

September 2016

BLU-V[®] System User Manual

For neutralization of DNA of dead organisms



Sample & Assay Technologies

QIAGEN Sample and Assay Technologies

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1. Introduction

Thank you for choosing the BLU-V System. We are confident that this instrument will become an integral part of your laboratory.

Before using the BLU-V System, it is essential that you read this user manual carefully. Following the instructions and safety information in this user manual will ensure safe operation and maintain the system in a safe condition.

1.1 Intended Use of the BLU-V system

The BLU-V System is intended for molecular biology applications. This product is not intended for the diagnosis, prevention, or treatment of a disease.

All due care and attention should be exercised in the handling of the products. We recommend all users of QIAGEN products to adhere to the NIH guidelines that have been developed for recombinant DNA experiments, or to other applicable guidelines.

The BLU-V System allows the neutralization of the DNA of dead organisms through the use of photo-activation on intercalating agents. Neutralizing the DNA of dead organisms allows the downstream detection of DNA of living cells by conventional PCR or real-time PCR.

The BLU-V System is intended for use by professional users trained in molecular biology techniques and the operation of the BLU-V System instrument.

1.2 General Information

1.2.1 Scope of delivery

The delivery includes the following items.

- BLU-V System
- BLU-V Sample Holder
- Power supply cable*

1.2.2 Technical assistance

At QIAGEN, we pride ourselves on the quality and availability of our technical support. Our Technical Services Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of QIAGEN products. If you have any questions or experience any

* For details, see Appendix C.

difficulties regarding the BLU-V System or QIAGEN products in general, do not hesitate to contact us.

QIAGEN customers are a major source of information regarding advanced or specialized uses of our products. This information is helpful to other scientists, as well as to the researchers at QIAGEN. We therefore encourage you to contact us if you have any suggestions about product performance or new applications and techniques.

For technical assistance, contact one of the QIAGEN Technical Services Departments or local distributors (see back cover).

1.2.3 Policy statement

It is the policy of QIAGEN to improve products as new techniques and components become available. QIAGEN reserves the right to change the specifications of products at any time.

In an effort to produce useful and appropriate documentation, we appreciate your comments on this user manual. Please contact QIAGEN Technical Services with any feedback.

1.2.4 Requirements for BLU-V System users


Table 1 covers the general level of competence for the use and servicing of the BLU-V System.


Table 1. Level of competence required for the BLU-V System

Task	Personnel	Training and experience
Routine use	Laboratory technicians or equivalent	Training in molecular biology techniques for laboratory instrument operation
Servicing	QIAGEN Service Specialists only	Trained, certified, and authorized by QIAGEN




2. Safety Information

<p>EN</p>	<p>Before using the BLU-V System, it is essential that you read this user manual carefully. Following the instructions and safety information in this user manual will ensure safe operation and maintain the system in a safe condition.</p> <p>The following types of safety information appear throughout the BLU-V System User Manual.</p>
<p>DE</p>	<p>Bevor das BLU-V System genutzt wird, ist es essentiell das Handbuch sorgfältig zu lesen. Folgen sie den Anweisungen und Sicherheitsinformationen des Handbuches um eine sichere Nutzung des Gerätes zu gewährleisten.</p> <p>Die folgenden Gefahrensymbole zur Sicherheitsinformation tauchen im BLU-V System Handbuch auf.</p>
<p>FR</p>	<p>Avant d'utiliser le BLU-V System, il est impératif de lire attentivement ce manuel et de porter une attention particulière aux informations de sécurité. Afin de garantir un fonctionnement de l'appareil en toute sécurité et de maintenir l'appareil en bon état de marche, il est impératif de suivre les instructions et les informations de sécurité fournies dans le présent manuel d'utilisation.</p> <p>Les types d'informations de sécurité suivants sont fournis tout au long du manuel.</p>

<p>WARNING</p> 	<p>The term WARNING is used to inform you about situations that could result in personal injury to you or other persons.</p> <p>Details about these circumstances are given in a box like this one.</p>
<p>DE</p>	<p>WARNING (WARNUNG)</p> <p>WARNUNG weist auf Situationen und Umstände hin, die zu einer Verletzung des Benutzers oder anderer Personen führen können.</p> <p>Nähere Angaben zu der Art der Gefährdung und der Vermeidung solcher Situationen werden in einem Textfeld wie diesem neben der Warnung gemacht.</p>

FR	<p>WARNING (DANGER)</p> <p>Le terme WARNING (DANGER) est utilisée pour avertir des situations pouvant occasionner des dommages corporels à l'utilisateur ou à d'autres personnes.</p> <p>Les détails sur ces circonstances figurent dans un encadré semblable à celui-ci.</p>
<p>CAUTION</p> 	<p>The term CAUTION is used to inform you about situations that could result in damage to the instruments or other equipment.</p> <p>Details about these circumstances are given in a box like this one.</p>
DE	<p>CAUTION (ACHTUNG)</p> <p>ACHTUNG weist auf Situationen und Umstände hin, die zu einer Beschädigung des Gerätes führen können. Um einen Geräteschaden zu vermeiden, muss die genannte Anleitung unbedingt befolgt werden.</p> <p>Nähere Angaben zu der Art der Gefährdung und der Vermeidung solcher Situationen werden in einem Textfeld wie diesem gemacht.</p>
FR	<p>CAUTION (ATTENTION)</p> <p>Le terme CAUTION (Attention) est utilisé pour signaler les situations susceptibles de provoquer des détériorations de l'instrument ou d'autre matériel.</p> <p>Les détails sur ces circonstances figurent dans un encadré semblable à celui-ci.</p>
EN	<p>The advice given in this manual is intended to supplement, not supersede, the normal safety requirements prevailing in the user's country.</p>
DE	<p>Die Hinweise in diesem Handbuch sind ergänzend, und ersetzen nicht die Standard-Sicherheitsanforderungen die im jeweiligen Land vorherrschen.</p>
FR	<p>Les conseils donnés dans ce manuel ont pour but de venir compléter les exigences de sécurité habituelles en vigueur dans le pays de l'utilisateur et non de s'y substituer.</p>

2.1 Proper use


<p>WARNING/ CAUTION</p> 	<p>Risk of personal injury and material damage [W1]</p> <p>Improper use of the BLU-V System instrument may cause personal injury or damage to the instrument.</p> <p>The instrument must only be operated by qualified personnel.</p>
<p>DE</p>	<p>Verletzungsgefahr und Beschädigung des Gerätes</p> <p>Die unsachgemäße Bedienung des BLU-V Systems kann zu einer Verletzung des Benutzers oder zur Beschädigung des Gerätes führen.</p> <p>Die Bedienung des BLU-V Systems darf nur durch qualifiziertes Personal, das entsprechend geschult wurde, erfolgen.</p>
<p>FR</p>	<p>Risque de dommages corporels et matériels</p> <p>L'utilisation non convenable du BLU-V System peut causer des blessures ou des détériorations de l'instrument.</p> <p>Le BLU-V System ne doit être utilisé que par du personnel qualifié qui a été formé de façon appropriée.</p>
<p>CAUTION</p> 	<p>Damage to the instrument [C1]</p> <p>Never put the sample tubes directly into the holes in the BLU-V instrument. Always use the BLU-V Sample Holder to put sample tubes into the instrument.</p>
<p>DE</p>	<p>Beschädigung des Gerätes</p> <p>Setzen Sie nie die Probengefäße direkt in das BLU-V Gerät. Benutzen Sie immer den Probenhalter (BLU-V sample holder), um die Proben in das Gerät zu setzen.</p>
<p>FR</p>	<p>Détérioration de l'appareil</p> <p>Ne pas placer les échantillons directement dans emplacements pour tubes du BLU-V system. Toujours utiliser le support d'échantillon du BLU-V system prévu à cet effet pour placer les échantillons dans l'instrument.</p>
<p>CAUTION</p> 	<p>Damage to the instrument [C2]</p> <p>Avoid spilling water or chemicals onto the BLU-V System instrument. Damage caused by water or chemical spillage will void your warranty.</p>

DE	Beschädigung des Gerätes Vermeiden Sie es, Wasser oder Chemikalien auf dem BLU-V System zu verschütten. Durch verschüttetes Wasser oder verschüttete Chemikalien verursachte Geräteschäden sind nicht durch die Garantie abgedeckt.
FR	Détérioration de l'appareil Eviter de renverser de l'eau ou des substances chimiques sur le BLU-V System. Tout dommage causé par de l'eau ou des produits chimiques mettra fin à la garantie.
EN	In case of emergency, switch off the BLU-V System at the power switch and unplug the power cord from the power outlet.
DE	In Falle eines Notfalls, schalten Sie das BLU-V System am Hauptschalter aus und ziehen das Stromkabel aus der Steckdose.
FR	En cas d'urgence, éteignez le BLU-V system à l'aide de l'interrupteur d'alimentation puis débranchez le câble d'alimentation de la prise de courant.

2.2 Electrical safety

EN	If operation of the BLU-V System is interrupted in any way (e.g., due to interruption of the power supply or a mechanical error), first switch off the instrument using the power switch, then disconnect the electrical cord from the power outlet. Contact QIAGEN Technical Services after such an incident.
DE	Im Falle eines Funktionsausfalles des BLU-V Systems (z.B. durch Unterbrechung der Stromzufuhr, oder einem mechanischen Fehler), schalten Sie das Gerät zunächst am Stromschalter aus, und entfernen Sie dann das Stromkabel aus der Steckdose.

FR	<p>Si le fonctionnement du BLU-V system est interrompu pour quelque raison que ce soit (coupure d'alimentation ou problème mécanique), éteignez le BLU-V system à l'aide de l'interrupteur d'alimentation puis débranchez le câble d'alimentation de la prise de courant. Contactez le Service Technique de QIAGEN si un incident de ce type survient.</p>
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<p>WARNING</p> 	<p>Electrical hazard [W2]</p> <p>Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument unsafe.</p> <p>Intentional interruption is prohibited.</p> <p>Lethal voltages inside the instrument</p> <p>When the instrument is connected to line power, its terminals may be live. Opening covers or removing parts is likely to expose live parts.</p>
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DE	<p>Gefährdung durch Elektrizität</p> <p>Das Gerät muss zum Betrieb immer geerdet sein.</p> <p>Es ist verboten, die Schutzleiter im Gerät oder in der Netzzuleitung zu trennen oder zu entfernen.</p> <p>Gefährliche Spannung im Gerät</p> <p>Auch in ausgeschaltetem Zustand kann an einigen Stellen im Gerät Netzspannung anliegen, wenn das Gerät am Stromnetz angeschlossen ist. Das Öffnen oder Entfernen von Gehäuseteilen kann diese stromführenden Teile freilegen.</p>
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FR	<p>Risque d'électrocution</p> <p>Toute interruption du conducteur de protection à l'intérieur ou à l'extérieur de l'instrument, ou déconnexion du raccord du conducteur de protection (terre) peut rendre l'instrument dangereux. Il est interdit d'interrompre volontairement ce conducteur.</p> <p>Présence de tensions mortelles dans l'instrument</p> <p>Lorsque l'instrument est relié au secteur, les raccords peuvent être sous tension, et des parties sous tension peuvent être découvertes en ouvrant des capots ou en retirant des pièces (à l'exception de celles auxquelles il est possible d'accéder manuellement).</p>
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<p>EN</p>	<p>To ensure satisfactory and safe operation of the BLU-V System:</p> <ul style="list-style-type: none"> ■ The line power cord must be connected to a line power outlet that has a protective conductor (earth/ground). ■ The instrument must not be operated with the cover removed. ■ If liquid has spilled on the instrument, switch it off, disconnect it from the power outlet, and contact QIAGEN Technical Services. <p>If the BLU-V System becomes electrically unsafe, prevent other personnel from operating it, and contact QIAGEN Technical Services. The instrument may be electrically unsafe if:</p> <ul style="list-style-type: none"> ■ The instrument or the power cord appears to be damaged. ■ The instrument has been stored under unfavorable conditions for a prolonged period.
<p>DE</p>	<p>Um eine erfolgreiche und sichere Handhabung des BLU-V systems zu gewährleisten:</p> <ul style="list-style-type: none"> ■ Das Stromkabel muss an einem Stecker mit Schutzleiter (Erde) angeschlossen sein. ■ Das Gerät darf nicht mit offenem Deckel betrieben werden. ■ Wenn Flüssigkeiten auf dem Gerät verschüttet wurden, schalten Sie das Gerät aus, ziehen Sie das Stromkabel und kontaktieren Sie den QIAGEN Technical Service. <p>Wenn das BLU-V System elektrisch unsicher wird, verhindern Sie das andere Personen es benutzen und kontaktieren Sie den QIAGEN Technical Service. Das Gerät ist elektrisch unsicher wenn:</p> <ul style="list-style-type: none"> ■ Das Gerät oder das Stromkabel beschädigt ist. ■ Das Gerät unter unsachgemäßen Bedingungen für längere Zeit gelagert wurde.

FR	<p>Afin que le BLU-V System fonctionne de manière satisfaisante et en toute sécurité, conformez-vous aux conseils suivants :</p> <ul style="list-style-type: none"> ■ Le câble d'alimentation doit être relié à une prise d'alimentation disposant d'un conducteur de protection (terre/masse). ■ Ne faites pas fonctionner l'appareil si des capots ou des pièces ont été retirés. ■ Si du liquide a été renversé à l'intérieur de l'appareil, éteignez-le et débranchez-le de la prise d'alimentation, puis contactez le support technique de QIAGEN. <p>Si l'appareil devient dangereux sur le plan électrique, empêchez d'autres membres du personnel de l'utiliser et contactez le support technique de QIAGEN ; l'appareil peut être dangereux électriquement si :</p> <ul style="list-style-type: none"> ■ celui-ci ou le câble d'alimentation semble endommagé ; ■ il a été stocké dans des conditions défavorables pendant une longue période.
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2.3 Environment


Operating conditions

WARNING 	Explosive atmosphere [W3]
	The BLU-V System is not designed for use in an explosive atmosphere.
DE	Explosionsfähige Atmosphären
	Das BLU-V System darf nicht in explosionsfähigen Atmosphären betrieben werden.
FR	Atmosphère explosive
	Le BLU-V System n'est pas conçu pour fonctionner dans une atmosphère explosive.

<p>WARNING</p> 	<p>Risk of overheating [W4]</p> <p>To ensure proper ventilation, maintain a minimum clearance of 10 cm (4 in.) to the air inlet fan as well as the ventilation slits situated on both sides of the instrument.</p> <p>Slits and openings that ensure the ventilation of the BLU-V System must not be covered.</p>
<p>DE</p>	<p>Überhitzung des Gerätes</p> <p>Zur Sicherstellung einer ausreichenden Belüftung des BLU-V Systems muss ein Mindestabstand von 10 cm an den Seiten und an der Rückseite des Gerätes eingehalten werden.</p> <p>Lüftungsschlitze und -öffnungen des Gerätes nicht abdecken.</p>
<p>FR</p>	<p>Risque de surchauffe</p> <p>Laisser un espace d'au moins 10 cm sur les côtés et à l'arrière du BLU-V System pour assurer une ventilation efficace.</p> <p>Les grilles et prises d'air assurant la ventilation du BLU-V System ne doivent pas être couvertes.</p>

2.4 Biological safety

<p>EN</p>	<p>Use safe laboratory procedures as outlined in publications such as <i>Biosafety in Microbiological and Biomedical Laboratories</i>, HHS (www.cdc.gov/od/ohs/biosfty/biosfty.htm).</p>
<p>DE</p>	<p>Nutzen sie sichere Laborpraktiken wie beschrieben in "<i>Biosafety in Microbiological and Biomedical Laboratories, HHS</i>" (www.cdc.gov/od/ohs/biosfty/biosfty.htm).</p>
<p>FR</p>	<p>Lors de la manipulation de substances biologiques, employer des procédures de laboratoire sûres comme décrit dans des publications telles que <i>Biosafety in Microbiological and Biomedical Laboratories</i>, HHS (www.cdc.gov/od/ohs/biosfty/biosfty.htm).</p>

<p>WARNING</p> 	<p style="text-align: right;">[W5]</p> <p>Samples containing infectious agents</p> <p>Some samples used with the BLU-V System may contain infectious agents. Handle such samples in accordance with the required safety regulations.</p> <p>The responsible person(s) (e.g., laboratory manager) must take the necessary precautions to ensure that the workplace is safe and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents, as defined in the applicable Safety Data Sheets (SDSs) or OSHA*, ACGIH†, or COSHH‡ documents.</p> <p>Venting of fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.</p>
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*OSHA: Occupational Safety and Health Administration (United States of America).

† ACGIH: American Conference of Government Industrial Hygienists (United States of America).

‡ COSHH: Control of Substances Hazardous to Health (United Kingdom).

<p>DE</p>	<p>Infektiöses Probenmaterial</p> <p>Proben, die mit Hilfe dieses Gerätes prozessiert werden, können infektiöse Agenzien enthalten. Die Probenhandhabung sollte aus diesem Grund mit größter Vorsicht und gemäß den anzuwendenden Sicherheitsbestimmungen erfolgen. Es sollten immer Sicherheitsbrille, zwei Paar Handschuhe und ein Laborkittel getragen werden.</p> <p>Der Betreiber der Anlage ist für die Gewährleistung der Sicherheit am Arbeitsplatz verantwortlich. Er hat sicherzustellen, dass die Bediener des Gerätes ausreichend geschult sind und der Umgang mit infektiösen Agenzien nicht das in den Sicherheitsdatenblättern oder in anderen zu beachtenden Dokumenten festgelegte Ausmaß überschreitet.</p> <p>Bei der Behandlung von Abluft und bei der Abfallbeseitigung sind alle gesetzlichen Regelungen zur Gesundheit und Sicherheit auf nationaler, regionaler und lokaler Ebene zu berücksichtigen.</p>
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FR	Echantillons contenant des agents infectieux <p>Certains échantillons utilisés avec cet instrument peuvent contenir des agents infectieux. Manipuler ce type d'échantillon avec le plus grand soin et en accord avec les règles de sécurité requises.</p> <p>Toujours porter des lunettes de protection, deux paires de gants et une blouse de laboratoire.</p> <p>La personne responsable (par exemple le Chef du laboratoire) doit prendre les précautions nécessaires pour assurer la sécurité de l'environnement du poste de travail et pour être sûr que les opérateurs de l'instrument sont suffisamment formés et non exposés à des quantités dangereuses d'agents infectieux comme défini dans "Material Safety Data Sheets (MSDS)" ou des documents "OSHA*", ACGIH† ou COSHH‡".</p> <p>L'évacuation des vapeurs et déchets doit être conforme à tous règlements et dispositions légales - au plan national, départemental et local - concernant la santé et la sécurité.</p>
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2.5 Chemicals

<p>WARNING</p> 	<p style="text-align: right;">[W6]</p> <p>Hazardous chemicals</p> <p>Some chemicals used with the BLU-V System may be hazardous or may become hazardous after completion of the protocol run.</p> <p>Always wear safety glasses, gloves, and a lab coat.</p> <p>The responsible person(s) (e.g., laboratory manager) must take the necessary precautions to ensure that the workplace is safe and that the instrument operators are suitably trained and not exposed to hazardous levels of toxic substances (chemical or biological), as defined in the applicable Safety Data Sheets (SDSs) or OSHA*, ACGIH†, or COSHH‡ documents.</p> <p>Venting of fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.</p>
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<p>DE</p>	<p>Gefährliche Chemikalien</p> <p>Einige der in Verbindung mit diesem Gerät verwendeten Chemikalien sind gesundheitsgefährdend oder können nach Beendigung eines Protokoll-Durchlaufes gesundheitsgefährdend werden.</p> <p>Es sollten immer Sicherheitsbrille, Handschuhe und ein Laborkittel getragen werden.</p> <p>Der Betreiber der Anlage ist für die Gewährleistung der Sicherheit am Arbeitsplatz verantwortlich. Er hat sicherzustellen, dass die Bediener des Gerätes ausreichend geschult sind und nicht gesundheitsgefährdenden Konzentrationen toxischer Substanzen (chemischer oder biologischer) ausgesetzt sind, so wie dies in den Sicherheitsdatenblättern oder in anderen zu beachtenden Dokumenten festgelegt ist.</p> <p>Bei der Behandlung von Abluft und bei der Abfallbeseitigung sind alle gesetzlichen Regelungen zur Gesundheit und Sicherheit auf nationaler, regionaler und lokaler Ebene zu berücksichtigen.</p>
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FR	Substances chimiques dangereuses <p>Certaines substances chimiques utilisées avec cet instrument peuvent être dangereuses ou peuvent le devenir après que le protocole ait été effectué.</p> <p>Toujours porter des lunettes de protection, paire de gants et une blouse de laboratoire.</p> <p>La personne responsable (par exemple le Chef du laboratoire) doit prendre les précautions nécessaires pour assurer la sécurité de l'environnement du poste de travail et pour être sûr que les opérateurs de l'instrument sont suffisamment formés et non exposés à des quantités dangereuses de substances toxiques (chimique ou biologique) comme défini dans "Material Safety Data Sheets (MSDS)" ou des documents "OSHA*", ACGIH† ou COSHH‡". L'évacuation des vapeurs et déchets doit être conforme à tous règlements et dispositions légales - au plan national, départemental et local - concernant la santé et la sécurité.</p>
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‡ COSHH: Control of Substances Hazardous to Health (United Kingdom).

2.6 Safety maintenance





<p>CAUTION</p> 	<p>Damage to the instrument [C3]</p> <p>Do not use spray bottles containing alcohol or disinfectant to clean the surface of the BLU-V System instrument or its parts. Spray bottles should be used only to clean items that have been removed from the instrument.</p>
<p>DE</p>	<p>Beschädigung des Gerätes</p> <p>Verwenden Sie keine Sprühflaschen die Alkohol oder Desinfektionsmittel enthalten, um die Oberflächen des BUL-V Gerätes zu reinigen. Sprühflaschen dürfen nur zur Reinigung der abgenommener Teile genutzt werden.</p>
<p>FR</p>	<p>Détérioration de l'appareil</p> <p>Ne pas pulvériser de liquides contenant de l'alcool ou désinfectant pour nettoyer les surfaces du BLU-V system ou de ses composants. Les pulvérisateurs peuvent être utilisés uniquement pour nettoyer des composants qui ont été préalablement retirés de l'instrument.</p>
<p>WARNING</p> 	<p>Risk of electric shock [W7]</p> <p>Do not open the panels on the instruments.</p> <p>Risk of personal injury and material damage</p> <p>Only perform maintenance that is specifically described in this user manual.</p>
<p>DE</p>	<p>Gefährdung durch Elektrizität</p> <p>Unter keinen Umständen darf das Gehäuse des BLU-V Systems geöffnet werden.</p> <p>Verletzungsgefahr und Beschädigung des Gerätes</p> <p>Keine Pflege- und Wartungsarbeiten durchführen, die nicht in diesem Handbuch beschrieben sind.</p>





FR	<p>Risque d'électrocution</p> <p>Ne pas ouvrir les panneaux du BLU-V System.</p> <p>Risque de dommages personnels et matériels</p> <p>Réaliser uniquement la maintenance décrite spécifiquement dans ce manuel.</p>
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2.7 Waste disposal

EN	<p>Used consumables, such as sample tubes, may contain hazardous chemicals or infectious agents from the purification process. Such waste must be collected and disposed of properly in accordance with local safety regulations.</p> <p>For disposal of waste electrical and electronic equipment (WEEE) see Appendix A.</p>
DE	<p>Abfallentsorgung</p> <p>Gebrauchte Verbrauchsmittel, wie Probengefäße, können gesundheitsgefährdende Chemikalien oder infektiöse Bestandteile beinhalten. Diese Art von Abfällen muss sachgemäß der lokalen Sicherheitsregeln gesammelt und entsorgt werden.</p> <p>Bezüglich der Entsorgung elektrischer Geräte siehe Appendix A.</p>
FR	<p>Mise au rebut des déchets</p> <p>Les consommables et flacons utilisés peuvent contenir des agents chimiques ou infectieux dangereux. Ces déchets doivent être convenablement collectés et mis au rebut conformément aux règles de sécurité locales.</p> <p>Pour savoir comment mettre au rebut le BLU-V system, voir l'annexe A.</p>

2.8 Symbols on the BLU-V System

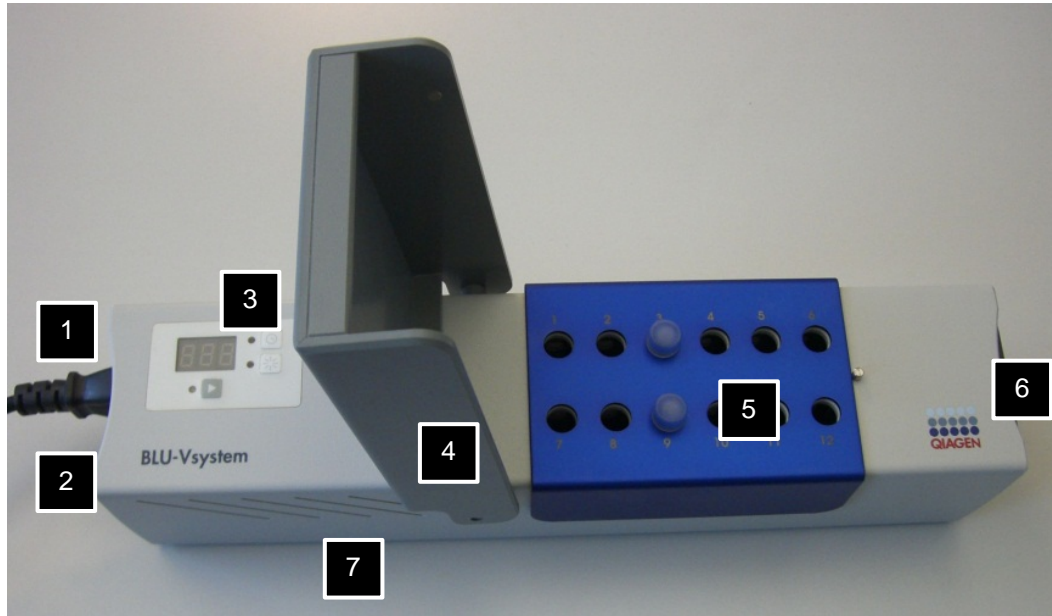
Symbol	Location	Language	Description
SN	Type plate on the bottom of the instrument	EN	Serial number
	Plakette auf der Unterseite des Gerätes	DE	Seriennummer
	Plaque au-dessous de l'appareil	FR	Numéro de série
	Type plate on the bottom of the instrument	EN	Safety relevant circuit breaker
	Plakette auf der Unterseite des Gerätes	DE	Sicherheitsrelevanter Stromunterbrecher
	Plaque au-dessous de l'appareil	FR	Fusible électrique de sécurité
	Type plate on the bottom of the instrument	EN	Legal manufacturer
	Plakette auf der Unterseite des Gerätes	DE	Hersteller i. S. d. Gesetzes
	Plaque au-dessous de l'appareil	FR	Fabricant légal
	Type plate on the bottom of the instrument	EN	Waste Electrical and Electronic Equipment (WEEE)
	Plakette auf der Unterseite des Gerätes	DE	WEEE-Kennzeichnung (Zertifizierung gemäß europäischer Richtlinien bzw. Elektro- und Elektronik-Altgeräte-Verordnung)
	Plaque au-dessous de l'appareil	FR	Symbole DEEE pour l'Europe
	Type plate on the bottom of the instrument	EN	CE mark for Europe
	Plakette auf der Unterseite des Gerätes	DE	CE-Zeichen

Symbol	Location	Language	Description
	Plaque au-dessous de l'appareil	FR	Marquage CE
	Type plate on the bottom of the instrument	EN	FCC mark of the United States Federal Communications Commission
	Plakette auf der Unterseite des Gerätes	DE	FCC Markierung der Federal Communications Kommission der USA
	Plaque au-dessous de l'appareil	FR	Marquage FCC de la commission fédérale des communications des Etats Unis
	Type plate on the bottom of the instrument	EN	RCM mark for Australia (supplier identification N17965)
	Plakette auf der Unterseite des Gerätes	DE	RCM-Kennung für Australien und Neuseeland (Herstellerkennung: N17965)
	Plaque au-dessous de l'appareil	FR	Marquage RCM pour l'Australie et la Nouvelle-Zélande (identifiant du fournisseur N17965)
	Type plate on the bottom of the instrument	EN	RoHS mark for China (the restriction of the use of certain hazardous substances in electrical and electronic equipment)
	Plakette auf der Unterseite des Gerätes	DE	RoHS Markierung für China (Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten)
	Plaque au-dessous de l'appareil	FR	Marquage RoHS pour la Chine (limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques)
	Type plate on the bottom of the instrument	EN	Consult instructions for use
	Plakette auf der Unterseite des Gerätes	DE	Beachten Sie die Anwendungshinweise
	Plaque au-dessous de l'appareil	FR	Consulter le mode d'emploi

3. General Description

The BLU-V System is a thermally stable instrument that generates a constant and uniform light dosage to allow simultaneous photo-activation of 12 samples in a simple and efficient manner. Its design minimizes intra-and inter-laboratory variability.

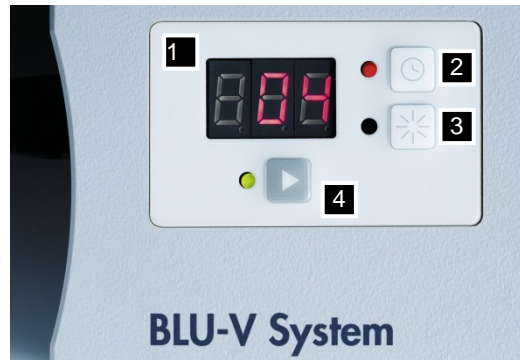
3.1 Features of the BLU-V System



- | | |
|---|------------------------|
| 1 | Socket for power cable |
| 2 | On/off switch |
| 3 | Control panel |
| 4 | Protective shield |
| 5 | BLU-V Sample Holder |
| 6 | Air inlet fan |
| 7 | Air outlet slits |

3.1.1 Control panel

- 1 Numerical display
- 2 Time set button and LED
- 3 Light intensity button and LED
- 4 Start button and operation LED



3.1.2 Protective shield

The protective shield in the operating position.



Note: You may only perform a run when the protection shield is closed. A sensor detects whether the shield is closed or not.

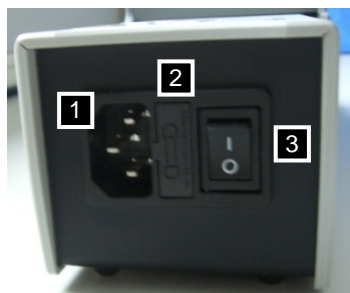
3.1.3 Air inlet fan

The air inlet fan is located on the right side of the instrument.



3.1.4 Power supply

- 1 Socket for power cable
- 2 Fuse box
- 3 ON/OFF switch




Note: Details on changing the fuse are given in the “Maintenance” section.

3.1.5 Power cable

The BLU-V System is equipped with a power cable with a plug suitable for the destination country.

3.1.6 BLU-V Sample Holder

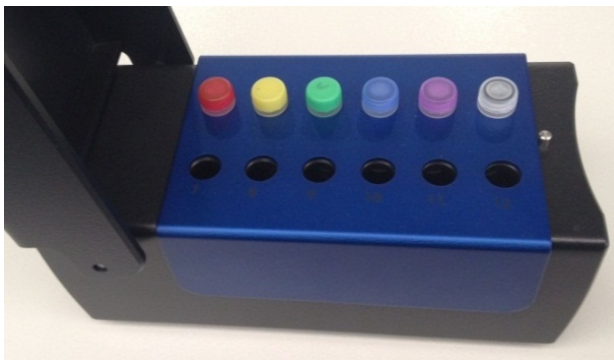
The BLU-V Sample Holder enables the insertion of 12 sample tubes, each with a tube volume of up to 2 ml into the BLU-V System instrument.

CAUTION 	<p>Damage to the instrument [C1]</p> <p>Never put the sample tubes directly into the holes in the BLU-V instrument. Always use the BLU-V Sample Holder to put sample tubes into the instrument.</p>
DE	<p>Beschädigung des Gerätes</p> <p>Setzen Sie nie die Probengefäße direkt in das BLU-V Gerät. Benutzen Sie immer den Probenhalter (BLU-V sample holder), um die Proben in das Gerät zu setzen.</p>
FR	<p>Détérioration de l'appareil</p> <p>Ne pas placer les échantillons directement dans emplacements pour tubes du BLU-V system. Toujours utiliser le support d'échantillon du BLU-V system prévu à cet effet pour placer les échantillons dans l'instrument.</p>



3.1.7 Using the BLU-V Incubation Box (optional)

The BLU-V Incubation Box is intended for light-protected incubation of reaction solutions containing photo-reactive reagents. The BLU-V Incubation Box and a second BLU-V Sample Holder for use with it must be ordered separately. For details, see Appendix B: BLU-V System Accessories.



Tubes in BLU-V Sample Holder within BLU-V Incubation Box



BLU-V Incubation Box with closed protective shield

The procedure for use of the BLU-V Incubation Box is as follows:

1. **Set up the reaction solutions in tubes with volumes up to 2 ml.**
2. **Open the BLU-V Incubation Box and insert the BLU-V Sample Holder.**
3. **Place the tubes into the BLU-V Sample Holder.**
4. **Close the protective shield and keep it closed during incubation.**
5. **When incubation is complete, the BLU-V Sample Holder containing the tubes can be transferred into the BLU-V System.**

4. Installation

4.1 Unpack the instrument



The packaging of the BLU-V System can be stored for reuse.

4.2 Site requirements

Place the BLU-V System instrument on a level, stable surface, ideally a firmly secured bench top, near an earthed/grounded electrical outlet. Unobstructed access to the electrical outlet to which the instrument is connected must be ensured at all times. Allow at least 10 cm (4 in) of clearance on all sides of the unit for proper ventilation. While operating, make sure that the instrument does not touch other objects. Locate it away from vibration-sensitive instruments, such as an analytical balance.

4.3 Power cable connection

The socket for connecting the power cable is on the left of the BLU-V System instrument.

1. **Connect the supplied power cord to the socket on the instrument.**
2. **Plug the instrument into the electrical outlet.**
3. **Switch the instrument ON.**
4. **The green LED beside the start button on the control panel flashes green when the instrument is ON.**

When the BLU-V System is not in use for a longer period of time, we recommend disconnecting the power cable.

4.4 Grounding requirements

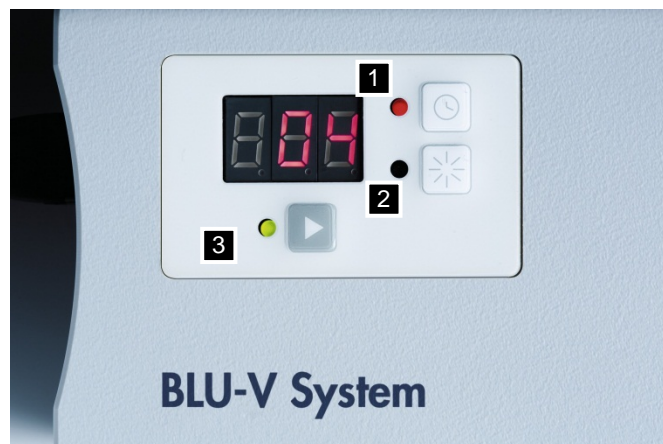
To protect operating personnel, the instrument is equipped with a 3-conductor AC power cord. To preserve this protection feature, do not operate the instrument from an AC power outlet that has no ground (earth) connection.

For replacement of the 3-conductor AC power cord, contact QIAGEN Technical Services for an authorized spare part.

4.5 LED status lights

There are three light emitting diode (LED) status lights on the control panel.

- 1 This LED is on and red when the display shows the selected time, and this setting can be changed by pushing the time set button.
- 2 This LED is on and red when the display shows the selected light intensity and this setting can be changed by pushing the light intensity button
- 3 This LED flashes green when the instrument is switched ON. It changes to red and stops flashing when the start button is pressed



5. Operating Procedures


5.1 Preparation


Before switching on the instrument:

1. **Prepare the reaction solutions.**
2. **Insert the reaction tubes into the BLU-V Sample Holder.**
3. **Place the BLU-V Sample Holder with the sample tubes into the BLU-V System.**

Note: If the BLU-V Incubation Box with the BLU-V Sample Holder has been used, this holder can be directly transferred into the instrument.

4. **Close the protective shield.**

CAUTION 	<p>Damage to the instrument [C1]</p> <p>Never put the sample tubes directly into the holes in the BLU-V instrument. Always use the BLU-V Sample Holder to put sample tubes into the instrument.</p>
DE	<p>Beschädigung des Gerätes</p> <p>Setzen Sie nie die Probengefäße direkt in das BLU-V Gerät. Benutzen Sie immer den Probenhalter (BLU-V sample holder), um die Proben in das Gerät zu setzen.</p>
FR	<p>Détérioration de l'appareil</p> <p>Ne pas placer les échantillons directement dans emplacements pour tubes du BLU-V system. Toujours utiliser le support d'échantillon du BLU-V system prévu à cet effet pour placer les échantillons dans l'instrument.</p>

<p>WARNING</p> 	<p>Risk of overheating [W4]</p> <p>To ensure proper ventilation, maintain a minimum clearance of 10 cm (4 in.) to the air inlet fan as well as the ventilation slits situated on both sides of the instrument.</p> <p>Slits and openings that ensure the ventilation of the BLU-V System must not be covered.</p>
<p>DE</p>	<p>Überhitzung des Gerätes</p> <p>Zur Sicherstellung einer ausreichenden Belüftung des BLU-V Systems muss ein Mindestabstand von 10 cm an den Seiten und an der Rückseite des Gerätes eingehalten werden.</p> <p>Lüftungsschlitze und -öffnungen des Gerätes nicht abdecken.</p>
<p>FR</p>	<p>Risque de surchauffe</p> <p>Laisser un espace d'au moins 10 cm sur les côtés et à l'arrière du BLU-V System pour assurer une ventilation efficace.</p> <p>Les grilles et prises d'air assurant la ventilation du BLU-V System ne doivent pas être couvertes.</p>

5.1.1 Setting the time

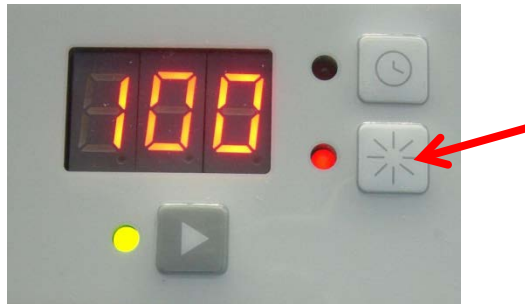


- The display shows the selected time in minutes.
- The default setting of the timer when the instrument is first used is 15 minutes.
- The time setting can be changed by pushing the time set button until the required value is reached. It can be pushed step by step or continuously. The time increments are 1 minute each.
- The maximum possible time is 60 minutes. The time setting is a cyclic push button — after 60, it begins again with 1.
- Adjust the time settings based on the recommendations given in the corresponding BLU-V Kit handbooks.

- When the start button is pressed, the entered time disappears and the count starts at zero.

Note: The setting of the last completed run is saved as the new default.

5.1.2 Setting the light intensity



- Press the light intensity button to set the internal LED light intensity.
- The default light intensity is 100%.
- The light intensity setting can be changed by pushing the light intensity button until the required value is reached. The increments are 10% each.
- The light intensity button is a cyclic push button — after 100%, it begins again with 10%.
- Adjust the light intensity settings based on the recommendations given in the corresponding BLU-V Kit handbooks. For standard illumination settings keep the light power at 100%.

Note: The setting of the last completed run is saved as the new default.

5.1.3 Using the protective shield

- Close the protective shield before starting the run.
- Keep the protective shield closed until the run is completed.

If the protective shield is opened during a run, the instrument will interrupt automatically and the photo-activation LEDs will switch off. The time will also stop. The run and the time will only continue when the protective shield is closed again.

5.2 Performing the run


1. To start the run, press the start button. The color of the indicator LED will change from green to red. The time display will show the elapsed time from the beginning of the operation in minutes.

- 2. Throughout the run, the indicator LED will be red to show that the internal LEDs are working.**
- 3. When the run time is complete, the internal LEDs are shut off, but the indicator LED remains red and the fan stays on to cool the instrument.**
- 4. After 30 seconds the indicator LED will change from red to flashing green and the set time is displayed again, open the protective shield and remove the BLU-V Sample Holder with the sample tubes.**
- 5. Keep the instrument on until the fan stops. This helps to cool the instrument. It takes around 30 seconds.**
- 6. The instrument is ready for a new set of samples when the fan stops.**

6. Maintenance

6.1 Cleaning procedure

Disconnect the BLU-V System from the power supply for cleaning. Use a lightly moistened cloth or an antistatic cloth. Do not use cleaning agents or abrasive solvent products.

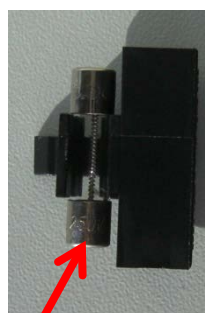
<p>CAUTION</p> 	<p>Damage to the instrument [C3]</p> <p>Do not use spray bottles containing alcohol or disinfectant to clean the surface of the BLU-V System instrument or its parts. Spray bottles should be used only to clean items that have been removed from the instrument.</p>
<p>DE</p>	<p>Beschädigung des Gerätes</p> <p>Verwenden Sie keine Sprühflaschen die Alkohol oder Desinfektionsmittel enthalten, um die Oberflächen des BUL-V Gerätes zu reinigen. Sprühflaschen dürfen nur zur Reinigung der abgenommener Teile genutzt werden.</p>
<p>FR</p>	<p>Détérioration de l'appareil</p> <p>Ne pas pulvériser de liquides contenant de l'alcool ou désinfectant pour nettoyer les surfaces du BLU-V system ou de ses composants. Les pulvérisateurs peuvent être utilisés uniquement pour nettoyer des composants qui ont été préalablement retirés de l'instrument.</p>

6.2 Replacing the main fuse

To replace the main fuse, follow this procedure.



A



B

1. Switch the instrument OFF.

- 2. Remove the power cord from the socket.**
- 3. Remove the fuse holder (indicated by the red arrow A).**
- 4. Remove the fuse (indicated by the red arrow B) from the fuse holder.**
- 5. Insert the new fuse and insert the fuse holder into the instrument.**

Specifications of the fuse are given in Appendix A "Technical data".

Appendix A

Technical Data

QIAGEN reserves the right to change specifications at any time.

Environmental conditions

Operating conditions

Power range	100–240 V AC Mains supply voltage fluctuations must not exceed +/- 10% of nominal supply voltages
Frequency range	50/60 Hz
Fuse	T2A/250V Time-Delay
Maximum power	60 W
Overvoltage category	II
Air temperature	15–32°C (59–89.6°F)
Relative humidity	15–75% (noncondensing) Maximum of 75% relative humidity for temperatures up to 31°C (88°F), decreasing linearly to 50% humidity at 32°C (89.6°F)
Altitude	Up to 2000 m (6500 ft.)
Place of operation	For indoor use only
Pollution degree	2

Transportation conditions

Air temperature	–25°C to 60°C (–13°F to 140°F) in manufacturer's packaging
Relative humidity	Maximum of 75% (noncondensing)

Storage conditions

Air temperature	5°C to 40°C (41°F to 104°F) in manufacturer's packaging
Relative humidity	Maximum of 85% (noncondensing)

Dimensions and Weight

Dimensions	Width: 355 mm (14 in.)
	Height: 83 mm (3.3 in.)
	Depth: 90 mm (3.5 in.)
Weight	1.2 kg (2.65 lb.)

Waste Electrical and Electronic Equipment

This section provides information about disposal of waste electrical and electronic equipment by users.

The crossed-out wheeled bin symbol (see below) indicates that this product must not be disposed of with other waste; it must be taken to an approved treatment facility or to a designated collection point for recycling, according to local laws and regulations.

The separate collection and recycling of waste electronic equipment at the time of disposal helps to conserve natural resources and ensures that the product is recycled in a manner that protects human health and the environment.



Recycling can be provided by QIAGEN upon request at additional cost. In the European Union, in accordance with the specific WEEE recycling requirements and where a replacement product is being supplied by QIAGEN, free recycling of its WEEE-marked electronic equipment is provided.

To recycle electronic equipment, contact your local QIAGEN sales office for the required return form. Once the form is submitted, you will be contacted by QIAGEN either to request follow-up information for scheduling collection of the electronic waste or to provide you with an individual quote.

FCC declaration

The "United States Federal Communications Commission" (USFCC) (in 47 CFR 15. 105) declared that the users of this product must be informed of the following facts and circumstances.

"This device complies with part 15 of the FCC:

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

"This Class B digital apparatus complies with Canadian ICES-0003."

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules and meets all requirements of the Canadian Interference-Causing Equipment Standard ICES 003 for digital apparatus. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/T.V. technician for help.

QIAGEN GmbH Germany is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connection cables and equipment other than those specified by QIAGEN GmbH, Germany. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Warranty

The BLU-V System instrument has a 24-month warranty period which starts when the final customer purchases it.

The warranty is void when misuse of the equipment can be proved.

Damage or manufacturing faults caused by impacts, chemical or corrosive products, liquids, damp, or other external factors, such as radiation, fire, or inadequate transport are not included.

In addition, the warranty will not apply if the equipment has been handled, repaired, or modified by not qualified or specifically designated personnel.

Appendix B: Declaration of Conformity

Name and address of the legal manufacturer

QIAGEN GmbH
QIAGEN Strasse 1
40724 Hilden
Germany

An up-to-date Declaration of Conformity can be requested from QIAGEN Technical Services.

Appendix C: BLU-V System Accessories

The following accessories are not included in the delivery. State the order number (cat. no.) when ordering the accessory.

Product	Contents	Cat. no.
BLU-V Incubation Box	Box for up to 12 tubes (tube volumes up to 2 ml) for light protection during incubation	9022908
Fuse T2A, 250V	Set of fuses	9240628
Power cord	Power cord for use in Australia	9232548
Power cord	Power cord for use in Switzerland	9232546
Power cord	Power cord for use in India	9243305

The following accessory is included in the delivery and can be ordered separately. State the order number (cat. no.) when ordering the accessory.

Product	Contents	Cat. no.
BLU-V Sample Holder	Sample holder for up to 12 tubes (tube volumes up to 2 ml)	9022909

Appendix D: Related Products

The following related products are not included in the delivery. State the order number (cat. no.) when ordering the accessory.

Product	Contents	Cat. no.
BLU-V Viability PMA Kit	PMA Reagent 2 x 0.7 mg, EB Buffer, RNase-Free water	296015

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services.

Trademarks: QIAGEN[®], Sample to Insight[®], BLU-V[®] (QIAGEN Group). Registered names, trademarks, etc. used in this document, even when not specifically marked as such, are not to be considered unprotected by law.

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Notes

Notes

Notes

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