

IDEXX **ProCyte Dx**^{*} Hematology Analyzer Operator's Guide

Proprietary Rights Notice

Information in this document is subject to change without notice. Companies, names and data used in examples are fictitious unless otherwise noted. No part of this document may be reproduced or transmitted in any form or by any means, electronic, mechanical or otherwise, for any purpose, without the express written permission of IDEXX Laboratories. IDEXX Laboratories may have patents or pending patent applications, trademarks, copyrights or other intellectual or industrial property rights covering this document or subject matter in this document. The furnishing of this document does not give a license to these property rights except as expressly provided in any written license agreement from IDEXX Laboratories.

© 2014 IDEXX Laboratories, Inc. All rights reserved. • 06-0002359-00

*ProCyt Dx, Laminar Flow Impedance, Smart Flags, IDEXX VetLab, IDEXX SmartLink, IDEXX InterLink, Catalyst, Catalyst Dx, IDEXX UA, IDEXX VetStat, VetTest, VetLyte, LaserCyt Dx, Coag Dx, VetCollect, IDEXX VetTrol, SNAP, SNAP cPL, and 4Dx are trademarks or registered trademarks of IDEXX Laboratories, Inc. or its affiliates in the United States and/or other countries. e-CHECK is a trademark or registered trademark of Sysmex Corporation. Vacutainer and Hemoguard are trademarks of Becton, Dickinson and Company. VetAutoread is a trademark of QBC Diagnostics, Inc. Linksys and EtherFast are registered trademarks of Cisco Systems, Inc. All other product and company names and logos are trademarks of their respective holders.



Contents

Preface	v
Safety Precautions	v
International Symbol Descriptions	vi
Other Symbols	viii
Caution Symbols	viii
 A Getting Started	 A-1
Introduction	A-1
What Is a Dot Plot?	A-2
IDEXX VetLab* Station Connectivity	A-5
Components	A-5
Analyzer Status	A-6
Powering the Analyzer On/Off	A-6
Opening/Closing the Sample Drawer	A-7
Standby Mode	A-7
Viewing Analyzer Status Information	A-7
Analysis Parameters	A-7
Compatible Species	A-8
 B Using the ProCytex Dx* Analyzer	 B-1
Overview	B-1
Changing the Tube Adapter	B-1
Analyzing Samples	B-2
Canceling a Run That Has Been Sent to the Analyzer but Not Run	B-5
Viewing Test Results	B-5
Printing Test Results	B-5
Responding to an Alert	B-5
Customizing the Settings	B-5
 C Managing Reagents and Stains	 C-1
Overview	C-1
Connecting a Reagent Kit to the Analyzer	C-1
Changing a Reagent Kit/Stain Pack	C-1
Viewing Reagent/Stain Information	C-4
Reagent Kit Components	C-5
Stain Pack Components	C-6
 D Sample Collection and Preparation	 D-1
Overview	D-1
IDEXX Quality Sample Preparation	D-2

E	Quality Control	E-1
	Overview	E-1
	Quality Control Materials	E-1
	Adding a Quality Control Lot	E-1
	Running Quality Control.....	E-1
	Viewing and Printing Quality Control Results	E-2
	Trending Quality Control Results	E-2
	Viewing Quality Control Lot Information	E-3
F	Maintenance	F-1
	Overview	F-1
	Upgrading the Software.....	F-1
	Running the Daily Standby Procedure	F-1
	Powering Off the Analyzer Weekly	F-2
	Running the Monthly Rinse Procedure.....	F-2
	Cleaning the Case	F-3
	Cleaning the Fan Filter.....	F-3
	Managing Data	F-3
G	Troubleshooting	G-1
	Overview	G-1
	Accessing the ProCytex Dx Diagnostics Screen	G-1
	Analyzer Icon Displays with an Offline Status	G-2
	Analyzer Icon Displays with an Busy Status when a Sample Is Not Being Processed.....	G-2
	Running the Auto Rinse Procedure	G-2
	Running the Waste Chamber Rinse Procedure	G-2
	Running the Flow Cell Rinse Procedure.....	G-3
	Running the Drain Reaction Chamber Procedure.....	G-4
	Running the Drain RBC Isolation Chamber Procedure.....	G-4
	Running the Drain Waste Chamber Procedure	G-4
	Running the Reset Air Pump Procedure.....	G-5
	Running the Reset Aspiration Motor Procedure.....	G-5
	Running the Reset Sheath Motor Procedure.....	G-5
	Running the Reset Tube Motor Procedure	G-5
	Running the Reset WB Motor Procedure	G-5
	Running the Remove Clog Procedure.....	G-6
	Running the Clear Pinch Valve Procedure.....	G-6
	Smart Flags*.....	G-7
H	Appendices	H-1
	Installing the ProCytex Dx* Analyzer.....	H-1
	Technical Specifications	H-4
	IDEXX Technical Support Contact Information	H-7

Preface

Serving veterinarians throughout the world, IDEXX Laboratories understands that medical content, including interpretation of diagnostic results and medical protocols may vary from country to country. A medical review board has approved the content presented in this document.

IDEXX has more than 40 reference laboratories worldwide employing over 100 veterinarians. If you have any questions about the medical content or interpretation of results in this document, please contact IDEXX Laboratories.

Safety Precautions

The IDEXX ProCytex Dx* Hematology Analyzer weighs approximately 55 pounds (25 kg). It may require multiple people to lift the instrument. Be sure to use a table or desk that can support the weight of the analyzer.

Position the analyzer so that the power switch and power cord are easily accessible.

DO NOT stack other equipment or containers on top of the analyzer.

Keep analyzer away from sources of heat or flames.

DO NOT place or operate the analyzer near x-ray equipment, photocopiers, or other devices that generate static or magnetic fields.

PROTECT your equipment from damp conditions or wet weather.

Take care not to spill water or other fluids on the unit.

DO NOT use any of the following liquids, abrasives, or aerosol sprays on or near the analyzer, as they may damage the outer case and may adversely affect results:

- Organic solvents
- Ammonia-based cleaners
- Ink markers
- Sprays containing volatile liquids
- Insecticides
- Polish
- Room freshener

The ProCytex Dx analyzer uses a semiconductor laser unit. This laser unit is shielded with a sealed box cover. DO NOT remove the cover. If the cover is removed, the unit is equipped with an interlock system that prevents laser operations. DO NOT look directly into the laser beam.

Line voltage for the ProCytex Dx analyzer is 100–240 V AC, 50/60 Hz. Be sure to plug all equipment into properly grounded electrical outlets.

Use only the power cable supplied.

Disconnect the power cable:

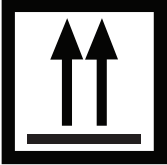
- If the cable becomes frayed or otherwise damaged.
- If anything is spilled onto the analyzer.
- If your analyzer is exposed to excessive moisture.
- If your analyzer is dropped or the case has been damaged.

The ProCyte Dx analyzer should only be used as described in this guide. Failure to follow these instructions may adversely affect results as well as the safety features of the analyzer.

International Symbol Descriptions

International symbols are often used on packaging to provide a pictorial representation of particular information related to the product (such as expiration date, temperature limitations, batch code, etc.). IDEXX Laboratories has adopted the use of international symbols on our analyzers, product boxes, labels, inserts, and manuals in an effort to provide our users with easy-to-read information.

Symbol	Description	Symbol	Description
	Use by A utiliser avant Verwendbar bis Usare entro Usar antes de 使用期限		Temperature limitation Température limite Zulässiger Temperaturbereich Temperatura limite Limitación de temperatura 保存温度(下限)
	Batch code (Lot) Code de lot (Lot) Chargenbezeichnung (Partie) Codice del lotto (partita) Código de lote (Lote) ロット番号		Upper limit of temperature Limite supérieure de température Temperaturobergrenze Limite superiore di temperatura Limite superior de temperatura 保存温度(上限)
	Serial number Numéro de série Seriennummer Numero di serie Número de serie シリアル番号		Consult instructions for use Consulter la notice d'utilisation Gebrauchsanweisung beachten Consultare le istruzioni per l'uso Consultar las instrucciones de uso 取扱説明書をご参照ください。
	Catalog number Numéro catalogue Bestellnummer Numero di catalogo Número de catálogo 製品番号		Keep away from sunlight Conserver à l'abri de la lumière Vor direkter Sonneneinstrahlung schützen Mantener alejado de la luz solar Tenere lontano dalla luce diretta del sole 遮光してください。
	Authorized Representative in the European Community Représentant agréé pour la C.E.E. Autorisierte EG-Vertretung Rappresentante autorizzato nella Comunità Europea Representante autorizado en la Comunidad Europea EC内の正規販売代理店		WEEE Directive 2002/96/EC Directive 2002/96/CE (DEEE) WEEE-Richtlinie 2002/96/EG Directiva 2002/96/CE RAEE Direttiva RAEE 2002/96/CE 廃電気電子機器指令 (WEEE Directive 2002/96/EC)
	Manufacturer Fabricant Hersteller Ditta produttrice Fabricante 製造元		Biological risks Risques biologiques Biogefährlich Rischi biologici Riesgos biológicos 生物学的リスク

Symbol	Description	Symbol	Description
	Caution, consult accompanying documents Attention, consulter les documents joints Achtung, Begleitdokumente beachten Attenzione, consultare la documentazione allegata Precaución, consultar la documentación adjunta 注意、添付文書をご参照ください。		Do not reuse Usage unique Nicht wiederverwenden No reutilizarw Non riutilizzare 再利用しないでください。
	Caution, hot surface Attention, surface très chaude Precaución, superficie caliente Vorsicht, heiße Oberfläche Attenzione, superficie rovente 高温注意		Electrostatic-sensitive device Appareil sensible aux charges électrostatiques Dispositivo sensible a descargas electrostáticas Gerät ist sensibel auf elektrostatische Ladung Dispositivo sensibile alle scariche elettrostatiche 静電気の影響を受ける装置
	Keep dry Conserver dans un endroit sec Mantener seco Vor Nässe schützen Tenere al riparo dall'umidità 濡らさないこと。		Fragile Fragile Frágil Zerbrechlich Fragile 取扱注意
	This side up Haut Este lado hacia arriba Diese Seite nach oben Alto この面を上にする。		Date of manufacture Date de production Fecha de producción Herstelldatum Data di produzione 製造年月日:
GHS P 304	IF INHALED: EN CAS D'INHALATION: EN CASO DE INHALACIÓN: BEI EINATMEN: IN CASO DI INALAZIONE: 吸引した場合	GHS P 312	Call a POISON CENTER or doctor/physician if you feel unwell Appeler un CENTRE ANTIPOISON ou un médecin en cas de malaise. Llamar a un CENTRO DE INFORMACION TOXICOLOGICA o a un médico en caso de malestar Bei Unwohlsein GIFTINFORMATIONSZENTRUM oder Arzt anrufen In caso di malessere, contattare un CENTRO ANTIVENENI o un medico 気分が悪くなった時は医師に連絡すること

Symbol	Description
GHS H 303/313/333	May be harmful if swallowed, on contact with skin, and if inhaled Peut être nocif par ingestion, inhalation, par contact avec la peau et par inhalation Puede ser nocivo en caso de ingestión, en contacto con la piel o en caso de inhalación Kontakt mit der Haut, einatmen oder verschlucken kann Gesundheitsschäden verursachen Può essere nocivo per ingestione, inalazione, e contatto con la pelle 吸入、接触または飲み込むと有害のおそれ。

Other Symbols

Symbol	Description	Symbol	Description
	USB symbol		Ethernet/network symbol

Caution Symbols

Right Side of the Analyzer

Do not put your fingers inside of the analyzer when the analyzer is powered on. Doing so may result in injury. (Caution symbol circled below.)



Rear of the Analyzer

To avoid electrical shock, unplug the analyzer before servicing.

Replace only with fuses of the specified type and current rating. The fuse rating is 5.0 A L 250 V (time lag low breaking capacity).

A Getting Started

Introduction

The IDEXX ProCyt Dx* Hematology Analyzer is an automated hematology analyzer for animal blood that evaluates and provides the results of 24 parameters for each blood sample in approximately two minutes. The ProCyt Dx analyzer is for veterinary use only.

How It Works

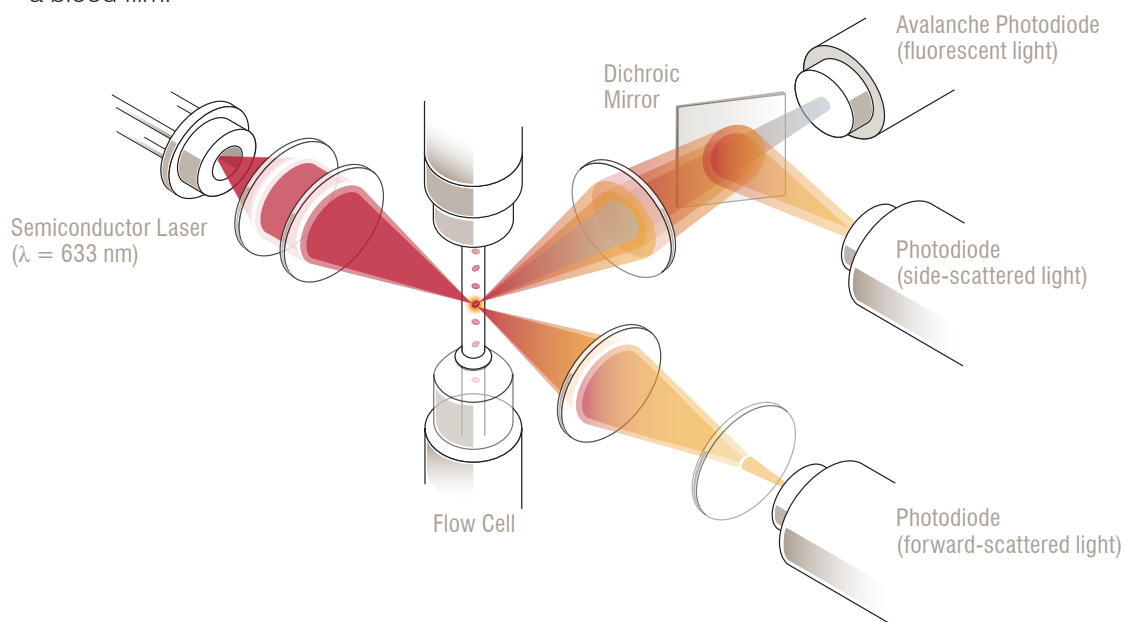
The ProCyt Dx analyzer employs three state-of-the-art technologies—laser flow cytometry, optical fluorescence, and Laminar Flow Impedance*—as well as the SLS-hemoglobin method.

Laser Flow Cytometry

With laser flow cytometry, the system performs two separate analyses:

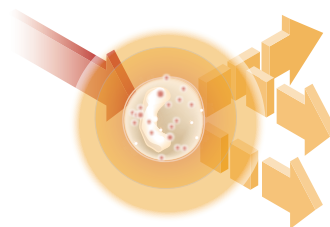
- Red blood cell optical—analyzes mature red blood cells, reticulocytes, and platelets
- White blood cell differential—analyzes and classifies the five-part differential

The cellular suspensions are hydrodynamically focused through a narrow orifice that is exposed to focused red laser light. Forward-scattered light and side-scattered light are then collected for each cell. These optical signatures provide information on the size, complexity, contents, and structure within each cell. This analysis mimics what a trained pathologist does when examining a blood film.



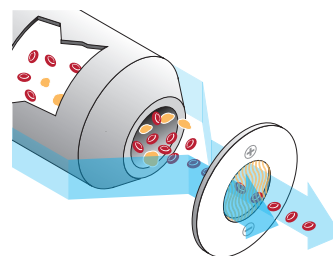
Optical Fluorescence

With optical fluorescence, the ProCyt Dx Leukocyte Stain and Reticulocyte Stain bind to nucleic acids in the cells and are excited by the red laser light. The fluorescence signatures are uniquely captured at a higher wavelength from the normal side-scattered light by utilizing a dichroic mirror. This method is the gold standard for determining reticulocytes and provides additional sensitivity for identifying the five-part white blood cell differential.



Laminar Flow Impedance*

Laminar Flow Impedance is the fastest method for analyzing the size and number of red blood cells and platelets. With this method, a diluted sample is focused through the center of a detection aperture and an electrical signal is disrupted by each cell's presence. The resistance measured can determine the size and type of each cell. The ProCyt Dx analyzer sends the sample through the aperture in one coaxial core stream of sample and reagent. Simultaneously, the core stream is surrounded by a faster moving sheath reagent, which ensures that only one cell is in the aperture at a time, preventing any count coincidence or recirculation.



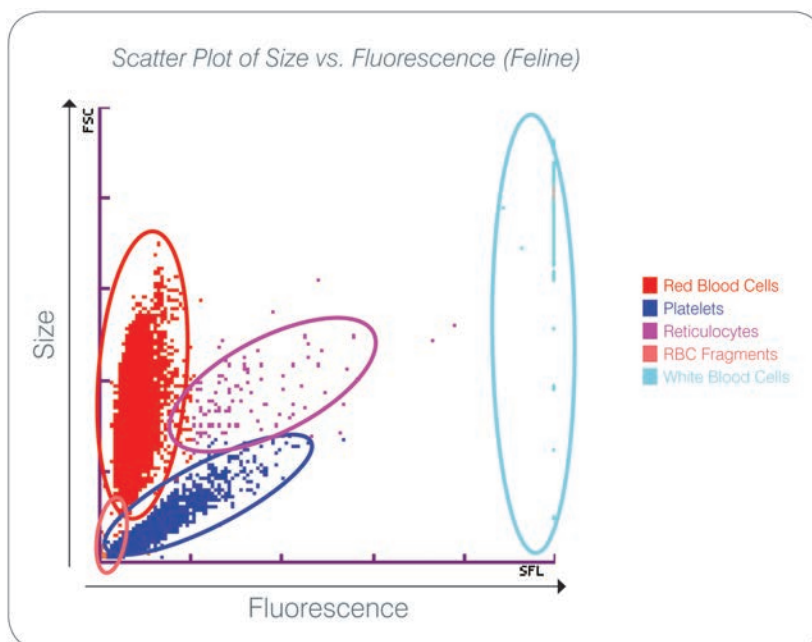
SLS-Hemoglobin Method

Hemoglobin conversion with the SLS-hemoglobin method is fast and does not use poisonous substances like other methods (such as the cyanmethemoglobin method), making it a suitable method for automation. And since it can be used to measure methemoglobin, it can also accurately measure blood containing methemoglobin, as is the case with control samples.

What Is a Dot Plot?

Dot plots are a visual representation of the complete blood count (CBC) and are a valuable tool for quickly interpreting sample results on the ProCyt Dx analyzer. Each dot in the plot represents a single cell as it is analyzed by the device. The different cellular elements of the blood appear as distinct clouds of dots, and when the definition of the cloud is diminished or intensified, this indicates variability within that particular cellular population, which could indicate an abnormality. The greater the abnormality, the greater the potential variation from normal. A blood film review will provide additional information. For example, if the clouds of dots are more dense than normal, an increased count for that particular cell will likely be evident in a blood film.

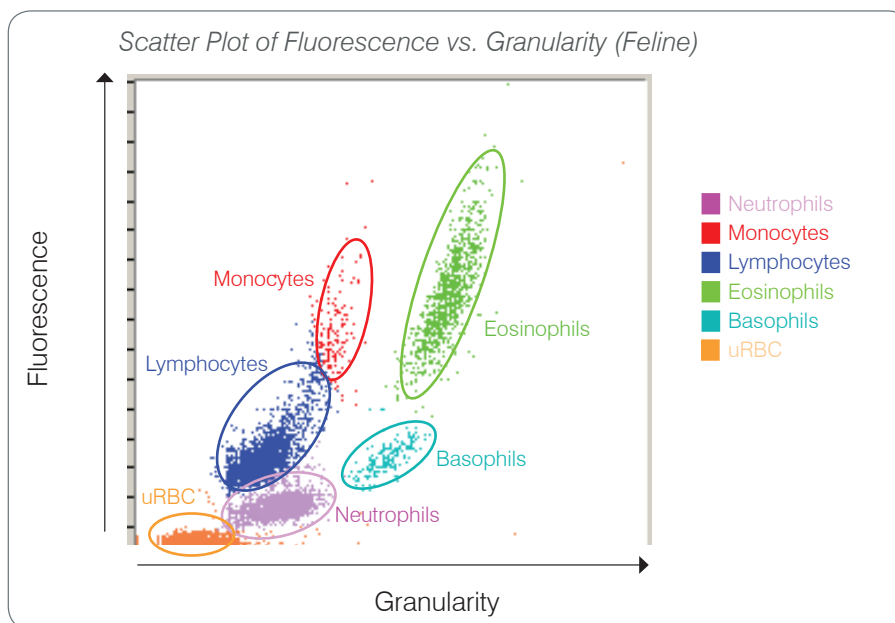
Red Blood Cell Classification



On the red blood cell run, the ProCyte Dx Analyzer classifies the following populations:

- **Red Blood Cells (RBCs)**—The red blood cells (erythrocytes) are primarily responsible for carrying oxygen to tissue cells and carrying carbon dioxide from those cells.
- **Platelets**—Platelets (thrombocytes) play an integral role in the processes of primary and secondary hemostasis leading to the formation of clots. Due to their smaller size, they spend less time in front of the laser beam, absorb less light, and therefore fall closer to the bottom on the y axis.
- **Reticulocytes**—Reticulocytes are immature red blood cells that contain ribosomal RNA. The reticulocytes are larger than many of the RBC population and more granular because of the RNA. These larger cells absorb more stain and fluoresce in the presence of the laser. They are located to the right of the RBC population.
- **RBC Fragments**—RBC fragments are fragile red blood cells that have fragmented during the red blood cell optical reagent chemistry. These are generally in tact red blood cell membranes that have released their hemoglobin. The particles have a similar size to platelets but refract light differently and are therefore located to the left of the platelet population.
- **White Blood Cells**—On occasion, a small amount of white blood cells can be seen on the red blood cell dot plot. These cells are larger than reticulocytes and therefore appear higher on the plot. The cells appear because they have absorbed the IDEXX ProCyte Dx Reticulocyte Stain and, given their intercellular content, these cell signatures will have far more fluorescent light scatter than reticulocytes.

White Blood Cell Classification



The ProCyt Dx analyzer utilizes side-scattered fluorescence and side scatter for the primary classification of white blood cells:

- **Neutrophils**—Normally, the nucleic acid content of neutrophils is the lowest of the five-part differential. Conversely, they are more optically complex than the mononuclear cells, therefore they have the least fluorescence but higher scatter than lymphocytes and monocytes.
- **Lymphocytes**—Normally, lymphocytes are the smallest cells relative to the other cells in the five-part differential. They are also the least complex, but have a high concentration of nucleus to cytoplasm. Therefore, these cells have a higher fluorescence but less side scatter than neutrophils and less fluorescence than monocytes.
- **Monocytes**—Monocytes have the largest nucleus of the normal differential. They are less complex than neutrophils but can be more complex than lymphocytes due to their lacy-appearing cytoplasm. Monocytes contain the highest amount of fluorescence and have slightly more side scatter than lymphocytes but less than neutrophils.
- **Eosinophils**—There is a great deal of variation in the size and granularity of eosinophils from species to species. Normally, canine, equine, bovine, and ferret eosinophils appear as a cluster of cells uniquely higher in side scatter to the right of the neutrophils. There is also a degree of fluorescence increase as well. In feline samples, eosinophils are unique in that they have the nearly the highest fluorescence and the most scatter of all of the cells.
- **Basophils**—Basophils also vary species to species. In General, they have a more fluorescence than neutrophils, and also have more side scatter. In canine, equine, bovine, and ferret samples, they appear just above neutrophils in fluorescence, and to the right of the lymphocytes on side scatter. In feline samples, basophils appear below the eosinophils in fluorescence and to the right of lymphocytes in side scatter.
- **uRBC**—This population consists of unlysed red blood cells. Because the red blood cells have no nuclear content, they have little fluorescent light scatter and fall lower on the plot than any white blood cells.

IDEXX VetLab* Station Connectivity

The ProCyt Dx analyzer is part of the IDEXX VetLab* suite of analyzers, all of which connect to the IDEXX VetLab* Station.

Connecting multiple analyzers to the IDEXX VetLab Station helps you attain a comprehensive picture of your patient's health, with the ability to view test results from multiple analyzers on a single report. With the ProCyt Dx analyzer connected to the IDEXX VetLab Station, you can:

- Automatically review patients' prior results on every printout for easy comparison.
- Improve client communications with illustrated diagnostic or treatment progress printouts.
- Trend serial data.
- Link to expert descriptions and common causes of abnormal values.
- Print information to help explain the significance of results to your clients.
- Allow new staff to train independently.
- View educational on-screen guides and videos, such as how to properly prepare a whole blood sample.
- Learn proper protocols and tips for best techniques.

Note: For detailed information about the IDEXX VetLab Station, including how to use all of its features, refer to the *IDEXX VetLab Station Operator's Guide*.

Components

The ProCyt Dx analyzer is a self-contained system that analyzes animal blood and control samples. It is connected to and communicates with the IDEXX VetLab Station.

Analyzer



IDEXX VetLab Station

The IDEXX VetLab Station functions as the communications hub for all IDEXX analyzers, including the ProCyt Dx analyzer.



Information Processing Unit (IPU)

The IPU is a dedicated computer that connects to the ProCyte Dx analyzer and communicates with the IDEXX VetLab Station. This computer acts as the central processing unit for the ProCyte Dx analyzer and has been specifically designed to integrate these two IDEXX VetLab products. It is required for the system to function correctly.



Bar Code Reader

A bar code reader can be connected to the IDEXX VetLab Station, which provides a quick method for entering data when changing reagents, loading ProCyte Dx control targets, and loading acceptable ranges for quality control. A bar code reader is not required to complete these steps, but it does make the data entry process faster and easier.

Note: The bar code reader can also be used to enter patient information (from a bar code) on the Identify Patient screen.



Analyzer Status

The light-emitting diode (LED) indicator on the front panel of the ProCyte Dx analyzer, indicates the analyzer's status.

Note: You can also view the analyzer status by viewing its icon on the IDEXX VetLab Station Home screen.

LED Color	Description
No color	OFF; analyzer is turned off
Green (steady)	READY; analyzer is ready to process samples or perform maintenance/diagnostic tasks
Green (flashing)	IN PROCESS; analyzer is aspirating sample
Red	ERROR; an error has occurred; review error or alert messages on the IDEXX VetLab Station

Powering the Analyzer On/Off

It is recommended that you power off the analyzer, IPU, and the IDEXX VetLab Station once per week.

To Power On the Analyzer

1. Ensure the IDEXX VetLab Station computer is powered on and that the touch-screen monitor displays the Home screen. If necessary, tap **Home** in the upper-left corner of the screen to access the Home screen. The ProCyte Dx icon appears with an Offline (black) status.
2. Power on the IPU by pressing the power button on the front of the IPU computer.
3. When the status of the ProCyte Dx icon on the Home screen changes from Offline (black) to Busy (yellow), power on the IDEXX ProCyte Dx analyzer using the switch located on the right side of the analyzer. The ProCyte Dx performs a variety of self-check procedures (if a self-check procedure fails, an alert message will display on the IDEXX VetLab Station Home screen). This process takes approximately 8 minutes.
4. If the self-check procedure is successful, the status of the ProCyte Dx icon on the Home screen changes to Ready (green) and the LED on the ProCyte Dx analyzer turns green (steady).

To Power Off the Analyzer

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **Turn Off ProCyte Dx**. The Turn Off ProCyte Dx dialog box displays.
4. Tap **OK**. The IPU powers down automatically.
5. When the Standby procedure is complete and the analyzer alarm sounds, power off the analyzer using the switch located on the right side of the analyzer.
6. Tap **Shut Down** on the IDEXX VetLab Station Home screen to power it off.

Opening/Closing the Sample Drawer

Press the **Open/Close** button on the analyzer to open or close the sample drawer.

Standby Mode

When the ProCyte Dx is idle for 11 hours and 45 minutes, the analyzer enters Standby mode. The analyzer also enters Standby mode daily at a user-defined time (7:00 p.m. by default).

To Restart the Analyzer

Tap **Exit Standby**. It takes approximately 8 minutes to exit Standby mode.

Important: The analyzer will perform a background check when it restarts.

You can customize when you want the analyzer to enter Standby mode. For more information, see “Running the Daily Standby Procedure” on page F-1.

Viewing Analyzer Status Information

The ProCyte Dx Instruments screen displays the analyzer’s current software version, serial number, and IPU serial number. It also displays procedures/reminders relevant to the analyzer.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab. The analyzer status information displays on the left side of the screen.

Analysis Parameters

The ProCyte Dx analyzer provides results for the following parameters†:

Parameter	Description
RBC	Total number of erythrocytes
HCT	Hematocrit value: erythrocyte ratio of total blood volume
HGB	Hemoglobin concentration
MCV	Mean erythrocyte volume in total sample
MCH	Mean hemoglobin volume per red blood cell (RBC) count
MCHC	Mean hemoglobin concentration of erythrocytes
RDW	The degree of variation in size of the erythrocyte population
%RETIC	Reticulocyte percent
RETIC	Reticulocyte count

Parameter	Description
WBC	Total number of leukocytes
%NEU	Neutrophil percent
%LYM	Lymphocyte percent
%MONO	Monocyte percent
%EOS	Eosinophil percent
%BASO	Basophil percent
NEU	Neutrophil count
LYM	Lymphocyte count
MONO	Monocyte count
EOS	Eosinophil count
BASO	Basophil count
PLT	Total number of platelets
MPV	Mean platelet volume
PDW	Platelet distribution width; the degree of variation in size of the platelet population
PCT	Plateletcrit value

[†]The number of reported parameters may vary according to species (e.g., reticulocytes are not reported for equine species).

Compatible Species

The ProCyt Dx analyzer can analyze blood from the following species:

- Canine
- Feline
- Equine
- Bovine
- Ferret
- Other[‡]

[‡]The “Other” species was incorporated for research purposes. The algorithms for “other” are based on the canine species and therefore not validated for other animal species. The canine algorithm incorporates known cellular size, scatter pattern, and unique distributions customized for that species. This mode can be used by experienced professionals with knowledge of hematology dot plots and who can make visual updates to the displayed pattern of the dot plot.

B Using the ProCyte Dx* Analyzer

Overview

Before using the ProCyte Dx analyzer each day:

- Check the reagent levels on the ProCyte Dx Instruments screen to ensure there is a sufficient amount of reagent for the number of samples to be analyzed that day (for more information, see “Viewing Reagent/Stain Information” on page C-4).
- Check the tubing and cables attached to the analyzer. Ensure the tubing is not bent and that the power cord is securely plugged into the outlet.

Changing the Tube Adapter

Before you begin collecting a patient sample and processing it in the ProCyte Dx analyzer, be sure you have the correct tube adaptor loaded in the sample drawer of the analyzer. The ProCyte Dx analyzer has three sample tube adapters so you can use various tube sizes, if necessary.

The ProCyte Dx is capable of running most EDTA blood collection tubes. There are numerous standard (13 x 75 mm) hematology tube manufacturers. We recommend that you only use tubes from a reliable and trustworthy source. If you have any questions or concerns about EDTA tube selection, IDEXX recommends and supports the use of 2 mL draw BD standard EDTA tubes and IDEXX VetCollect* tubes.



Regular Adapter

Use with standard 13 x 75 mm diameter tubes (such as IDEXX VetCollect tubes and BD Vacutainer* 13 x 75 mm [2.0 mL] tubes with a Hemoguard* closure)



Micro Adapter

Use with micro tubes in the following sizes: 10.25 x 50 mm, 10.25 x 64 mm, or 1.3 mL (such as Sarstedt 1.3 mL tubes)

Important: Remove tube cap before analysis.

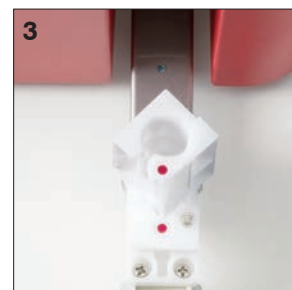


QC Adapter

Use with e-CHECK* (XS) quality control blood samples.

To Install the Tube Adapter

1. If the sample drawer is not open, press the **Open/Close** button on the ProCyte Dx analyzer to open the sample drawer.
2. Select the sample tube adapter that is appropriate for the sample tube you are using.
3. Place the sample tube adapter in the sample position area of the sample drawer.



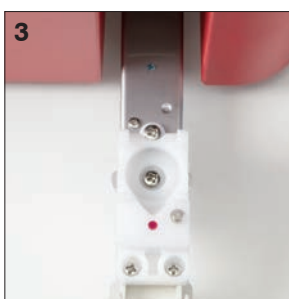
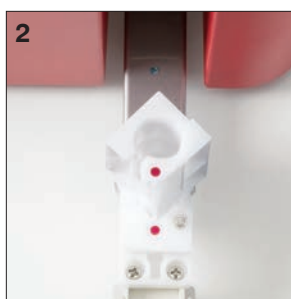
4. Align the red mark on the adapter with the red mark on the drawer.
5. Turn the adapter to the right until you hear a click (about 45°); this ensures the adapter is properly installed.

Note: If you are using a micro tube, you must remove the cap before beginning the sample analysis process.



To Remove the Tube Adapter

1. If the sample drawer is not open, press the **Open/Close** button on the ProCyte Dx analyzer to open the sample drawer.
2. Turn the sample tube adapter to the left (45°) until the red mark on the adapter and the red mark in the sample position area of the drawer line up.
3. Lift the tube adapter to remove it.



Analyzing Samples

The ProCyte Dx analyzer produces a complete blood count (CBC) analysis for each patient blood sample it processes. There are four different work flows that can be used to analyze a sample on the ProCyte Dx analyzer:

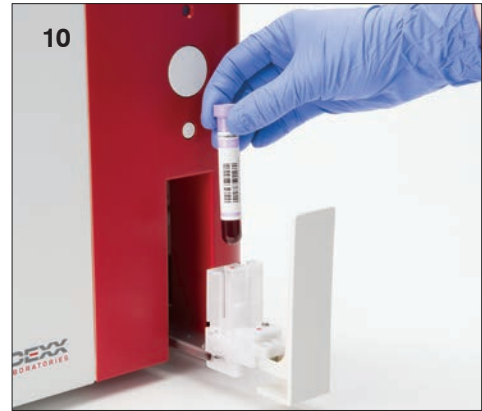
- **Analyze Sample Button**—Use this work flow if you **do not have** a practice management system connected to your IDEXX VetLab* Station via IDEXX SmartLink* or IDEXX InterLink* technology.
- **Pending List** or **Census List**—Use one of these work flows if you **have** a practice management system connected to your IDEXX VetLab Station via IDEXX SmartLink or IDEXX InterLink technology. Using this work flow will save you time because you do not need to enter the client and patient information into the IDEXX VetLab Station (since it has already been entered into your practice management system).
- **Ready to Run Icon**—Use this work flow if you initiated the sample run using one of the other work flows, but the analyzer was busy at the time and the sample could not be run immediately.

For more information on these work flows, see the *IDEXX VetLab Station Operator's Guide*.

To Analyze a Sample Using the Analyze Sample Button

1. On the IDEXX VetLab Station Home screen, tap **Analyze Sample**.
2. Enter the client and patient information (required fields are noted with an asterisk) and tap **Next**.
3. On the Select Instruments screen, select the **Reason for Testing**.

4. Tap the **ProCyte Dx** analyzer icon to select it and add it to the current analysis job list.
5. Tap **Run**. The patient information is sent to the ProCyte Dx analyzer. A dialog box appears with information about the selected patient and instructions for processing the sample on the analyzer.
6. Read the instructions and tap **OK**. The ProCyte Dx icon now appears in the patient-specific job status area (on the IDEXX VetLab Station Home screen) with an In Process status.
7. On the ProCyte Dx analyzer, ensure the sample drawer is open. If necessary, press the **Open/Close** button on the analyzer to open the sample drawer.
8. Ensure the appropriate tube adapter is in the sample position area of the sample drawer.
9. Prepare the sample. **Gently invert the sample 10 times** to ensure it is well mixed.
10. Immediately place the sample in the tube adapter.
Important: If you are using a micro tube, remove the cap before placing the tube in the tube adapter.
11. Press the **Start** button on the analyzer. The sample drawer automatically closes and the analyzer begins processing the sample.



To Analyze a Sample Using the Pending List

1. On the IDEXX VetLab Station Home screen, tap a patient name in the Pending List and then tap **Run** (below the Pending List).
2. On the Select Instruments screen, select the **Reason for Testing**.
3. Tap the **ProCyte Dx** analyzer icon (status is Ready) to select it and add it to the current analysis job list.
4. Tap **Run**. The patient information is sent to the ProCyte Dx analyzer. A dialog box appears with information about the selected patient and instructions for processing the sample on the analyzer.
5. Read the instructions and tap **OK**.
6. On the ProCyte Dx analyzer, ensure the sample drawer is open. If necessary, press the **Open/Close** button to open the sample drawer.
7. Ensure the appropriate tube adapter is in the sample position area of the sample drawer.
8. Prepare the sample. **Gently invert the sample 10 times** to ensure it is well mixed.
9. Immediately place the sample in the tube adapter.
Important: If you are using a micro tube, remove the cap before placing the tube in the tube adapter.
10. Press the **Start** button on the analyzer. The sample drawer automatically closes and the analyzer begins processing the sample.

To Analyze a Sample Using the Census List

1. On the IDEXX VetLab Station Home screen, tap a patient name in the Census List and then tap **Run** (below the Census List).
2. On the Select Instruments screen, select the **Reason for Testing**.
3. Tap the **ProCyte Dx** analyzer icon (status is Ready) to select it and add it to the current analysis job list.
4. Tap **Run**. The patient information is sent to the ProCyte Dx analyzer. A dialog box appears with information about the selected patient and instructions for processing the sample on the analyzer.
5. Read the instructions and tap **OK**. The ProCyte Dx icon now appears in the patient-specific job status area (on the IDEXX VetLab Station Home screen) with an In Process status.
6. On the ProCyte Dx analyzer, ensure the sample drawer is open. If necessary, press the **Open/Close** button on the analyzer to open the sample drawer.
7. Ensure the appropriate tube adapter is in the sample position area of the sample drawer.
8. Prepare the sample. **Gently invert the sample 10 times** to ensure it is well mixed.
9. Immediately place the sample in the tube adapter.
Important: If you are using a micro tube, remove the cap before placing the tube in the tube adapter.
10. Press the **Start** button on the analyzer. The sample drawer automatically closes and the analyzer begins processing the sample.

To Analyze a Sample Using the Ready to Run Icon

Note: In order to use this work flow, the ProCyte Dx icon must appear in the patient-specific job status area (on the IDEXX VetLab Station Home screen) with a Ready to Run status.

1. On the IDEXX VetLab Station Home screen, tap the Ready to Run **ProCyte Dx** icon in the patient-specific job status area.
2. A dialog box appears with information about the selected patient and options to start or cancel the sample run.
3. Tap **Start Run** to send the patient information to the selected analyzer.
4. A second dialog box appears with information about the selected patient and instructions for processing the sample on the analyzer.
5. Read the instructions and tap **OK**. The ProCyte Dx icon now appears in the patient-specific job status area (on the IDEXX VetLab Station Home screen) with an In Process status.
6. On the ProCyte Dx analyzer, ensure the sample drawer is open. If necessary, press the **Open/Close** button on the analyzer to open the sample drawer.
7. Ensure the appropriate tube adapter is in the sample position area of the sample drawer.
8. Prepare the sample. **Gently invert the sample 10 times** to ensure it is well mixed.
9. Immediately place the sample in the tube adapter.
Important: If you are using a micro tube, remove the cap before placing the tube in the tube adapter.
10. Press the **Start** button on the analyzer. The sample drawer automatically closes and the analyzer begins processing the sample.

Canceling a Run That Has Been Sent to the Analyzer but Not Run

1. In a patient-specific job status area on the Home screen, tap a **Ready to Run** or **Busy** ProCyte Dx icon. A dialog box appears with information about the selected patient and analyzer.
2. Tap **Cancel Run** to cancel the scheduled sample run for this patient. The ProCyte Dx icon is removed from the job status area.

Note: An in-process sample run cannot be canceled.

Viewing Test Results

1. On the IDEXX VetLab Station, select the patient whose results you want to view. Then, do one of the following from the Home screen:
 - Tap the patient name in the Recent Results list and then tap **View**.
 - Tap the **Records** button, tap the patient name, and then tap **View Records**.
2. On the Records: Select Results screen, tap the set of results that you want to view and then tap **View Results**.
3. On the Records: Test Results screen, tap the **ProCyte Dx** tab to view the analyzer's test results for the selected patient.

Printing Test Results

Analyzer results are automatically returned to the IDEXX VetLab Station and recorded in the appropriate patient's record. The diagnostic results report is a comprehensive report of all the test results specified in a laboratory request for that patient on a specific day.

Patient test results can be printed automatically each time a set of results are returned or you can manually print the results when needed. For more information, see the *IDEXX VetLab Station Operator's Guide*.

Responding to an Alert

If an analyzer experiences a problem, an alert message appears on the upper right side of the IDEXX VetLab Station title bar. If you are on the Home screen, the affected analyzer's icon also appears with an Alert status.

To View an Alert from the Home Screen

Tap the analyzer icon or tap the alert message in the title bar to display the alert message. Follow the instructions displayed in the alert message.

To View an Alert from Any Screen in the IDEXX VetLab Station

Tap the alert message on the title bar.

Customizing the Settings

You can customize some of the settings on the ProCyte Dx analyzer using the ProCyte Dx Settings button on the ProCyte Dx Instruments screen. For example, you can disable the printing of dot plots with patient results, or you can customize the time that the analyzer is set to standby each day.

Displaying and Printing Dot Plots with Patient Results

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **ProCyte Dx Settings**.
4. Select the **Display and print ProCyte Dx dot plot charts with patient results** check box.
5. Tap **OK**.

Customizing the Standby Mode Time

By default, the ProCyte Dx analyzer will set itself to Standby mode at 7:00 p.m. each day. Follow these instructions if you want to change the default time for Standby mode:

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **ProCyte Dx Settings**.
4. In the Standby Mode group box, tap the hour and/or minute up and down arrows to modify the time as needed.
5. Tap **a.m.** or **p.m.**
6. Tap **OK** to save your changes.

C Managing Reagents and Stains

Overview

The ProCyte Dx* analyzer uses self-contained reagents and stains to process patient samples. This section describes the contents of each reagent kit and stain pack and how to use them properly with the ProCyte Dx analyzer.

All ProCyte Dx analyzer reagents and stains are for veterinary use only.

Important: Reagent kits and stain packs must be kept at room temperature (15°C–30°C/ 59°F–86°F) when connected to the analyzer. Kits/packs that are not connected should be stored at 2°C–30°C (36°F–86°F).

IDEXX ProCyte Dx* Reagent Kit

The IDEXX ProCyte Dx Reagent Kit contains 3 reagent bottles (Lytic Reagent, Reticulocyte Diluent, and HGB Reagent), System Diluent, and a waste container. The reagent kit connects to the analyzer via the Quick-Connect Top.

Inside of the reagent kit, the reagent shelf is both color and number coded to indicate placement of each reagent, the System Diluent, and the waste container. Instructions for changing a reagent kit can be found later in this section.

Important: To ensure both customer safety and optimal system performance, IDEXX recommends that all reagent kits are placed next to or below the analyzer. Reagent kits should not be placed above the analyzer.

Quick-Connect Top

The Quick-Connect Top was designed to make changing reagents a simple and efficient process. The top has 5 probes that are designed to fit into the bottles and containers in the reagent kit. **The Quick-Connect Top is reused each time you change the reagent kit.**

IDEXX ProCyte Dx* Stain Pack

The IDEXX ProCyte Dx Stain Pack consists of one Leukocyte Stain pouch and one Reticulocyte Stain pouch that are fused together. Instructions for changing a stain pack can be found later in this section.

Connecting a Reagent Kit to the Analyzer

Attached to the probes on the Quick-Connect Top are tubes that connect to the Quick Disconnects on the back of the analyzer. Each tube is labeled with a color that corresponds to the colored Quick Disconnects. Be sure to connect the correct tube to the appropriate Quick Disconnect.

Changing a Reagent Kit/Stain Pack

An alert displays when the reagent kit/stain pack is empty or expired. When the reagent kit/stain pack is low or close to expiration, you can choose to change it immediately or be reminded to change it later.

Note: Be sure to review the warnings and precautions for each reagent/stain before handling these materials. For more information, see the reagent and stain descriptions on pages C-5–C-7.

Important: Disposal procedures should be compliant with local disposal laws.

To Change the Reagent Kit in Response to an Alert

1. Tap **Change Reagent** in the alert message.
2. If you have a bar code reader, scan the bar code on the new reagent kit. If you do not have a reader, type the bar code into the Enter a Reagent Code text box.
3. Open the top of a new reagent kit and place it next to the kit you are replacing.

Note: Open a new reagent kit by folding the top cover over the opposite side of the box, exposing the reagent shelf. The top cover of the reagent kit can either be removed or easily secured by the cardboard flaps found near the bottom of the opposite side of the box.

4. Remove the caps from the 3 bottles, the System Diluent, and the waste container in the new reagent kit and set them aside. If the plastic ring around the top of the System Diluent or waste container is resting below the cardboard shelf, gently pull them up so the ring rests on the shelf.

Important: Do not alter the order of the 3 reagent bottles.

5. Remove the Quick-Connect Top from the old reagent kit and position it onto the new reagent kit, ensuring the probes are inserted into the 3 reagent bottles, the System Diluent, and the waste container.
6. Ensure the Quick-Connect Top is placed securely on the reagent kit and tap **Start Prime**.

Important: It is essential that the Quick-Connect Top is placed securely on the reagent kit when priming reagents.

7. Carefully remove each reagent bottle from the old reagent kit and dispose of the contents of each bottle according to applicable local disposal laws. Extra reagents have been added to the bottles to ensure that the analyzer does not run out of reagent and aspirate air.

Important: DO NOT pour the remaining liquid from the old kit into the new kit. Pouring leftover liquid into the new kit requires the analyzer to use more reagent to prime the analyzer and can compromise the quality of the reagent.

Note: Contact IDEXX Technical Support to receive a copy of the MSDS information.

8. Place the caps from the bottles in the new reagent kit onto the bottles in the old reagent kit.



To Change the Reagent Kit (Without an Alert)

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyt Dx** tab.
3. Tap **Change Reagent**.
4. If you have a bar code reader, scan the bar code on the new reagent kit. If you do not have a reader, type the bar code into the Enter a Reagent Code text box.

5. Open a new reagent kit and place it next to the kit you are replacing.
Note: Open a new reagent kit by folding the top cover over the opposite side of the box, exposing the reagent shelf. The top cover of the reagent kit can either be removed or easily secured by the cardboard flaps found near the bottom of the opposite side of the box.
6. Remove the caps from the 3 reagent bottles, the System Diluent, and the waste container in the new reagent kit and set them aside. If the internal piece of the System Diluent or waste container caps are left inside of the kit, remove them.
Important: Do not alter the order of the 3 reagent bottles.
7. Remove the Quick-Connect Top from the old reagent kit and position it onto the new reagent kit, ensuring the probes are inserted into the 3 reagent bottles, the System Diluent, and the waste container.
8. Ensure the Quick-Connect Top is placed securely on the reagent kit and tap **Start Prime**.
Important: It is essential that the Quick-Connect Top is placed securely on the reagent kit when priming reagents.
9. Carefully remove each reagent bottle from the old reagent kit and dispose of the contents of each bottle according to applicable local disposal laws. Extra reagents have been added to the bottles to ensure that the analyzer does not run out of reagent and aspirate air.
Important: DO NOT pour the remaining liquid from the old kit into the new kit. Pouring leftover liquid into the new kit requires the analyzer to use more reagent to prime the analyzer and can compromise the quality of the reagent.
10. Place the caps from the bottles in the new reagent kit onto the bottles in the old reagent kit.

To Change the Stain Pack in Response to an Alert

1. Tap **Change Reagent** in the alert message.
2. If you have a bar code reader, scan the bar code on the new stain pack. If you do not have a reader, type the bar code into the Enter a Reagent Code text box.
3. Open the stain compartment cover and unscrew the empty stain pack from the caps/probes.
4. Remove the caps from a new stain pack and set them aside.
5. Screw a new stain pack into the caps in the stain compartment, ensuring each probe is inserted into the correct pouch (the cords are labeled).
6. Place the caps from the new stain pack onto the empty stain pack. Dispose of the stain pack according to applicable local disposal laws.
7. Place the new stain pack into the compartment, ensuring the cords are in front of the stain pack inside the compartment. Then, close the cover.
8. Ensure the Quick-Connect Top is placed securely on the reagent kit and tap **Start Prime**.
Important: It is essential that the Quick-Connect Top is placed securely on the reagent kit when priming reagents.
9. Tap **OK**.

To Change the Stain Pack (Without an Alert)

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **Change Reagent**.
4. If you have a bar code reader, scan the bar code on the new reagent kit. If you do not have a reader, type the bar code into the Enter a Reagent Code text box.
5. Open the stain compartment cover and unscrew the empty stain pack from the caps/probes.
6. Remove the caps from a new stain pack and set them aside.
7. Screw a new stain pack into the caps in the stain compartment, ensuring each probe is inserted into the correct pouch (the cords are labeled).
8. Repeat steps 5–7 for the other stain pouch.
9. Place the caps from the new stain pack onto the empty stain pack. Dispose of the stain pack according to applicable local disposal laws.
10. Place the new stain pack into the compartment, ensuring the cords are in front of the stain pack inside the compartment. Then, close the cover.
11. Ensure the Quick-Connect Top is placed securely on the reagent kit and tap **Start Prime**.
Important: It is essential that the Quick-Connect Top is placed securely on the reagent kit when priming reagents.
12. Tap **OK**.

Viewing Reagent/Stain Information

You can view the fill status and expiration information for your reagent kit and stain pack on the ProCyte Dx Instruments screen. A log is also available to view current and historical reagent/stain information.

To View Reagent/Stain Fill Status and Expiration Information

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab. Two gauges display in the center of the screen indicating the fill status for the reagent kit and stain pack (the gray bar indicates the fill level). The remaining days until each expires displays under the gauges. When the fill status is low or empty, the gauge and days until expiration turns red.

To View the Reagent Log

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **View Log**. The current reagent kit and stain pack display as black. Historical reagent kits and stain packs display as gray.
4. Tap **Back** to return to the ProCyte Dx Instruments screen or tap **Home** to return to the IDEXX VetLab Station Home screen.

Reagent Kit Components

The reagent kit has an unopened stability of 12 months from date of manufacture. Once opened, the product stability is 30 days or until the date of expiration (whichever comes first). Reagent kits must be kept at room temperature (15°C–30°C/59°F–86°F) when connected to the analyzer. Kits that are not connected should be stored at 2°C–30°C (36°F–86°F).

System Diluent

Intended Use

Diluent for use in the ProCyt Dx Hematology Analyzer.

Active Ingredients

Sodium chloride	6.38 g/L
Boric acid	1.0 g/L
Sodium tetraborate	0.2 g/L
EDTA-2K	0.2 g/L

Methodology

System Diluent is a ready-to-use diluent for photoelectrical analysis of whole blood.

Warning and Precautions

Do not ingest and avoid skin and eyes. In case of contact, flush with plenty of water immediately. Consult with physician in case of ingestion and/or contact with eyes.

Lytic Reagent

Intended Use

Reagent used to selectively lyse red blood cells from a sample, leaving white blood cells for analysis.

Active Ingredients

Nonionic surfactant	0.18%
Organic quaternary ammonium salts	0.08%

Methodology

Lytic Reagent is a ready-to-use reagent for analyzing white blood cell by photometric measurement.

Warning and Precautions

Do not ingest and avoid skin and eyes. In case of contact, flush with plenty of water immediately. Consult with physician in case of ingestion and/or contact with eyes.

Reticulocyte Diluent

Intended Use

Diluent used to determine the reticulocyte count and reticulocyte percent in blood.

Active Ingredients

Tricine buffer	0.18%
----------------	-------

Methodology

Reticulocyte Diluent is a ready-to-use diluent used for analyzing reticulocytes in blood.

Warning and Precautions

Wear gloves and a lab coat for protection. Avoid contact with skin and eyes. In case of skin contact, rinse immediately with plenty of water. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If swallowed, induce vomiting and seek medical advice.

HGB Reagent

Intended Use

The HGB Reagent is used to determine the hemoglobin concentration of blood.

Active Ingredients

Sodium lauryl sulfate 1.7 g/L

Methodology

The HGB Reagent is a clear, azide-free and cyanide-free, low toxicity reagent. Hemoglobin measurement using the HGB Reagent is based on the sodium lauryl sulfate method developed by Iwao Oshiro et al (SLS-hemoglobin method). In the SLS-hemoglobin method, an anionic surfactant, sodium lauryl sulfate (SLS) lyses the red blood cell membrane, releasing hemoglobin. The same SLS reagent subsequently combines with the released hemoglobin to form a stable hemichrome. The concentration of hemoglobin is then quantified by colorimetry using a filter photometer. The HGB Reagent has advantage over other cyanide-free methods in that it is able to measure the hemoglobin derivatives deoxyhemoglobin, oxyhemoglobin, carboxyhemoglobin, and methemoglobin.

Warnings and Precautions

Do not ingest. Avoid contact with skin and eyes. For skin contact, flush the area with water. If eyes are affected, flush with copious amounts of water and contact a physician. If ingestion occurs, give emetic (warm normal saline) until vomit fluid is clear and contact a physician.

Literature References

Oshiro I, Takenata T, Maeda J. New method for hemoglobin determination by using sodium lauryl sulfate (SLS). *Clin Biochem.* 1982;15:83–88.

Stain Pack Components

The stain pack has an unopened stability of 12 months from date of manufacture. Once opened and installed in the instrument, it is stable for 90 days or until expiration, whichever comes first. Stain packs must be kept at room temperature (15°C–30°C/59°F–86°F) when connected to the analyzer. Packs that are not connected should be stored at 2°C–30°C (36°F–86°F).

Leukocyte Stain

Intended Use

The Leukocyte Stain is used to stain the leukocytes in diluted and lysed blood samples for determination of the five-part differential count with the ProCyt Dx Hematology Analyzer.

Active Ingredients

Polymethine dye	0.002%
Methanol	3.0%
Ethylene glycol	96.9%

Methodology

A sample volume of a whole blood specimen is introduced into the analyzer where a portion of it is automatically diluted with and lysed by the Lytic Reagent. The Leukocyte Stain is then added, and the entire dilution is maintained at a constant temperature for a defined time period in order to stain the nucleated cells in the sample. The stained sample is then introduced into the laser flow cytometer, where side scatter light and side fluorescent emission are measured allowing the neutrophil (NEU) count and percentage, the lymphocyte (LYM) count and percentage, the monocyte (MONO) count and percentage, the eosinophil (EOS) count and percentage, and the basophil (BASO) count and percentage to be computed.

Warnings and Precautions

Wear gloves and a lab coat for protection. Avoid contact with skin and eyes. In case of skin contact, rinse immediately with plenty of soap and water. In case of contact with eyes, rinse immediately with water or normal saline, occasionally lifting upper and lower lids until no evidence of dye remains. Obtain medical attention. If swallowed, induce vomiting and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately.

Reticulocyte Stain**Intended Use**

Reticulocyte Stain is used to stain the reticulocyte population of cells for the assay of reticulocyte count and reticulocyte percent in blood with the ProCyt Dx Hematology Analyzer.

Active Ingredients

Polymethine dye	0.03%
Methanol	7.1%
Ethylene glycol	92.8%

Methodology

A sample volume of a whole blood specimen is introduced into the analyzer where a portion of it is automatically diluted with Reticulocyte Diluent (from the IDEXX ProCyt Dx Reagent Kit). Reticulocyte Stain is then added, and the entire dilution is maintained at a constant temperature for a defined time period in order to stain the reticulocytes present in the sample. The stained sample is then introduced into the laser flow cytometer, where forward light scatter and side fluorescent emission are measured allowing for the reticulocyte count (RETIC) and the reticulocyte percent (%RETIC) to be computed.

Warnings and Precautions

Wear gloves and a lab coat for protection. Avoid contact with skin and eyes. May produce irritation and discoloration of skin. In case of skin contact, wash affected area with soap and water. Polymethine dyes may result in irritation or injury to the eye. In case of contact with eyes, rinse immediately with water or normal saline, occasionally lifting upper and lower lids, until no evidence of dye remains. Obtain medical attention. If swallowed, induce vomiting and seek medical advice. Do not breathe vapor. In case of accident or if you feel unwell, seek medical advice immediately.

D Sample Collection and Preparation

Overview

The quality of your reference laboratory and in-house testing results is impacted by the quality of the sample you provide the laboratory/analyzer. Therefore, it is important that you always prepare samples properly. This chapter provides instructions for preparing quality samples, the recommended order of draw, and more.

We recommend that you familiarize yourself thoroughly with the following guidelines. If you have any questions about sample preparation, contact IDEXX Technical Support and we will be happy to assist you (for more information, see “IDEXX Technical Support Contact Information” on pages H-7–H-8)

- **Do not recycle syringes and needles**—Dull needles can cause trauma to the blood vessel, leading to cell destruction, hemolysis and platelet activation, especially in cats.
- **Choose the appropriate blood vessel and needle size**—Use a blood vessel that allows enough blood to collect within the tube or syringe selected. Select the appropriate needle size for the species.
- **Be gentle on the blood draw**—Exceeding the normal blood flow can collapse the blood vessel, which can be painful to the animal and cause hemolysis.
- **Mix the sample with EDTA as soon as possible**—When using a syringe and needle, remove the needle from the syringe before dispensing the blood. Remove the cap on the tube and fill the tube to its appropriate level.

Important: Replace the cap on the tube and immediately mix the EDTA sample at least 10 times by gentle inversion.

- **Make sure the sample-to-EDTA ratio is appropriate**—Fill the tube to its appropriate level for adequate mixing with EDTA. Overfilling will result in clotting; underfilling will alter the hematocrit and hemoglobin values. Refer to the manufacturer’s package insert for appropriate fill volumes.
- **Analyze the sample as soon as possible**—For best results, we recommend preparing and testing the sample within 4 hours. Even when refrigerated, blood samples will become less viable after 4 hours.
- **Discard severely hemolyzed samples**—If hemolysis is due to improper sample collection, discard the sample and redraw. If hemolysis is persistent, it may be due to a disease state.
- **Discard clotted samples and redraw**—The presence of clots will invalidate any results obtained, with the exception of the hematocrit.

See the table on pages D-2–D-4 for a list of the different sample types that each IDEXX VetLab* analyzer is capable of running. The table provides the sample volume required for each sample type as well as how to prepare the sample.

IDEXX Quality Sample Preparation

Analyzer/Test	Sample Volume Required	Serum	Plasma Lithium Heparin	Plasma Fluoride Oxalate	Whole Blood Lithium Heparin	Whole Blood EDTA	Whole Blood Citrate	Whole Blood Untreated	Urine	Sample Preparation	Centrifuge (time/speed)	Notes
Catalyst Dx* Chemistry Analyzer whole blood separator	600 µL–800 µL (max)				✓					gently invert lithium heparin collection tube for 30 seconds; use the 700 µL whole blood pipette to dispense sample into separator	processed automatically within Catalyst Dx analyzer	
Catalyst Dx* Chemistry Analyzer lithium heparin whole blood separator	0.6–0.8 cc (max)							✓		gently swirl (do not invert or shake) the separator at least 5 times to mix the sample with the anticoagulant	processed automatically within Catalyst Dx analyzer	
Catalyst Dx* Chemistry Analyzer sample cup	130 µL + 10 µL per test	✓	✓	✓					✓	serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds urine: use Catalyst Urine P:C Diluent to dilute the UCRE sample	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) urine: 45 seconds on “urine” setting	fluoride oxalate: only for LAC or GLU urine: for UPC Ratio only
Ammonia Test	see Catalyst Dx analyzer or VetTest analyzer	✓	✓							analyze sample within 30 minutes of collection	none	
VetTest* Chemistry Analyzer	30 µL + 10 µL per test	✓	✓	✓					✓	serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds urine: use Catalyst Urine P:C Diluent to dilute the UCRE sample	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) urine: 45 seconds on “urine” setting	fluoride oxalate: only for LAC or GLU urine: for UPC Ratio only
VetLyte* Electrolyte Analyzer	90 µL	✓	✓		✓					serum: allow to clot for 20 minutes plasma: fill collection tube to ½ – ¾ full then gently invert for 30 seconds whole blood: gently invert collection tube several times	serum: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) plasma: 90 seconds at 12,000 rpm (5 minutes at 8,000 rpm) whole blood: none	plasma/whole blood: do not use anticoagulants (e.g., EDTA, citrate, oxalate, or sodium heparin)

Analyzer/Test	Sample Volume Required	Serum	Plasma Lithium Heparin	Plasma Fluoride Oxalate	Whole Blood Lithium Heparin	Whole Blood EDTA	Whole Blood Citrate	Whole Blood Untreated	Urine	Sample Preparation	Centrifuge (time/speed)	Notes
VetStat* Electrolyte and Blood Gas Analyzer	200 µL	✓	✓	✓	✓					serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds whole blood, syringe/capillary tube: roll between fingers whole blood, collection tube: gently invert for 30 seconds	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) whole blood: none	plasma/whole blood: do not use anticoagulants (e.g., EDTA, citrate, oxalate, or sodium heparin)
ProCyte Dx* Hematology Analyzer	500 µL of sample from an IDEXX VetCollect* tube or 650 µL from a 1.3 mL Sarstedt tube (analyzer aspirates 30 µL of sample)					✓				gently invert collection tube 10 times	none	VetCollect* tubes are recommended for patient samples
LaserCyte* Hematology Analyzer	95 µL of sample from 500 µL draw					✓	✓			gently invert collection tube for 30 seconds	none	use CBC5R tube and VetCollect* tube
Coag Dx* Analyzer	200 µL						✓	✓		citrate: use 1.8- or 2.7-mL tube containing 3.2% sodium citrate; gently invert collection tube at least 4 times; wait 5 minutes before analyzing sample	none	citrate: analyze sample within 2 hours; keep at room temperature whole blood: collect sample only when analyzer displays "Add Sample...Press Start."
IDEXX VetAutoread* Hematology Analyzer	111 µL					✓	✓			gently invert collection tube for 30 seconds (at least 10 times)	EDTA: 5 minutes citrate: 10 minutes (2 cycles)	use EDTA anticoagulated blood EDTA: canine, feline, equine citrate: bovine
IDEXX VetLab* UA* Analyzer	5 mL								✓	dip IDEXX UA* Strip into urine and blot	none	
SNAP* T ₄ Test	50 µL or 100 µL	✓	✓							serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm)	volume varies depending on test protocol
SNAP* Total T ₄ Test	65 µL	✓	✓							serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm)	volume varies depending on test protocol

Analyzer/Test	Sample Volume Required	Serum	Plasma Lithium Heparin	Plasma Fluoride Oxalate	Whole Blood Lithium Heparin	Whole Blood EDTA	Whole Blood Citrate	Whole Blood Untreated	Urine	Sample Preparation	Centrifuge (time/speed)	Notes
SNAP* Cortisol Test	25 µL or 100 µL	✓								serum: allow to clot for 20 minutes	serum: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm)	volume varies depending on test protocol
SNAP* Bile Acids Test	100 µL	✓								serum: allow to clot for 20 minutes	serum: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm)	
SNAP* cPL* Test	3 drops	✓								serum: allow to clot for 20 minutes	serum: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm)	
SNAP* Feline Triple Test	3 drops	✓	✓	✓	✓	✓				serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds whole blood: gently invert collection tube for 30 seconds	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) whole blood: none	
SNAP* 4Dx* Test	3 drops	✓	✓		✓	✓				serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds whole blood: gently invert collection tube for 30 seconds	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) whole blood: none	
SNAP* FIV/FelV Combo Test	3 drops	✓	✓		✓	✓				serum: allow to clot for 20 minutes plasma: gently invert collection tube for 30 seconds whole blood: gently invert collection tube for 30 seconds	serum/plasma: 120 seconds at 12,000 rpm (10 minutes at 8,000 rpm) whole blood: none	

E Quality Control

Overview

The purpose of quality control (QC) is to monitor the ProCytex Dx* analyzer's performance over time. QC also ensures the reliability of the analyzer and reagent system. Quality control should be run on a monthly basis. It may be necessary to run quality control for troubleshooting purposes.

Quality Control Materials

e-CHECK* (XS) is the quality control material used to monitor the performance of the ProCytex Dx analyzer. Do not use any other quality control materials on the analyzer.

The e-CHECK (XS) control is a stabilized whole blood matrix designed for statistical process control of the ProCytex Dx analyzer. This product is for veterinary use only, by laboratory professionals or appropriately trained personnel.

e-CHECK (XS) can be used until the expiration date found on the product packaging.

Adding a Quality Control Lot

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab.
3. Tap **Quality Control**.
4. Tap **Add QC Lot**.
5. If you have a bar code reader, scan the bar code on the e-CHECK (XS) insert. If you do not have a reader, enter the bar code into the Enter a Quality Control Bar Code text box and then tap **Next**.
6. Repeat step 5 for all 6 bar codes. After each bar code is entered, the bar codes display in the Quality Control Bar Codes group box. When a bar code is entered successfully, a green check mark displays to the left of the bar code. When a bar code is deemed invalid (because it does not exist or has expired), a red X displays to the left of the bar code and an error message may display.
7. Tap **Next**. The QC Lot now displays on the Quality Control screen.

Running Quality Control

This procedure should be run monthly to ensure optimum performance of your analyzer.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab.
3. Tap **Quality Control**.
4. Select the ProCytex Dx Quality Control lot you want to use and then tap **Run QC**. The ProCytex Dx sample drawer opens.

Note: If there are no valid QC lots available, add a new quality control lot (for detailed instructions, see "Adding a Quality Control Lot" above).

5. Warm an e-CHECK (XS) vial to room temperature (18°C–25°C [64°F–77°F]) for at least 15 minutes. Do not let the vial exceed room temperature.

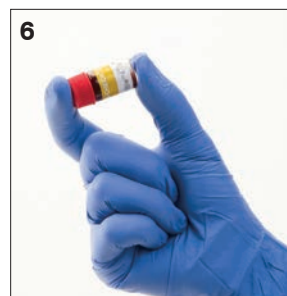
Note: Do not warm the vial in your hand.

6. Verify the cap is secure and gently invert the e-CHECK (XS) vial to mix until the cell button in the bottom of the vial is completely suspended.

Note: Inverting the vial occasionally during the warm-up process will decrease the amount of time it takes to complete this step.

7. Ensure the QC adapter is in place in the sample drawer.
8. Immediately place the e-CHECK (XS) vial in the tube adapter.
9. Tap **OK**. The IDEXX VetLab Station Home screen appears.
10. Press the **Start** button on the analyzer.
11. Return the e-CHECK (XS) vial to the refrigerator.

Note: e-CHECK (XS) is stable for 14 days once the cap is pierced.



Viewing and Printing Quality Control Results

1. On the IDEXX VetLab Station, select the QC run you want to view. Do one of the following from the Home screen:
 - Tap the QC lot information in the Recent Results list and then tap **View**.
 - Tap the **Records** button, tap the QC lot information, and then tap **View Records**.
2. In the Records: Select Results screen, tap the set of results that you want to view and then tap **View Results**.
3. On the Records: Test Results screen, tap the **ProCytex Dx** tab to view the QC results.
4. If you made an error, such as running the QC L2 instead of the QC L1, tap **Remove from QC Trend** at the top of the screen to remove the data point from the trending graph. For information on trending results, see "Trending Quality Control Results" below.
5. If you want to add a comment to the test results, tap **Add Comment** and enter the desired information.
6. Tap **Print** to print a copy of the QC results.

Trending Quality Control Results

1. On the IDEXX VetLab Station Home screen, tap the **Records** button, tap the QC lot information, and then tap **View Records**.
2. Select the QC results you want to trend.
3. Tap **Trend**.

Viewing Quality Control Lot Information

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab.
3. Tap **Quality Control**.
4. Tap **View QC Lot Information**. The lot number, level, unopened expiration date, and parameter information for that QC lot display.
5. Tap **Back** to return to the ProCytex Dx Instruments screen.

Overview

A variety of maintenance and diagnostic procedures allow you to maintain and service the ProCyte Dx* analyzer.

Note: Some of these tasks must be completed with assistance from an IDEXX Technical Support representative. Contact IDEXX Technical Support when prompted (see “IDEXX Technical Support Contact Information” on pages H-7–H-8).

Upgrading the Software

IDEXX will provide you, at no charge, updated instrument software on a periodic basis. These updates may include new features. Be sure to read the software notes contained within each new release.

For detailed upgrading instructions, see the insert included with the upgrade disc.

Running the Daily Standby Procedure

The Standby procedure is initiated daily at a user-defined time or when the analyzer is not in use for more than 11 hours and 45 minutes. When Standby mode is exited, the analyzer performs a background check to determine if the analyzer is ready to run or if it needs to be cleaned or requires maintenance. The analyzer should go into Standby mode once every 24 hours. It takes approximately 8 minutes to exit Standby mode.

Note: If you do not plan to use the analyzer on a particular day, do not exit Standby mode.

Important: Failure to run the Standby procedure may yield inaccurate results. IDEXX recommends that you place the analyzer in Standby mode at the end of each day's analyses or at least once every 24 hours if running the instrument continuously.

To run the Standby procedure at a certain time each day:

By default, the ProCyte Dx analyzer will set itself to Standby mode at 7:00 p.m. each day. Follow these instructions if you want to change the default time for Standby mode:

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **ProCyte Dx Settings**.
4. In the Standby Mode group box, tap the hour and/or minute up and down arrows to modify the time as needed.
5. Tap **a.m.** or **p.m.**
6. Tap **OK** to save your changes.

To run the Standby procedure when the analyzer is active:

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab.
3. Tap **Set to Standby**. A message appears indicating that the procedure takes approximately 3 minutes to complete.
4. Tap **OK**. The message box closes and the Home screen displays. The ProCyte Dx icon has a Busy status and a progress bar that shows the percentage complete. When the procedure completes, the status changes from Busy to Standby.

To exit Standby mode:

1. Tap the ProCyte Dx icon on the IDEXX VetLab Station Home screen (the icon should have a Standby status).
2. Tap **Exit Standby** on the ProCyte Dx Instruments screen. When prompted, tap **OK** to confirm that you want to exit Standby mode. The Auto Rinse procedure automatically begins on the ProCyte Dx analyzer and a background check is initiated. When these procedures are finished (after approximately 8 minutes), the ProCyte Dx analyzer is ready to begin processing samples.

Powering Off the Analyzer Weekly

It is recommended that you power off the analyzer and IPU once per week. For instructions on how to power off the analyzer, see "To Power Off the Analyzer" on page A-7.

Running the Monthly Rinse Procedure

The Monthly Rinse procedure:

- Washes contaminants from the optical detector block flow cell
- Automatically initiates the Auto Rinse procedure
- Generates a background check

The Monthly Rinse procedure takes approximately 25 minutes to complete. To ensure optimum analyzer performance, IDEXX recommends that you perform this procedure each month.

For this procedure, you must prepare a 5% bleach solution by combining filtered, unscented bleach with distilled/deionized water. The ratio of bleach to distilled/deionized water varies depending on the concentration of the bleach (for example, Clorox* Regular Bleach has a 6% concentration, so the solution should be 5 parts Clorox Regular Bleach and 1 part distilled/deionized water).

Important: Only use filtered and unscented bleach without surfactants. DO NOT USE scented bleaches or generic versions of regular bleach. DO NOT USE tap water. The solution can be used up to one week after it is made.

To run the Monthly Rinse procedure:

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap **Monthly Rinse**. The Monthly Rinse message box displays and the sample drawer opens on the ProCyte Dx analyzer.
4. Read the message and verify that the time required for the procedure does not have an impact on your work flow.

5. Prepare a 5% bleach solution by combining filtered, unscented bleach with distilled/deionized water. The ratio of bleach to distilled/deionized water varies depending on the concentration of the bleach (for example, Clorox® Regular Bleach has a 6% concentration, so the solution should be 5 parts Clorox Regular Bleach and 1 part distilled/deionized water).
6. Dispense 3 mL of the bleach solution into an untreated tube and insert the tube into the sample drawer on the analyzer.
7. Tap **OK**.
8. Press the **Start** button on the analyzer to begin the Monthly Rinse procedure. The ProCyte Dx icon on the Home screen displays with a Busy status and a progress bar that shows the percentage complete for the Monthly Rinse procedure.

Cleaning the Case

Always disconnect the power cable before cleaning the analyzer.

Clean the outside of the analyzer with a damp (not wet) lint-free cloth. A mild disinfectant or liquid soap will remove grease. Do not use any of the following near the analyzer: organic solvents, ammonia-based cleaners, ink markers, sprays containing volatile liquids, insecticides, polish, or room freshener.

Care should be taken not to spill any samples, chemicals, cleaning agents, water, or other fluids on/in the analyzer.

Note: Dust and animal hair can lead to analyzer failures. Routinely dust off the analyzer and surrounding surfaces with a damp cloth.

Cleaning the Fan Filter

The analyzer's fan filter should be cleaned monthly.

The analyzer should be powered off when cleaning the fan filter. As a result, it is recommended that you clean the fan filter during the weekly reboot process when the analyzer and the IPU are both powered off.

To clean the fan filter:

1. Ensure the analyzer is powered off.
2. Open the analyzer's right side cover.
3. Remove the fan filter.
4. Vacuum the filter to remove the debris.
5. Replace the fan filter and close the right side cover.



Managing Data

You may want to copy your ProCyte Dx files to a CD or print a performance report for troubleshooting purposes.

Copying Data Files to a CD

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap the **Data** tab.

4. Tab **Copy Data Files to CD-R**.
5. Load a CD-R into the IDEXX VetLab Station CD drive and then tap **Next**. A progress bar displays indicating the percentage complete for the copying.
6. When the copying is complete, tap **Close**.

Printing a Performance Report

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab and then tap **ProCytex Dx Diagnostics**.
3. Tap the **Data** tab.
4. Tab **Print Performance Report**. The performance report prints.

Overview

Some of these tasks must be completed with assistance from an IDEXX Technical Support representative. Contact IDEXX Technical Support when prompted (see “IDEXX Technical Support Contact Information” on pages H-7–H-8).

Important: The ProCyte Dx* analyzer must have a Ready status to run a maintenance procedure. Most on-demand diagnostic and maintenance tasks are accessible from the ProCyte Dx Diagnostics screen on the IDEXX VetLab Station.

Differences in Results

With a Commercial Laboratory or Other Instrument

Comparing results from different laboratories that may be using different equipment or methods is imprecise at best. Any comparisons should be performed on the same sample that has been “split,” stored under like conditions, and tested at approximately the same time. If too much time elapses between running sample, the sample can age. For example, after 8 hours, MCV values change as cells tend to swell. Compare each result to the reference interval stated by IDEXX or the commercial laboratory (as appropriate). Each result should have the same relationship to its method’s reference interval. For instance, a sample giving a ProCyte Dx analyzer result that is slightly below the reference interval should produce a laboratory result slightly below the laboratory’s reference interval.

With Your Own Expectations

If you receive results that are not what you expected for a particular patient, consider the following:

- Were there any abnormalities noted in the sample taken (e.g., hemolysis, lipemia, and stress) that could cause the changes seen?
- How far outside the reference interval is the result? The more narrow the reference interval, the more important minor changes become.
- Would any treatments or drugs the patient may be taking alter the results?
- Do clinical findings support the results? Unexpected abnormal results are usually accompanied by other evidence.
- Is the result biologically significant or possibly so?
- What other tests or procedures might be used to confirm or reject this result?

All laboratory results should be interpreted in light of the case history, the clinical signs, and the results of ancillary tests.

Accessing the ProCyte Dx Diagnostics Screen

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.

When a maintenance function is in process, the ProCyte Dx icon on the Home screen displays with a Busy status and a progress bar that shows the percentage complete for the process.

Analyzer Icon Displays with an Offline Status

When communication between the IPU and the router is lost, the ProCytex Dx icon on the IDEXX VetLab Station Home screen displays with an Offline status. To resolve, ensure the Ethernet cable that connects the IPU to the router is properly connected. If the situation persists, follow these instructions:

1. Power off the analyzer.
2. Press and hold the power button on the IPU until it shuts down.
3. Wait 5 seconds and then power the IPU back on.
4. Once the ProCytex Dx icon on the IDEXX VetLab Station Home screen changes to a Busy status (yellow), power the analyzer back on.

Analyzer Icon Displays with an Busy Status when a Sample Is Not Being Processed

When communication between the IPU and the analyzer is lost, the ProCytex Dx icon on the IDEXX VetLab Station Home screen displays with a Busy status. To resolve, ensure the Ethernet cable that connects the IPU to the analyzer is properly connected. If the situation persists, follow these instructions:

1. Power off the analyzer.
2. Press and hold the power button on the IPU until it shuts down.
3. Wait 5 seconds and then power the IPU back on.
4. Once the ProCytex Dx icon on the IDEXX VetLab Station Home screen changes to a Busy status (yellow), power the analyzer back on.

Running the Auto Rinse Procedure

The Auto Rinse procedure cleans the detector chamber and the dilution line. It also performs a background check. The Auto Rinse procedure takes approximately 4 minutes to complete.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab and then tap **ProCytex Dx Diagnostics**.
3. Tap **Auto Rinse**. The Auto Rinse message box displays.
4. Read the message and verify that the time required for the procedure does not have an impact on your work flow. Then, tap **OK**.

Running the Waste Chamber Rinse Procedure

The Waste Chamber Rinse procedure uses a 5% bleach solution to rinse the waste chamber in the ProCytex Dx analyzer. This procedure takes approximately 10 minutes to complete. This procedure should be performed when prompted.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab and then tap **ProCytex Dx Diagnostics**.
3. Tap **Waste Chamber Rinse**. The Waste Chamber Rinse message box displays.
4. Read the message and verify that the time required for the procedure does not have an impact on your work flow.

5. Prepare a 5% bleach solution by combining filtered, unscented bleach with distilled/deionized water. The ratio of bleach to distilled/deionized water varies depending on the concentration of the bleach (for example, Clorox* Regular Bleach has a 6% concentration, so the solution should be 5 parts Clorox Regular Bleach and 1 part distilled/deionized water).

Important: Only use filtered and unscented bleach without surfactants. DO NOT USE scented bleaches or generic versions of regular bleach. DO NOT USE tap water. The solution can be used up to one week after it is made.

6. Dispense 3 mL of the bleach solution into an untreated tube and insert the tube into the sample drawer on the analyzer.
7. Tap **OK**.
8. On the ProCyt Dx analyzer, press the **Start** button to begin the Waste Chamber Rinse procedure. The ProCyt Dx icon on the Home screen displays with a Busy status and a progress bar that shows the percentage complete for the Waste Chamber Rinse procedure.

Running the Flow Cell Rinse Procedure

The Flow Cell Rinse procedure washes contaminants from the optical detector block flow cell. This procedure takes approximately 6 minutes to complete.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyt Dx** tab and then tap **ProCyt Dx Diagnostics**.
3. Tap **Flow Cell Rinse**. The Flow Cell Rinse message box displays.
4. Read the message and verify that the time required for the procedure does not have an impact on your work flow.
5. Prepare a 5% bleach solution by combining filtered, unscented bleach with distilled/deionized water. The ratio of bleach to distilled/deionized water varies depending on the concentration of the bleach (for example, Clorox* Regular Bleach has a 6% concentration, so the solution should be 5 parts Clorox Regular Bleach and 1 part distilled/deionized water).

Important: Only use filtered and unscented bleach without surfactants. DO NOT USE scented bleaches or generic versions of regular bleach. DO NOT USE tap water. The solution can be used up to one week after it is made.

6. Dispense 3 mL of the bleach solution into an untreated tube and insert the tube into the sample drawer on the analyzer.
7. Tap **OK**.
8. On the ProCyt Dx analyzer, press the **Start** button to begin the Flow Cell Rinse procedure. The ProCyt Dx icon on the Home screen displays with a Busy status and a progress bar that shows the percentage complete for the Flow Cell Rinse procedure.

Running the Drain Reaction Chamber Procedure

The Drain Reaction Chamber procedure, which takes less than 1 minute to complete, drains accumulated reagents out of the reaction chamber and reprimes the ProCytex Dx analyzer. Immediately following this procedure, the Auto Rinse procedure automatically begins. Total time for both procedures to complete is approximately 9 minutes.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab and then tap **ProCytex Dx Diagnostics**.
3. Tap **Drain Reaction Chamber**. The Drain Reaction Chamber message box displays.
4. Read the message and verify that the time required for the procedure does not have an impact on your work flow. Tap **OK**.

Running the Drain RBC Isolation Chamber Procedure

The Drain RBC Isolation Chamber procedure, which takes approximately 3 minutes to complete, drains accumulated reagents out of the RBC isolation chamber.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab and then tap **ProCytex Dx Diagnostics**.
3. Tap **Drain RBC Isolation Chamber**. The Drain RBC Isolation Chamber message box displays.
4. Read the message and verify that the time required for the procedure does not have an impact on your work flow. Tap **OK**.

The ProCytex Dx icon displays on the IDEXX VetLab Station Home screen with a Busy status along with a progress bar indicating the percentage that the Drain RBC Isolation Chamber procedure is complete.

Running the Drain Waste Chamber Procedure

When draining the waste chamber, the waste chamber drainage sequence can be run to drain accumulated waste out of the waste chamber. The Drain Waste Chamber message box is displayed while the sequence is running.

Note: For the Drain Waste Chamber sequence to run, the ProCytex Dx must be in Ready status. If a process is attempted while the analyzer is in any other status, an error warning will be sounded on the analyzer and the Drain Waste Chamber message box will not appear.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCytex Dx** tab and then tap **ProCytex Dx Diagnostics**.
3. Tap **Drain Waste Chamber**. The Drain Waste Fluid message box displays. When the drainage process is complete, this window closes.
4. Tap **OK**.

Running the Reset Air Pump Procedure

The Reset Air Pump procedure, which takes less than 1 minute to complete and should be performed when the pump is replaced.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap **Reset Air Pump**. The Reset Air Pump message box displays.
4. Tap **OK**.

Running the Reset Aspiration Motor Procedure

The Reset Aspiration Motor procedure takes less than 1 minute to complete.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap **Reset Aspiration Motor**. The Reset Aspiration Motor message box displays.
4. Tap **OK**.

Running the Reset Sheath Motor Procedure

The Reset Sheath Motor procedure takes less than 1 minute to complete.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap **Reset Sheath Motor**. The Reset Sheath Motor message box displays.
4. Tap **OK**.

Running the Reset Tube Motor Procedure

The Reset Tube Motor procedure takes less than 1 minute to complete.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap **Reset Tube Motor**. The Reset Tube Motor message box displays.
4. Tap **OK**.

Running the Reset WB Motor Procedure

The Reset WB Motor procedure takes less than 1 minute to complete.

1. Tap **Instruments** on the IDEXX VetLab Station Home screen.
2. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
3. Tap **Reset WB Motor**. The Reset WB Motor message box displays.
4. Tap **OK**.

Running the Remove Clog Procedure

The Remove Clog procedure, which takes approximately 1 minute to complete, eliminates clogs from the RBC detector.

1. Ensure the ProCyte Dx analyzer has a Ready status.
2. Tap **Instruments** on the IDEXX VetLab Station Home screen.
3. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
4. Tap **Remove Clog**. The Remove Clog message box displays.
5. Read the message and verify that the time required for the procedure does not have an impact on your work flow. Tap **OK**.
6. On the ProCyte Dx analyzer, press the **Start** button to begin the Remove Clog procedure. The ProCyte Dx icon on the Home screen displays with a Busy status and a progress bar that shows the percentage complete for the Remove Clog procedure.

Running the Clear Pinch Valve Procedure

The Clear Pinch Valve procedure takes approximately 1 minute to complete.

1. Ensure the ProCyte Dx analyzer has a Ready status.
2. Tap **Instruments** on the IDEXX VetLab Station Home screen.
3. Tap the **ProCyte Dx** tab and then tap **ProCyte Dx Diagnostics**.
4. Tap **Clear Pinch Valve**. The Clear Pinch Valve message box displays.
5. Read the message and verify that the time required for the procedure does not have an impact on your work flow. Tap **OK**.

Smart Flags*

Automated cell counters have two main objectives. First, they must examine the various components of a blood sample and return the appropriate red blood cell count, white blood cell count, platelet count, and various cellular indices. Second, they must prompt the user with a message in the event that the accuracy of these cellular evaluations may be compromised. For example, if the blood sample being analyzed contains white blood cells with markedly abnormal morphology, the analyzer may not be able to provide full characterization and the device will return a message suggesting a blood film should be reviewed for confirmation.

The flagging for the ProCyt Dx analyzer signals the user that an abnormal cell or group of cells is present and it cannot be characterized in the normal hemogram. An asterisk (*) indicates the analyzer is questioning the presence of the cellular population. A hash mark (---) indicates the analyzer was unable to return a result for a particular parameter. In either case, a blood film should be consulted. These message flags act as internal controls to remind the doctor that a sample must be examined under a microscope. In the vast majority of cases, this microscopic review process will take less than 1–3 minutes. A manual leukocyte differential will be needed only rarely.

Flag	Displays when any of the following parameters is flagged with an asterisk (*) or hash marks (---)		Description	Action Required
WBC Abnormal Distribution	WBC NEU LYM MONO EOS BASO	%NEU %LYM %MONO %EOS %BASO	The patient's white blood cell morphology made it difficult to separate individual populations.	Evaluate the blood film to confirm the values.
RBC Abnormal Distribution	RBC HCT MCV MCH	MCHC RDW RETIC %RETIC	Abnormal distribution of the size, shape, or numbers of the patient's red blood cells.	
RETIC Abnormal Distribution	RETIC %RETIC		Abnormal distribution of the size, shape, or numbers of the patient's reticulocytes.	
PLT Abnormal Distribution	PLT MPV	PDW PCT	Abnormal distribution of the size, shape, or numbers of the patient's platelets or too few platelets available for accurate assessment.	
PLT Aggregates Detected	PLT MPV PDW PCT	EOS BASO [†] %EOS %BASO [†]	The patient's platelets may be clumped and interfere with accurate platelet parameters as well as basophil and eosinophil distribution.	

[†]For feline species, BASO and %BASO cannot be determined and a result of "---" will be reported.

Installing the ProCyte Dx* Analyzer

- The ProCyte Dx analyzer weighs approximately 55 pounds (25 kg). It may require multiple people to lift the instrument. Be sure to use a table or desk that can support the weight of the analyzer.
- Position the analyzer so that the power switch and power cord are easily accessible.
- To secure the space required for maintenance, install the IDEXX VetLab Station touch-screen monitor and computer on the right side of the ProCyte Dx analyzer.
- The analyzer should be installed in a well-ventilated location, away from water, dust, and direct sunlight. Do not place the analyzer in a location where it can be splashed by water. It should be located in a space large enough to be used safely, including when the sample drawer is open. If additional equipment is to be attached/connected to it, additional desk space will be required.
- The analyzer should be placed on a level surface with a minimum of 2 inches (5 cm) between the back of the analyzer and any wall.
- Do not install in an area of elevated temperature and vibration.
- Do not install this instrument in places where chemicals are stored or gas can develop.
- Do not use this instrument in any operating environment that has electroconductive or flammable gases, including oxygen, hydrogen, and anesthesia.
- The power cable for this instrument is approximately 6 feet (1.8 m) long. Use a nearby outlet that is designed for it.

To install the analyzer:

1. Before you unpack the analyzer, choose an optimum location for the instrument. Choose a well-ventilated area away from obvious sources of heat, direct sunlight, cold, humidity, or vibrations. For optimum results, room temperature should be at 15°C–30°C (59°F–86°F) and relative humidity at 30%–85%.
2. Unpack the analyzer.
3. Using the flat blade screwdriver provided, unlock and open the right side door.
4. Remove the binder clip from the piercer belt.
5. Remove the piece of tape on the protection plate 174.
6. Close and lock the right side door.
7. Open the stain compartment cover and unscrew the empty stain pack from the caps/probes.
8. Remove the caps from a new stain pack and set them aside.
9. Screw a new stain pack into the caps in the stain compartment, ensuring each probe is inserted into the correct pouch (the cords are labeled).
10. Place the caps from the new stain pack onto the empty stain pack. Dispose of the stain pack according to applicable local disposal laws.

11. Place the new stain pack into the compartment, ensuring the cords are in front of the stain pack inside the compartment. Then, close the cover.
12. Connect the ends of the tubes on the Quick-Connect Top to the back of the analyzer. Each tube, matching the labels on the tubes and on the back of the analyzer.
13. Open a reagent kit, remove the caps from the 3 bottles, System Diluent, and the waste container and place the Quick-Connect Top over the kit so that the probes are inserted into the 3 bottles, System Diluent, and the waste container.
14. Ensure the analyzer is powered off and then connect the power cable to the analyzer and to a properly grounded electrical outlet.

Warning:

- Be sure to ground this analyzer. Improper grounding may cause electrical shock.
- The analyzer's power supply cord uses a 3-prong plug. When the power supply socket is provided with grounding, simply plug it to the socket.
- Be sure not to exceed socket capacity. Failure to do so may cause a fire.

To Install the IDEXX VetLab Router

Note: If you already have a router connected directly to the IDEXX VetLab Station computer, you can skip this section and move to the *To Connect the ProCyte Dx Analyzer to the IPU* section (below).

1. Connect the AC power adapter to the power port on the back of the router supplied by IDEXX Laboratories.
2. Plug the AC power adapter into an electrical outlet.
3. Connect one end of the Ethernet cable (provided with the router) into any available numbered port on the router.

Important: Do not connect the IDEXX VetLab Station directly to the Internet/WAN port on the router.

4. Connect the other end of the Ethernet cable (from step 3) into the IDEXX VetLab Station computer's Ethernet port, which is located near the center panel on the back of the computer.

Note: If this Ethernet port on the IDEXX VetLab Station computer is currently being used to connect the IDEXX VetStat* Electrolyte and Blood Gas Analyzer (red Ethernet cable) to your IDEXX VetLab Station, disconnect the red Ethernet cable. Then complete step 4 above. The *To Reconnect the VetStat Analyzer* section, found on the next page, explains how to reconnect the VetStat analyzer after the router is installed.

To Connect the ProCyte Dx Analyzer to the IPU

1. Connect the Ethernet end of the shielded Ethernet cable into the USB-to-Ethernet adaptor and then into the ProCyte Dx analyzer.

Note: This cable should ONLY be used to connect the ProCyte Dx analyzer to the IPU.

2. Connect the USB end of the shielded Ethernet-to-USB converted cable into an available USB port on the back of the IPU.
3. Power on the ProCyte Dx analyzer.

To Connect the IPU to the IDEXX VetLab Station Connectivity Router

1. Connect the Ethernet cable provided to the next available port on the back of the router.
Important: Do not connect the ProCytex Dx analyzer directly to the Internet port on the router.
2. Connect the other end of the Ethernet cable (from step 1) into the Ethernet port on the back of the IPU.
3. Power on the IDEXX VetLab Station.
4. Once all of the analyzer icons (except ProCytex Dx) are present with a Ready status, power on the IPU.
5. When the ProCytex Dx icon displays with a Busy status (yellow), power on the ProCytex Dx analyzer.

Note: If the ProCytex Dx icon does not appear on the IDEXX VetLab Station Home screen within 5 minutes, contact IDEXX Technical Support for assistance (see “IDEXX Technical Support Contact Information” on pages H-7–H-8).

To Reconnect the VetStat Analyzer

Important: This information is only for practices with a VetStat analyzer. The direct connection between the VetStat analyzer and the IDEXX VetLab Station uses a standard Ethernet cable with a light-purple cross-over adapter. This light-purple crossover adapter, which is located on one end of the cable, must be removed before reconnecting the Ethernet cable to the router.

1. Ensure the light-purple crossover adapter has been removed from the VetStat Ethernet cable.
2. Connect one end of the VetStat Ethernet cable to the VetStat analyzer and the other end to the next available port on the router.

Important: Do not connect the VetStat analyzer directly to the Internet port on the router.

3. On the VetStat Home screen, tap **System Manager** and then tap **Setup**.
4. Use the alphanumeric keypad to enter the setup password, **207**, and tap **OK**.
5. From the Setup screen, tap **Hardware** and then tap the **Ethernet** tab.
6. Select **Dynamic** as the network setting and then tap **OK** to save the change.
7. Turn off the VetStat analyzer by toggling the power switch to OFF. Then, turn on the analyzer. After the VetStat analyzer returns to the Home screen, the VetStat icon will appear at the bottom of the IDEXX VetLab Station Home screen.

Note: If the VetStat icon does not appear on the IDEXX VetLab Station Home screen within 3 minutes, contact IDEXX Technical Support for assistance (see “IDEXX Technical Support Contact Information” on pages H-7–H-8).

Technical Specifications

Dimensions and Weight

Main Unit Dimensions	Width: 12.6" (320 mm)
	Height: 15.8" (403 mm)
	Depth: 16.26" (413 mm)
Main Unit Weight	Approximately 55 lb (25 kg)

Performance Specifications and Throughput

Throughput	CBC+DIFF+RETIC: approximately 30 samples/hour	
Ambient temperature	15°C–30°C (59°F–86°F)	
	Optimum: 23°C (73.4°F)	
Relative humidity	30%–85%	
Power supply	100–240 V AC, 50/60 Hz	
Power consumption	210 VA or less	
Display range	WBC	0.00–999.99 K/ μ L
	RBC	0.00–99.99 M/ μ L
	HGB	0.0–35.0 g/dL
	HCT	0.0%–100.0%
	PLT	0–9999 K/ μ L
	%RETIC	0.00%–99.99%
	RETIC	0–9999 K/ μ L
Background limits	WBC	0.1 K/ μ L
	RBC	0.02 M/ μ L
	HGB	0.1 g/dL
	PLT	10 K/ μ L
	PLT-O	10 K/ μ L
Precision Precision data generated by a trained professional running 6 instruments across five days. Ten replicates of normal level control were gathered each day for a total of 300 precision runs.	WBC	3.0%
	RBC	1.5%
	HGB	1.5%
	HCT	1.5%
	PLT	4.0% (100 K/ μ L or more)
	%NEU	8.0%
	%LYM	8.0%
	%MONO	11.0%
	RETIC	15% (RBC 3.00 M/ μ L or more, %RETIC 1%–4%)
	%RETIC	15% (RBC 3.00 M/ μ L or more, %RETIC 1%–4%)
Analysis Parameters	See pages A-7–A-8	

Accuracy[†] Analysis was generated from 250 total samples (50 of each species) and compared to the Sysmex XT-V	WBC	R ≥ 0.95
	RBC	R ≥ 0.95
	HGB	R ≥ 0.95
	HCT	R ≥ 0.95
	PLT	R ≥ 0.90
	RETIC	R ≥ 0.90
	%RETIC	R ≥ 0.90
	%NEU	R ≥ 0.90
	%LYM	R ≥ 0.60
	%MONO	R ≥ 0.60
	%EOS	R ≥ 0.70
	%BASO	R ≥ 0.45
Linearity Data generated using both whole blood panels and commercially available linearity controls.	WBC	0–310 K/ μ L R ≥ 0.95
	RBC	0.00–16.00 M/ μ L R ≥ 0.95
	HGB	0.0–25.0 g/dL R ≥ 0.95
	HCT	0.0%–60.0% HCT R ≥ 0.95
	PLT	0–2000 K/ μ L R ≥ 0.95
	%RETIC	0.0%–23% R ≥ 0.90
	RETIC	0.00–3.0 M/ μ L R ≥ 0.90
Carryover	WBC	1.0% or less
	RBC	1.0% or less
	HGB	1.0% or less
	HCT	1.0% or less
	PLT	1.0% or less
Aspiration Volume	30 μ L	
Sample Volume Required for Proper Aspiration	VetCollect* sample tube: Minimum of 500 μ L Micro sample tube: Minimum of 90 μ L (dependent on the tube manufacturer's recommendations)	
Data Storage Capacity	Data is stored on the IDEXX VetLab* Station. The IDEXX VetLab Station memory is upgradeable, and therefore, data capacity is virtually unlimited.	
Storage Condition (Transportation)	Ambient temperature: -10°C–60°C (14°F–140°F)	
	Relative humidity: 10%–90% or less (no condensation/keep dry)	

Laser	Class 1 device, 635 nM, 15 mW capability adjusted to 5.5 ± 0.1 mW This equipment complies with: • FDA Standard 21 CFR 1040.10 • IEC 60825-1, 2nd Ed., 2007 Safety of Laser Products Part I: Equipment Classification and Requirements
Reagent kit and stain pack operating and storage temperatures	Operating temperature: 15°C–30°C (59°F–86°F) Storage temperature: 2°C–30°C (36°F–86°F)

IDEXX Technical Support Contact Information

IDEXX Sales Representative: _____

Telephone/Voice Mail: _____

United States

IDEXX Laboratories, Inc.
One IDEXX Drive
Westbrook, Maine 04092 USA

Toll-Free Technical Support 1-800-248-2483
Main Telephone Number 1-207-556-0300
Toll-Free Fax 1-800-248-3010
idexx.com

The Netherlands

IDEXX Europe B.V.
Scorpius 60 Building F
2132 LR Hoofddorp
The Netherlands

Toll-Free Technical Support 00800 1234 3399
Telephone (31) 23 558 7000
Toll-Free Fax 00800 1234 3333
Fax (31) 23 558 7233
www.idexx.nl

France

IDEXX S.A.R.L.
Bâtiment Floride - Eragny Parc
11 Allée Rosa, Luxembourg
95610 Eragny, sur Oise
France

Toll-Free Technical Support 00800 1234 3399
Telephone (33) 1 34 32 62 00
Fax (33) 1 34 30 02 08
www.idexx.fr

Germany

IDEXX GmbH
Mörkestraße 28/3
D-71636 Ludwigsburg
Germany

Toll-Free Technical Support 00800 1234 3399
Fax 0800 6645627
www.idexx.de

Italy

IDEXX Laboratories Italia, S.r.l.
Via Canova 27
20145 Milano
Italy

Toll-Free Technical Support 00800 1234 3399
Telephone (39) 02 319 20 31
Fax (39) 02 319 20 347
www.idexx.it

Spain

IDEXX Laboratorios, S.L.
c/ Plom, n° 2-8, 3°
08038 Barcelona
Spain

Toll-Free Technical Support 00800 1234 3399
Telephone (34) 93 414 26 08
Fax (34) 93 414 74 78
www.idexx.es

United Kingdom

IDEXX Laboratories Ltd.
Milton Court, Churchfield Road
Chalfont St Peter
Buckinghamshire SL9 9EW
United Kingdom

Toll-Free Technical Support 00800 1234 3399
Telephone (44) 01753 891 660
Fax (44) 01753 891 520
www.idexx.co.uk

Australia

IDEXX Laboratories Pty. Ltd.
Metro Centre
Unit 20, 30-46 South Street
Rydalmere, New South Wales 2116
Australia

Toll-Free Technical Support 1300 44 33 99
Telephone (61) 2 9898 7300
Fax (61) 2 9898 7302
www.idexx.com.au

Canada

IDEXX Laboratories Canada Corporation
C/O Apple Express
5055 Satellite Drive, Unit 5
Mississauga, ON L4W 5K7
Canada

Toll-Free Technical Support 1-800-248-2483
Telephone 1-905-602-9499
Toll-Free Fax 1-800-248-3010
Fax..... 1-905-602-6640
idexx.com

Japan

IDEXX Laboratories KK
3-3-7 Kitano, Mitaka-shi, Tokyo
181-8608 Japan

Toll-Free Technical Support 0120-71-4921
Telephone (81) 422 71 4921
Fax..... (81) 422 71 4922
www.idexx.co.jp

