. If detergent was used, wipe all surfaces with a cloth moistened, not soaked, with water.
5. Use a clean, dry, lint-free cloth to dry all wet surfaces.

   If liquid is spilled inside the reader, contact Technical Support.

Decontamination

- The Epoch requires decontamination prior to shipping, storage, and disposal.
- Decontamination is required by the U.S. Department of Transportation regulations.
- Persons performing the decontamination process must be familiar with the basic setup and operation of the instrument.
- Agilent recommends the use of the following decontamination solutions and methods based on our knowledge of the instrument and recommendations of the Centers for Disease Control and Prevention (CDC). Neither Agilent nor the CDC assumes any liability for the adequacy of these solutions and methods. Each laboratory must ensure that decontamination procedures are adequate for the biohazard(s) they handle.

Required Materials

- Sodium hypochlorite (NaClO)
- 70% isopropyl alcohol (as an alternative to sodium hypochlorite)
- Deionized or distilled water
- Safety glasses

- Surgical mask
- Protective gloves
- Lab coat
- Biohazard trash bags
- 125-mL beakers
- Clean, lint-free cotton cloths

Procedure

1. Turn off and unplug the reader from the power supply.
2. Prepare a disinfecting solution: an aqueous solution of 0.5% sodium hypochlorite (NaClO). If the effects of sodium hypochlorite are a concern, 70% isopropyl alcohol may be used.
3. Moisten a clean, lint-free cloth with the disinfecting solution, then thoroughly wring it out so that liquid does not drip from it. Do not soak the cloth.
4. Wipe the plate carrier and all exposed surfaces of the instrument.
5. Wait 20 minutes.
6. Moisten a cloth with deionized or distilled water and wipe all surfaces of the instrument that have been cleaned with the disinfecting solution.
7. Use a clean, dry lint-free cloth to wipe all wet surfaces.
8. Discard the used gloves and cloths, using a biohazard trash bag and an approved biohazard container.

Instrument Testing

Schedule

Recommendations for an Epoch used two to five days per week:

Test	Frequency
System Test	Monthly
Absorbance Tests	Monthly

System Test

Each time the Epoch is turned on, it automatically performs a series of tests on the reader's motors, lamp, and various subsystems. This test can take a few minutes to complete. If all tests pass, the microplate carrier is ejected and the green LED on the power switch remains on.

If any test results do not meet the internally coded Failure Mode Effects Analysis (FMEA) criteria, the reader beeps repeatedly and the green LED on the power switch flashes. If this occurs, press the carrier eject button to stop the beeping.

1. Turn on the reader and launch Gen5.
2. Select **System > Diagnostics > Run System Test**.
3. When the test is complete, a dialog appears, requesting additional information. Enter your user name and other information (if desired), and then click **OK**.
4. The results report appears. It should show "SYSTEM TEST PASS". If it shows "SYSTEM TEST FAIL" contact Technical Support.

Absorbance Tests

Description

This test uses the 7-Filter Absorbance Test Plate (Part Number 7260522) to confirm the mechanical alignment; optical density accuracy, linearity, and repeatability; and wavelength accuracy to NIST-traceable values. The Absorbance Plate Test compares the reader's optical density and wavelength measurements to NIST-traceable values.

Test Plate Certificates

To run this test on the Epoch, you will need the 7-Filter Absorbance Test Plate (Part Number 7260522) with its accompanying certificates.

Define the Absorbance Test Plate Parameters

1. Obtain the certificates that came with the Test Plate.
2. Start Gen5. From the main screen, click **System > Diagnostics > Test Plates > Add/Modify Plates**.
3. Click **Add**/**Add Plate**. The Absorbance Test Plate dialog appears.
4. Select the appropriate plate type and enter the plate's serial number.
5. Enter the last and next certification dates, found on the calibration sticker on the Test Plate. Click **Help** for guidance when setting the wavelengths and entering the OD and peak wavelength values.
6. Review the values you entered, and then click **OK** to save the data. The wavelengths and corresponding calibration data that have been entered will now be available in Gen5 each time the Absorbance Plate Test is performed.

Procedure

1. From the main screen, click **System > Diagnostics > Test Plates > Run.**
2. If prompted, select the desired Test Plate and click **OK**.
3. When the Absorbance Test Plate Options dialog appears, select **Perform Peak Wavelength Test**, if it is not already selected.
4. Highlight the wavelength or wavelengths to be included in this test. Select only those wavelengths that are most appropriate for your use of the reader. Enter any comments, if desired.
5. Click **Start Test**.
6. Place the Test Plate in the microplate carrier so that well A1 is in the left-rear corner of the carrier (as you are facing the carrier).
7. Click **OK** to run the test.
8. When the test is completed, the results report appears. Scroll through the report; every result should show PASS. If any result shows "FAIL", try the following and rerun the test. If the test continues to fail, contact Technical Support.
   - Make sure the information entered into Gen5 matches the Test Plate's Certificate.
   - Verify that the Test Plate is within its calibration certification period. If it is out of date, contact Technical Support to schedule a recertification.
   - Ensure that the Test Plate is correctly seated in the microplate carrier.
   - Check the alignment (corner) holes on the Test Plate to ensure they are clear of debris.
   - Check the filters on the Test Plate to ensure they are clean. If necessary, clean them with lens paper. Do not remove the filters from the test plate. Do not use alcohol or other cleaning agents.

Specifications

General Specifications

Microplates
The Epoch accommodates standard 6-, 12-, 24-, 48-, 96-, and 384-well microplates with 128 x 86 mm geometry; and the Take3 and Take3 Trio Micro-Volume Plates.

Hardware and Environmental	
Light Source	Xenon flash light source
Dimensions	31.8 cm D x 30.5 cm W x 19.6 cm H
Weight	< 6.804 kg (without power supply)
Environment	Operational temperature 18°C to 40°C Storage temperature range: -25°C to 50°C
Humidity	Operational: Maximum relative humidity of 80% at temperatures up to 31°C decreasing linearly to 50% relative humidity at 40° C (non-condensing) Storage: 10% to 80% relative humidity (non-condensing)
Power Supply	24-volt external power supply compatible with 100–240 V~; +/- 10% @50–60 Hz
Power Consumption	< 40W

Read Specifications

All read speeds are +/– 2 seconds.

Endpoint Measurements			
96 Well			
Mode	Delay Time	630 nm	630/450 nm
Normal	100 msec	49	95
Rapid	0 msec	38	75
Sweep	N/A	15	30
384 Well			
Mode	Delay Time	630 nm	630/450 nm
Normal	100 msec	169	333
Rapid	0 msec	131	257
Sweep	N/A	31	56

Kinetic Measurements		
96 Well		
Mode	Delay Time	630 nm
Normal	100 msec	50
Rapid	0 msec	42
Sweep	N/A	13
Mode	Delay Time	630 nm
Normal	100 msec	169
Rapid	0 msec	129
Sweep	N/A	30

Optical Performance

Accuracy, Linearity, Repeatability
All qualifications were conducted using 96-/384-well, flat-bottom microplates. For the performance described here, the Gain on the Optics Test should be <= 8.
Measurement Range: 0.000 to 4.000 OD Resolution: 0.0001 OD
Accuracy, NIST Filters 96-well plate, normal read speed, 100-ms delay after plate movement 0.000–2.000 OD +/-1% +/-0.010 OD 2.000–2.500 OD +/-3% +/-0.010 OD 384-well plate, normal read speed, 100-ms delay after plate movement 0.000–1.500 OD +/-2% +/-0.010 OD 1.500–2.000 OD +/-5% +/-0.010 OD 96-well and 384-well plate, sweep read speed 0.000–1.000 OD +/-1% +/-0.010 OD
Linearity 96-well plate, normal read speed, 100-ms delay after plate movement 0.000–2.000 OD +/-1% +/-0.010 OD 2.000–2.500 OD +/-3% +/-0.010 OD 384-well plate, normal read speed, 100-ms delay after plate movement 0.000–1.500 OD +/-2% +/-0.010 OD 1.500–2.000 OD +/-5% +/-0.010 OD 96-well and 384-well plate, sweep read speed 0.000–1.000 OD +/-1% +/-0.010 OD
Repeatability, NIST Filters, Standard Deviation 96-well plate, normal read speed, 100-ms delay after plate movement 0.000–2.000 OD +/-1% +/-0.005 OD 2.000–2.500 OD +/-3% +/-0.005 OD 384-well plate, normal read speed, 100-ms delay after plate movement 0.000–1.500 OD +/-1% +/-0.005 OD 1.500–2.000 OD +/-3% +/-0.005 OD 96-well and 384-well plate, sweep read speed 0.000–1.000 OD +/-2% +/-0.010 OD

Optics	
λ range	200 to 999 nm
λ accuracy	± 2 nm
λ repeatability	± 0.2 nm
λ bandpass	< 5 nm
Detector	Photodiodes (2)

In This Book

This document contains installation, operation, maintenance, and qualification information for all models of the Epoch.

Document Revision History			
Part Number	Revision	Date	Modifications
7201009I	C	May 2022	Added Agilent brand information. Updated content and symbols to support 2017/746 – In Vitro Diagnostic Regulation. Replaced the Notices section with Copyright information. Added Customer Care contact information. Removed the Warranty and Product Registration section.

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