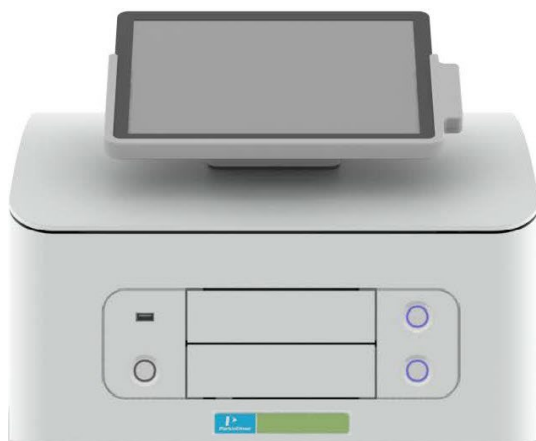


FlexDrop™ iQ™

Non-contact Dispenser

Hardware Manual



Preface

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Proper Equipment Operation

WARNINGS



- To reduce the risk of electric shock, do not remove the cover. No user serviceable parts are inside. Refer to qualified service personnel if help is required.
- Use this product only in the manner described in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

AVERTISSEMENTS



- Pour réduire le risque de choc électrique, ne pas retirer le couvercle. Ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Au besoin, confier l'appareil à un réparateur qualifié.
- Ce produit ne doit être utilisé que comme décrit dans ce manuel. Si cet appareil est utilisé d'une manière autre que celle spécifiée par le fabricant, la protection fournie par l'appareil peut être entravée.

Contact Us

If you have a question about a product that is not answered in this manual, or if you need assistance regarding this product, please contact the PerkinElmer Technical Support Center from 8:00 A.M. to 8:00 P.M., Eastern Time, Monday through Friday:

Phone: (US Toll Free): **800-762-4000**
(Worldwide): **+1 203-925-4602**
Fax: **+1 203-944-4904**
Email: DXSupportAmericas@perkinelmer.com
Internet: www.perkinelmer.com

Before you call, have the following information available for the technical representative:

- Product serial number
- Software version (found by choosing About from the main Help menu)
- If applicable, the *error number* shown in the software or in the log file.

Product Service and Customer Support Plans

PerkinElmer offers a full range of services to ensure your success. From our original factory warranty through a comprehensive line of customer support plans, PerkinElmer offers you Field Service Engineers and in-house Specialists who are dedicated to supporting your hardware, software, and application development needs.

Phone: (US Toll Free): **800-762-4000**
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Our programs can include such useful services as:

- Preventive maintenance
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Training for Your Product

Contact PerkinElmer for information about the availability of training courses for your product:

Phone: (US Toll Free): **800-762-4000**
(Worldwide): **+1 203-925-4602**
Fax: **+1 203-944-4904**

FCC

This device complies with part 15 of the FCC (United States Federal Communications Commission) Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

CE

This device complies with all applicable CE rules and requirements.

NOTE



Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

REMARQUE



Tout changement ou modification apporté à cet instrument non expressément approuvé par l'entité responsable de la conformité peut annuler l'autorisation d'opérer l'appareil accordée à l'utilisateur.

Table of Symbols

Table 1 contains symbols that identify particularly important information and alert you to the presence of hazards. These symbols may appear in this manual and/or on the product it describes.

Table 1. Important Symbols

Symbol Symbole	Description Description
	WARNING: Caution. Refer to the User's documentation. (ISO 7000-0434B) AVERTISSEMENT : Attention. Se reporter à la documentation de l'utilisateur.
	NOTE: A cautionary statement; an operating tip or maintenance suggestion; may result in instrument damage if not followed. REMARQUE : Énoncé indiquant une précaution à prendre, un conseil de fonctionnement ou une suggestion d'entretien ; son non-respect peut provoquer des dommages à l'instrument.
	Hazardous voltage; risk of electric shock. (IEC 60417-6042) Tension dangereuse ; risque de blessure par électrocution.
	Biological risks. (ISO 7000-0659) Risques biologiques.
	Risk of injury due to moving parts, shearing force, and crushing areas in operations area. Risque de blessure dû aux pièces mobiles, à la force de cisaillement et aux zones d'écrasement dans la zone d'opérations.
	Lifting hazard. May result in injury. (ISO 3864) Levage dangereux. Peut entraîner des blessures.
	Fuse. (IEC 60417-5016) Fusible.
	Alternating current. (IEC 60417-5032) Courant alternatif.






Symbol Symbole	Description Description
	On (power). (IEC 60417-5007) Marche (alimentation).
	Off (power). (IEC 60417-5008) Arrêt (alimentation).
	CE compliance mark. Marque de conformité CE.
	WEEE symbol (EN50419:2005). Do not dispose of as unsorted municipal waste. See the PerkinElmer website (www.perkinelmer.com) for more information.
	Consult Instructions for Use. (ISO 7000-1641) Consulter les Instructions d'emploi.

Table of Contents

Preface	2
Introduction	7
Overview.....	7
Use.....	7
Warranty and Product Liability	7
Safety	8
Safety Information	8
Disconnecting the System from the Electrical Power Supply	10
Disconnecting the System from Air Pressure Supply.....	10
System Contents	11
Operating Keys, Buttons, and Connections	12
Front Ports and Connections.....	12
Back Ports and Connections	13
Transport, Setup, and Startup	14
Transport	14
Set Up and Initial Operation	14
Operation	15
Starting the FlexDrop iQ Instrument.....	15
Shutting Down the FlexDrop iQ Instrument.....	16
Cleaning the Instrument	17
Spare Parts and Accessories	18
Troubleshooting	19
Service and Maintenance	20
Changing the Fuses	20
Technical Data	21

Introduction

Overview

This manual contains information pertaining to safe and proper handling, operation, and maintenance of the FlexDrop iQ instrument.

The following shall be observed:

- The Hardware Manual is part of the FlexDrop iQ.
- Please read this Hardware Manual carefully prior using the system.
- The Hardware Manual must be kept during the lifetime of the system.
- The Hardware Manual must be handed out to the successor.
- Only the most recent version is valid. New versions supersede previous versions.

Use

The PerkinElmer FlexDrop iQ is designed and developed to automatically dispense liquids in the nanoliter range via dispensing plates. A liquid or liquids are filled into a specific FlexDrop iQ dispensing plate which is the source plate. This plate is SBS-compatible. For proper and safe functionality, FlexDrop iQ Plates can only be used with the system. From this plate droplets are delivered by a hole in the bottom of the plate. Droplets are caught in a target plate which is typically a SBS compatible plate. A target can also be a flat object not exceeding the outer dimension of a microtiter plate.

Compliance with regulations and hints as written in this manual, are part of the intended use of the FlexDrop iQ instrument.

Warranty and Product Liability

The FlexDrop iQ comes with a 12-month warranty upon initial start-up.

- Warranty and product liability do not apply if the instrument is not operated within the intended use, if hints for safe and proper handling are not followed, or if the instrument was opened.
- Wear and tear parts are excluded from the warranty.

Only the PerkinElmer Service Representative can install and set up the instrument. Changes and modifications of the FlexDrop iQ not approved by PerkinElmer void all warranty claims.

Inserting parts or using consumables not approved by PerkinElmer may result in injuries or can damage the instrument.

Safety

Safety Information

Safe operation of the system is only ensured if these recommendations are followed as written in this guide or at the system.

- Connect the system to a power socket with a functioning protective earth conductor only.
- Before switching on the instrument, make sure that the local power supply voltage is in accordance with the specifications of the system. Please refer to the rating plate at the back of the instrument or technical specification in this manual (see: Technical Data).
- The instrument is completely disconnected from the electrical power supply when switching off the main switch on the back of the instrument. Power socket shall be in close vicinity of the instrument.
- The instrument generates heat. Please make sure for sufficient air circulation. 10 cm distance from the system to other surrounding objects is sufficient.
- Avoid long lasting high humidity and avoid condensing water.
- Only use parts delivered with the instrument or order parts from the supplier.
- Safe operation is no longer possible if:
 - the enclosure is damaged
 - water reached the inner of the instrument
 - parts reached into the inner of the instrument
 - smoke comes out of the instrument
 - power socket is damaged
 - does not work properly

In case of one of these situations, please immediately disconnect the system from the electrical power supply by removing the power cord from the power socket. Please contact your PerkinElmer Service Representative before using the instrument again.

**WARNING**

If the instrument or parts of the instrument get wet, switch off the instrument and disconnect the power cord. Clean and dry the system before switching it on again.

**AVERTISSEMENT**

Si l'instrument ou des parties de l'instrument sont mouillés, éteignez l'instrument et débranchez le cordon d'alimentation. Nettoyez et séchez le système avant de le rallumer.

**WARNINGS**

- *Mechanical movements behind doors.*
- *Do not touch drawers while they are moving. Increased crushing hazard.*

**AVERTISSEMENT**

- *Mouvements mécaniques derrière les portes.*
- *Ne touchez pas les tiroirs lorsqu'ils sont en mouvement. Risque d'écrasement accru.*

**WARNING**

Risk of electrical shock which may lead to death. The inside of the instrument contains live power parts. Do not remove the cover. No user serviceable parts inside. Please contact the PerkinElmer Technical Support for assistance (see page 3).

**AVERTISSEMENT**

Risque d'électrocution pouvant entraîner la mort. L'intérieur de l'instrument contient des parties sous tension. Ne retirez pas le couvercle. Aucune pièce réparable par l'utilisateur à l'intérieur. Veuillez contacter le support technique de PerkinElmer pour obtenir de l'aide (voir page 3).

Disconnecting the System from the Electrical Power Supply



WARNING

Switch off system at the main switch on the back of the instrument. Pull power cord out of socket.



AVERTISSEMENT

Éteignez le système au niveau de l'interrupteur principal à l'arrière de l'instrument. Retirez le cordon d'alimentation de la prise.

The system-plug-in connection via power cord and socket acts as a separator from the power supply. Place system in a way that separator can be easily recognized and accessed.

Disconnecting the System from Air Pressure Supply



WARNING

Close pressure reducing valve used at the air pressure supply. Pull quick fitting at the back side of the instrument.

Please hold quick fitting until completely deaerated.



AVERTISSEMENT

Fermer le réducteur de pression utilisé au niveau de l'alimentation en air. Tirez sur le raccord rapide à l'arrière de l'instrument.

Veillez tenir le raccord rapide jusqu'à ce qu'il soit complètement désaéré.

The system-plug-in connection via tubing and quick fitting acts as a separator from the air pressure supply. Place system in a way that separator can be easily recognized and accessed.

System Contents

NOTE: *Upon delivery please check complete delivery and for damages. In case of damages or missing parts, notify the delivery service and contact your PerkinElmer Service Representative (see page 3).*

Included in delivery of a FlexDrop iQ:

- (1) FlexDrop iQ Instrument
- (4) Power Cords (EU, UK, US, AU) Fuse change may be required.
- Air tubing - 6mm tubing with Quick Connect to instrument and fitting to connect to house air or compressor
- (4) Black adapter plates (1, 2, 4 and 8 mm) – for target plate heights
- (10) FlexDrop iQ Source Plates with 80 μ l wells in startup kit
- (3) Waste PCR Tubes
- (2) Transport Locks
- (2) 2.5A Fuses
- Windows Surface Pro Tablet

Operating Keys, Buttons, and Connections

Front Ports and Connections

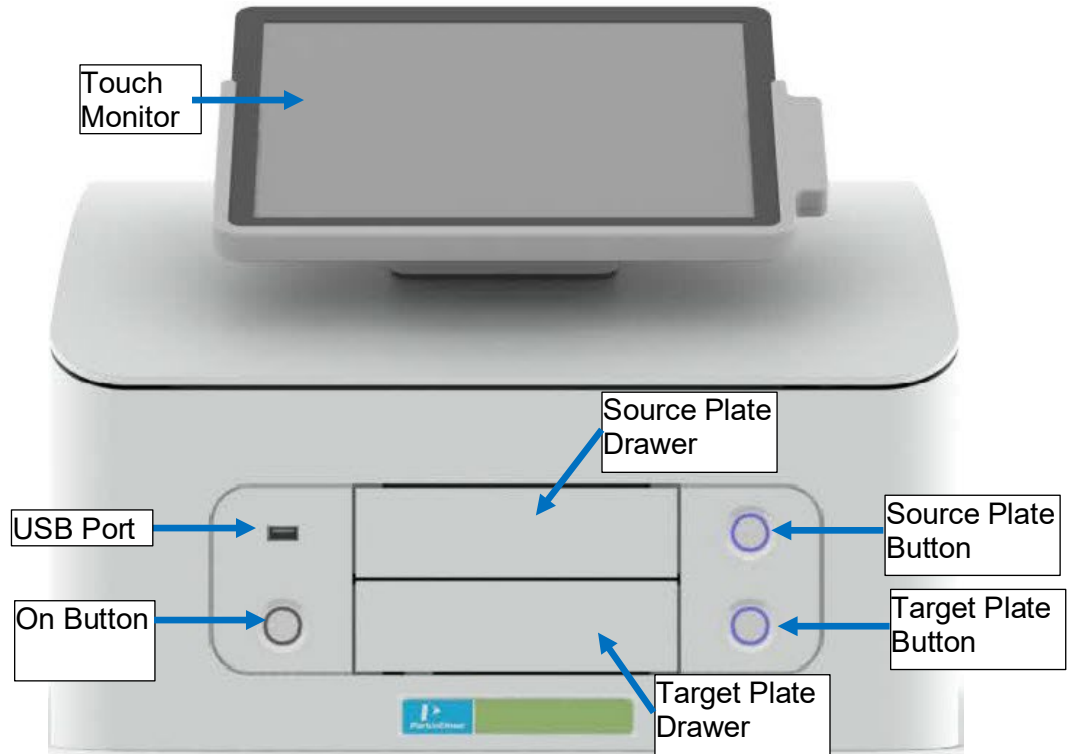


Figure 1. FlexDrop iQ Front

Front Connectors/Buttons	Function
ON Button	Press to turn the instrument on. (The main power switch on the back must be ON to operate the instrument.)
Source Plate Button	Open or close the Source Plate Drawer.
Target Plate Button	Open or close the Target Plate Drawer.
USB Port	USB Type A

Back Ports and Connections



Figure 2. FlexDrop iQ Back

Rear Connectors	Function
(2) USB Ports	USB Type A
RJ45 Port (LAN)	Network connector optionally used to connect the FlexDrop iQ to a LAN for network data storage.
Air pressure	Quick Coupling Socket KD2-CN-4-S (Festo) 3-10bar
Main Power Switch	Turns power to the instrument on (I) or off (O).
Power Cord Connector	110 - 230V Connector

Transport, Setup, and Startup

Transport

1. For transport, remove all consumables from the source and target trays.
2. Close the source and target plate drawers.
3. Close the FlexDrop iQ Studio software.
4. Shut down Windows.
5. Switch off the power switch on the back of the FlexDrop iQ.
6. Close the air pressure supply and disconnect from supply.
7. Disconnect the power cord.
8. If applicable, disconnect the network cable.
9. Install Transport Locks to stabilize the DispenseHead.



WARNING

Installation must be performed by PerkinElmer personnel. Instrument creates heat. For sufficient air circulation, allow at least 10 cm clearance around the instrument. Two people are necessary to lift or carry the instrument. Risk of crushing hazard when placing instrument.



AVERTISSEMENT

L'installation doit être effectuée par le personnel de PerkinElmer. L'instrument crée de la chaleur. Pour une circulation d'air suffisante, laissez un espace d'au moins 10 cm autour de l'instrument. Deux personnes sont nécessaires pour soulever ou porter l'instrument. Risque d'écrasement lors de la mise en place de l'instrument.

Set Up and Initial Operation

1. Place the FlexDrop iQ instrument on a flat, even, stable surface. Leave enough space in the front to fully move out the trays for source and target plate.
Do not cover the vent on back of instrument. Power cord and air pressure tubing must be easily accessible.
2. Connect air pressure supply (see Figure 2 FlexDrop iQ back). Set pressure to at least 3 bar, max. 10 bar. Open air pressure supply valve.
3. Optional: Connect instrument to a network via RJ45 connector (see Figure 2 FlexDrop iQ back).
4. Connect electrical power supply (see Figure 2 FlexDrop iQ back).

Operation

The intended use of the FlexDrop iQ instrument is the dispensing of liquids from a FlexDrop iQ source plate into a target plate. This section describes how to start and operate the FlexDrop iQ hardware. For instructions on using the FlexDrop Studio software to control the instrument, see the *FlexDrop iQ User Manual* (P/N CLS155330).

Starting the FlexDrop iQ Instrument

1. Switch on (I) the system using the power switch on the back of the system.

NOTE: *The system is supplied with power. The system is NOT ready for operation.*

2. Push the On button on the front left of the instrument to start the computer. Wait until the Windows operating system starts.

NOTE: *When the instrument is on, the On button illuminates green. The source and target plate drawers cannot be opened until the **FlexDrop iQ Studio Software** is running.*

3. Double-click the **FlexDrop iQ Studio** icon to start the software.

NOTE: *It takes approximately 30 seconds until the instrument is ready for operation.*

4. Wait for the instrument to complete the initialization and for the FlexDrop iQ Studio software to start. When the software starts, the main window opens and prompts you to create a new protocol or open an existing protocol.
5. Use the FlexDrop iQ Studio software to set up, load, run, and save dispensing protocols. Refer to the *FlexDrop iQ User Manual* (Part No. CLS155330) for the use of the software.

NOTE: *The source and target plates are loaded into the drawers (see Figure 1 FlexDrop iQ front). The **FlexDrop iQ Studio** software must be started to open and close the drawers.*

6. To open the source plate drawer, press the Source Plate Button on the front of the instrument (see Figure 1 FlexDrop iQ front).
7. To open the target plate drawer, press the Target Plate Button on the front of the instrument (see Figure 1 FlexDrop iQ front).

Shutting Down the FlexDrop iQ Instrument



To shut down the FlexDrop iQ instrument:

1. Remove all consumables from the Source and Target trays.
2. Close the Source and Target plate drawers.
3. In the FlexDrop iQ Studio software, select **Menu > Exit** to close the FlexDrop iQ Studio software.
4. On the tablet, select the Windows button, then select **Power > Shut Down**. Wait until the tablet power turns off.

If the instrument will not be used for an extended time, disconnect the instrument:

1. Switch off the power switch on the back of the FlexDrop iQ.
2. Close the air pressure supply and disconnect from supply.
3. Disconnect the power cord.
4. If applicable, disconnect the network cable.

Cleaning the Instrument

 WARNING	<p><i>Disconnect the instrument from the power supply before cleaning.</i></p> <p><i>Use only cleaning agents approved by PerkinElmer.</i></p>
 AVERTISSEMENT	<p><i>Débranchez l'instrument de l'alimentation électrique avant de le nettoyer.</i></p> <p><i>N'utilisez que des agents de nettoyage approuvés par PerkinElmer.</i></p>

- Clean the plastic surfaces, and the source and target plate drawers only. Use ethanol or isopropanol with a lint-free cloth.
- Do not flush or spray clean the instrument. Avoid liquid entry into the inside of the instrument.
- Clean the touch screen with a lint-free cloth. Do not use solvents or other aggressive liquids.
- Do not spray liquids onto the screen or push buttons.
- Do not autoclave the instrument or any parts of it.

Spare Parts and Accessories

CAUTION	<p><i>For reliable operation, use only approved spare parts and accessories. PerkinElmer is not liable if material is used which is not approved by PerkinElmer.</i></p> <p><i>For questions please contact your PerkinElmer Service Representative (see page 3).</i></p>
ATTENTION	<p><i>Pour des opérations fiables, veuillez n'utiliser que des pièces de rechange et des accessoires approuvés. PerkinElmer n'est pas responsable si un matériau est utilisé qui n'est pas approuvé par PerkinElmer.</i></p> <p><i>Pour toute question, veuillez contacter votre représentant de service PerkinElmer (voir page 3).</i></p>

Troubleshooting



Malfunction	Possible Cause	Workaround
Drawers do not open.	On Button at the front not pressed.	Press On Button, wait for button to turn GREEN.
FlexDrop iQ Studio software does not start.	Communication problem.	Shut down tablet and instrument and then restart. Ensure the cable from the instrument is connected to the Surface Pro tablet.
Instrument will not start although On Button is GREEN.	The lid was opened when instrument was turned on.	Close lid and start FlexDrop iQ Studio software.

If the malfunction cannot be solved, contact PerkinElmer Technical Support (see page 3).

Service and Maintenance

It is recommended to schedule a service visit once a year. Only your PerkinElmer Service Representative can perform repairs and maintenance. If you need technical support, please contact PerkinElmer Technical Support (see page 3).

Changing the Fuses

 <p>WARNING</p>	<p><i>Before changing the fuses, please read these Instructions. Before changing the fuse, it is mandatory to disconnect the system from the power supply. Only use fuses approved by the supplier. See page 21.</i></p>
 <p>AVERTISSEMENT</p>	<p><i>Avant de changer les fusibles, veuillez lire ces instructions. Avant de changer les fusibles, il est obligatoire de déconnecter le système de l'alimentation électrique. N'utilisez que des fusibles approuvés par le fournisseur. Voir page 21.</i></p>

The fuse assembly is part of the main switch. The main switch is located on the back of the instrument (see Figure 2 FlexDrop iQ back).

1. Shut down the instrument and disconnect the power cord from the socket before changing the fuses.
2. Use a small screwdriver or another suitable tool to open the fuse cover.
3. Remove both fuses and replace with two new fuses of the same type and rating. Make sure the fuse ratings match the power supply voltage.

The FlexDrop iQ uses the following fuses:

- **100 - 120 VAC:** 5 x 20 mm, 5A
- **200 - 240 VAC:** 5 x 20 mm, 2.5A

Technical Data

Instrument	FlexDrop iQ
Input Voltage:	AC 100-120V, 10A or AC 200-240V, 5A
Rated Frequency:	50/60 Hz
Power Input:	100W (500W max)
Fuses:	(2) 5 x 20 mm, 2,5A (200 - 240 VAC) (2) 5 x 20 mm, 5A (100 - 120 VAC)
Air Pressure Supply:	3 – 10 bar, maximum 10 bars (43 – 145 psi, maximum 145 psi)
Protection Class:	I
Environmental Conditions:	Temperature 64-77°F (18-25°C) Humidity 30-65 % rH
Dimensions L x W x H:	471 x 575 x 378 mm 18.6" x 22.75" x 15"
Weight:	50 kg (111 lbs.)
For Research Use Only. Not for use in diagnostic procedures.	



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