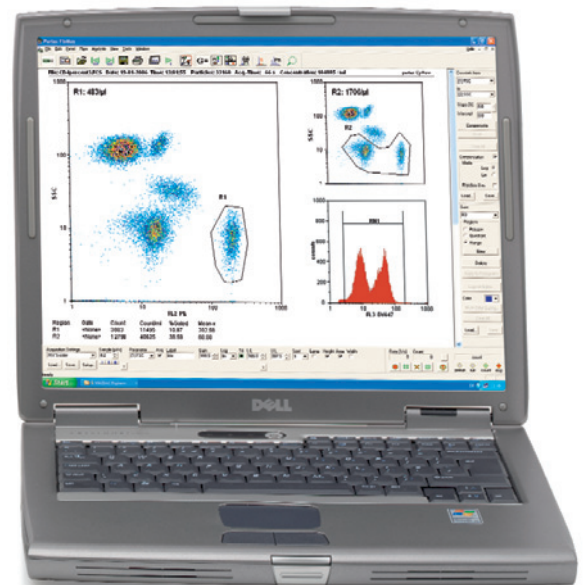
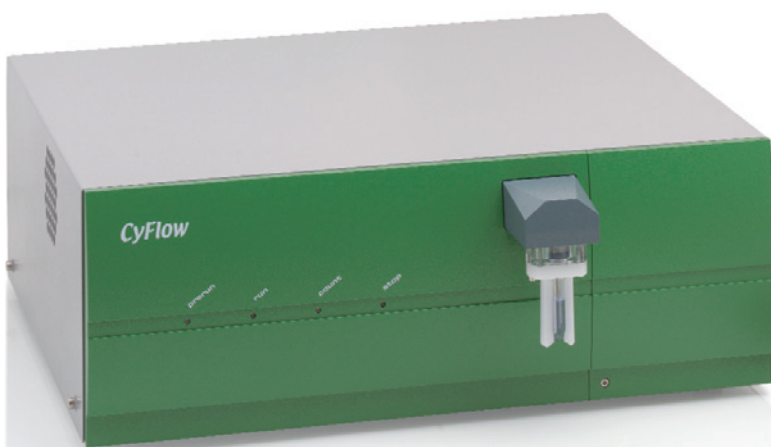


partec

CyFlow[®] SL_3

Healthcare | Immunology



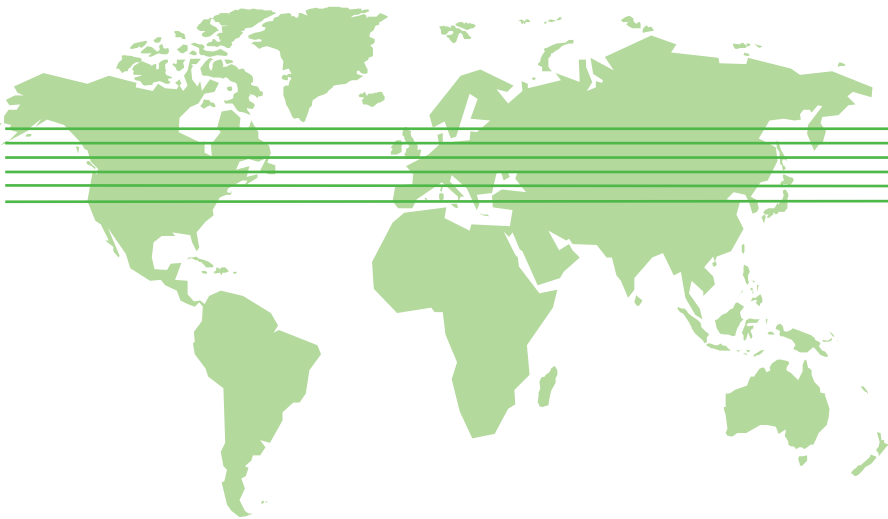
Portable FCM System for Routine HIV/AIDS Monitoring of Adult and Pediatric Patients

01 _____ COMPANY

Flow Cytometry made in Germany



New sophisticated applications and increasing requirements for reliable results in research and clinical routine within the shortest possible time - The challenge for flow cytometry instrumentation, automation, and software.



partec

A well-established network of subsidiaries and distributors in more than 60 countries worldwide characterizes Partec's commitment to the increasing focus and need for global access to Flow Cytometry instrumentation and application support:

www.partec.com/partec/distributors.html



More than 35 Years of Experience and Professional Expertise

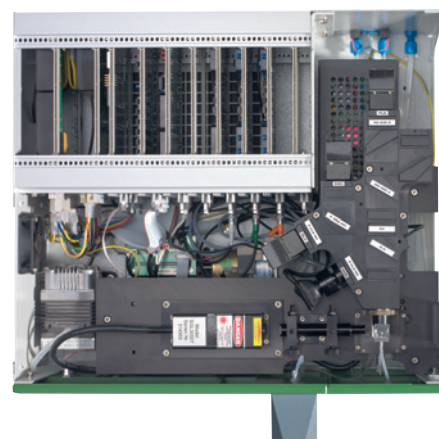
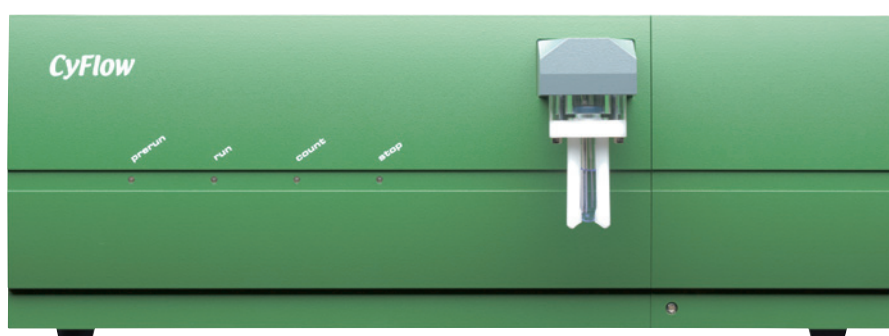
Partec – pioneer in Flow Cytometry since 1968 – responds to these requirements with the new generation of Windows™XP based CyFlow® and PAS™ FCM systems featuring innovative computer controlled flow systems, modular optical systems with advanced PMTs for all optical channels, most modern computer and digital electronic technologies including fast and precise 16 bit ADC converters and realtime data acquisition and display.

02 HIGHLIGHTS

CyFlow® SL_3 FCM System



- _ ultracompact and fully equipped mobile/portable instrument
- _ dimensions [cm]: L 43 x H 16 x D 37
- _ highest stability/robustness and highest precision
- _ single platform True Volumetric Absolute Counting (TVAC)
- _ high fluorescence sensitivity < 50 MESF (PE)
- _ power connection: regular 100/240 V AC or car battery and solar panels (12 V DC)
- _ set-up time: < 5 minutes
- _ volumetric absolute counting of CD4, CD45, CD8, CD3
- _ price per CD4 test: EUR 1.75
- _ price per CD4% test: EUR 2.50
- _ capacity: up to 250 CD4 or CD4% tests per day
- _ price for CyFlow® SL_3 including 300 tests: EUR 20,850



03 _____ TECHNOLOGY

CyFlow® SL_3 FCM System

The ultracompact and portable CyFlow® SL_3 provides most accurate and uniquely affordable absolute cell counting in HIV/AIDS monitoring, both for adults and children.

| Compact

The CyFlow® SL_3 is a fully equipped 3 parameter (SSC + 2 colour fluorescence) portable / desktop flow cytometer. It contains a solid state laser for green excitation. In the optionally available blue laser version it is fully compatible with standard flow cytometers used in clinical and research immunology. Its small size and robustness makes the CyFlow® SL_3 easy to place even in laboratories with limited space and limited resources. It is the perfect device to take over the routine patient monitoring from more expensive and service demanding large flow cytometers; dramatical cut down of running costs is achieved.

| High Stability | alignFree™ Technology

The complete optical system of the CyFlow® SL_3 is designed as one solid metal block. Time consuming installation and optical checks, realignments of lasers and readjustments are no longer required due to the unique Partec alignFree™ Technology.

| High Precision

The solid state laser of CyFlow® SL_3 shows a unique short and long term stability superior over water and air cooled gas lasers. High

precision analysis is maintained by the extraordinary long life time of solid state lasers.

| Power Connection

The CyFlow® SL_3 does not need particular power line connections, it runs on regular 100/240 V AC as well as 12 V DC. For field studies, in remote areas, and places with unstable power lines, the CyFlow® SL_3 can easily be connected to a car or solar panels. It is perfectly prepared for scientific expeditions, field studies, and as mobile flow cytometer for decentralized use close to patients in hospitals and small medical service stations.

| Price/Performance Ratio

The CyFlow® SL_3 opens a new era of flow cytometry, it supports all applications as known from traditional large flow cytometers at equipment costs roughly half the price of them. In addition, service and running costs as well as maintenance are reduced to a neglectible minimum near zero.

Selection of Fluorochromes for the CyFlow® SL_3 Light Source System

Type of laser

Fluorescence Channel

Fluorochromes

green solid state laser 532 nm



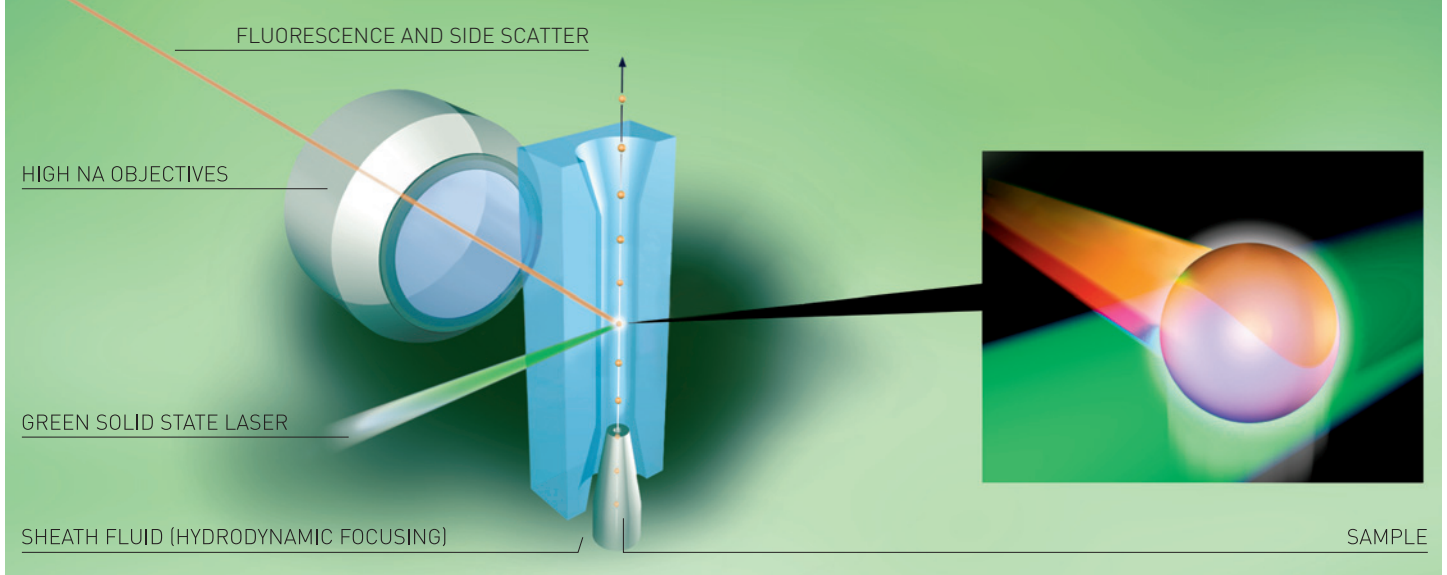
ORANGE
RED

PE
PE-Cy5

Alexa Fluor® 532
PE-Cy5.5 7-AAD

SYTO 80-83
PI

CY 3



The unique Partec quartz flow cuvette is the heart of the CyFlow® SL_3, ensuring that particles and cells cross the excitation light with best possible precision.

The design of the flow cuvette incorporates more than 35 years of experience in handling fluids with sub-micrometer and nanoliter precision. Thanks to the optical and mechanical precision of the flow cuvette, superior results are guaranteed

for all parameters. The sample is transported with help of a computer controlled digital syringe pump, part of a virtually cross-contamination-free fluid system.

The True Volumetric Absolute Counting (TVAC) is a unique feature of all Partec Flow Cytometers, offering highest absolute counting precision and accuracy.

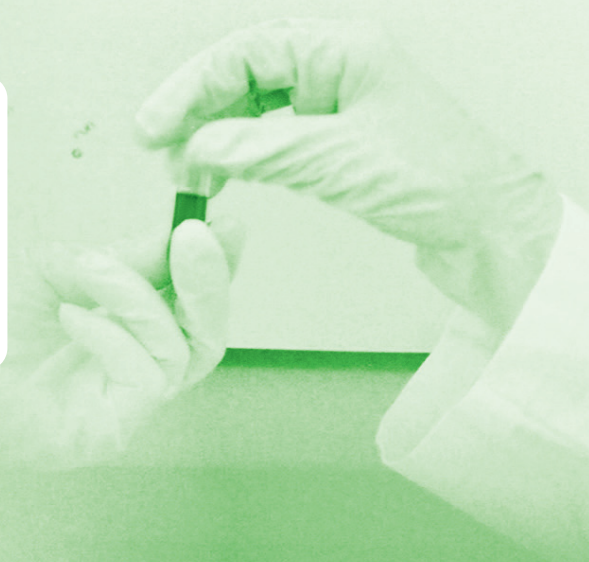
The CyFlow® SL_3 analyses concentrations of any particle or cell subpopulations of interest using True Volumetric Absolute Counting. This unique method is solely based on the fundamental definition of absolute counting respectively the particle concentration (c) which is equal to the counted number (N) of particles (e.g. cells) in a given volume (V), $c = N / V$. In the CyFlow® SL_3, the volume is measured directly by mechanical means, rather than by calibration with expensive beads with a—sometimes doubtful—“given” nominal concentration. Thus, the precision of volume measurement is defined by a fixed mechanical design, eliminating any errors related to varying bead concentrations or bead aggregation. The CyFlow® SL_3 allows the analysis of a fixed volume as defined by the distance between two platinum electrodes reaching into the sample tube with a given diameter.

Alternatively, a well defined volume of free choice involving the digital sample speed control can be used. Benefits of True Volumetric Absolute Counting:

- digital volumetric precision by mechanical design: CV < 2 %
- no errors related to calibration
- no additional time and preparation steps for reference beads or haematology reference count
- no expenses for calibration beads
- no separate haematology counter required

04 ANALYZE

CyFlow® SL_3 FCM System



Get your accurate and precise counting results from the **CyFlow® SL_3** for routine adult and pediatric patient monitoring within shortest possible time.

The CyFlow® SL_3 is designed to perform any kind of 3 parameter cell analysis and in particular to be used in routine HIV/AIDS follow-up diagnostic.

In this field the unique feature is to deliver – out of only one sample tube – the absolute number (concentration) of leukocytes, the absolute number (concentration) of lymphocytes, the absolute number of CD4+ T-lymphocytes and the percentage of CD4+ T-lymphocytes from all leukocytes and all lymphocytes as well.

A breakthrough for the routine application in HIV/AIDS monitoring is reached by the development of an ultimately easy-to-perform blood preparation protocol. This protocol does not need any critical pipetting step. Therefore, the main source of error is eliminated.

The results are directly displayed in terms of:

- concentration of CD4+ T-lymphocytes
- concentration of all leukocytes
- concentration of all lymphocytes
- percentage of CD4+ T-lymphocytes among all lymphocytes
- percentage of lymphocytes among all leukocytes

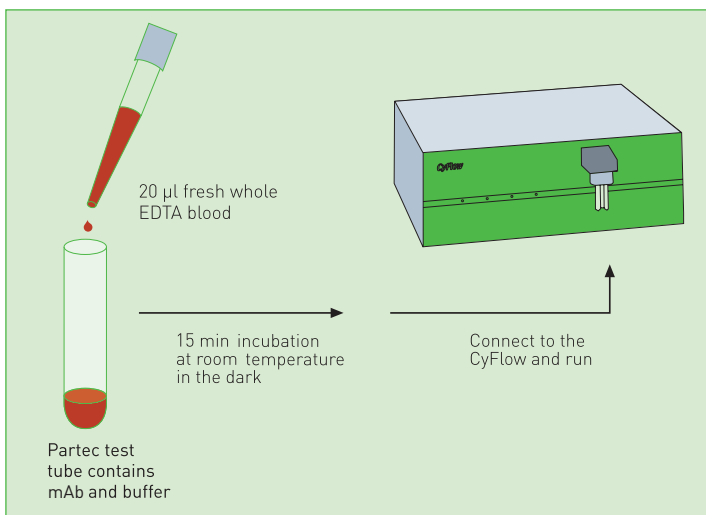


Fig. 1: CD4 Protocol
Analysis of absolute CD4+ T-Lymphocyte cell concentration from whole blood.

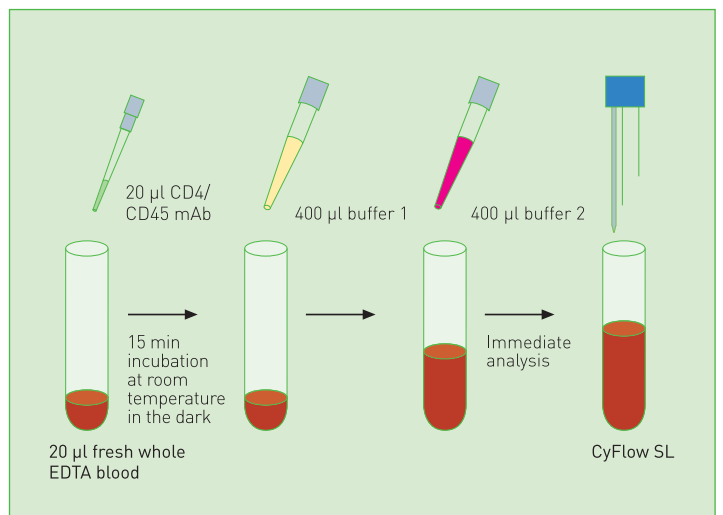
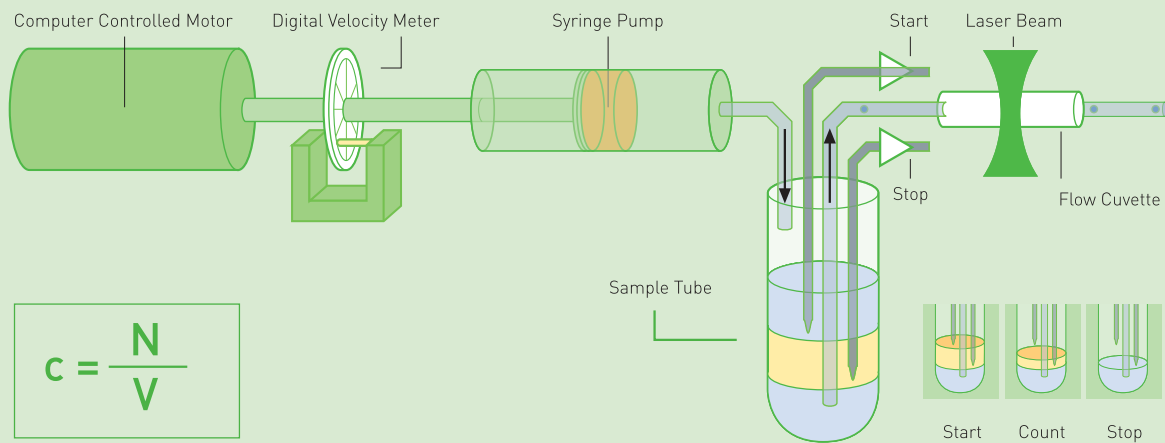


Fig. 2: CD4% Protocol
2-colour analysis of CD4/TLC/CD45 with CyFlow® SL_3 from whole blood.



Principle of Partec True Volumetric Absolute Counting

With this protocol a breakthrough for the analysis of pediatric blood samples is derived. With this feature the CyFlow® SL_3 is superior to other CD4 counting techniques.

HIV/AIDS monitoring is one of the main applications of the CyFlow® SL_3. The fast increasing number of patients who need a lifelong monitoring of the disease demand powerful techniques capable to run many samples per day. The CyFlow® SL_3 has the capability to analyse more than 250 blood samples per day. It allows to analyse the patient's CD4 lymphocyte count at costs close to EUR 2.50 only without the loss of accuracy. For the first time a full flow cytometric analysis ("gold standard" according to WHO) can be offered everywhere in the developing countries.

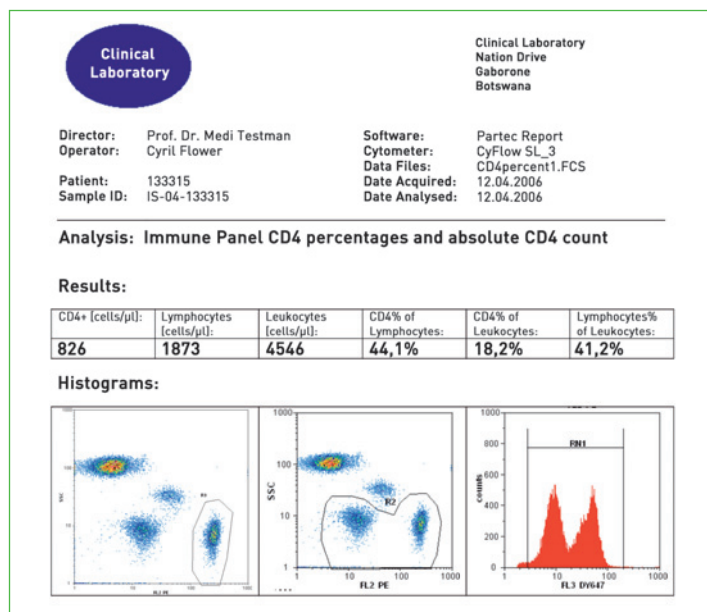


Fig. 4: Automatically generated clinical report from CD4% analysis: Direct result display of absolute CD4+ T-cell count (population R1, left), total lymphocyte count (population R2, middle), and total WBC count (white blood cells / leukocytes - population RN1, right).

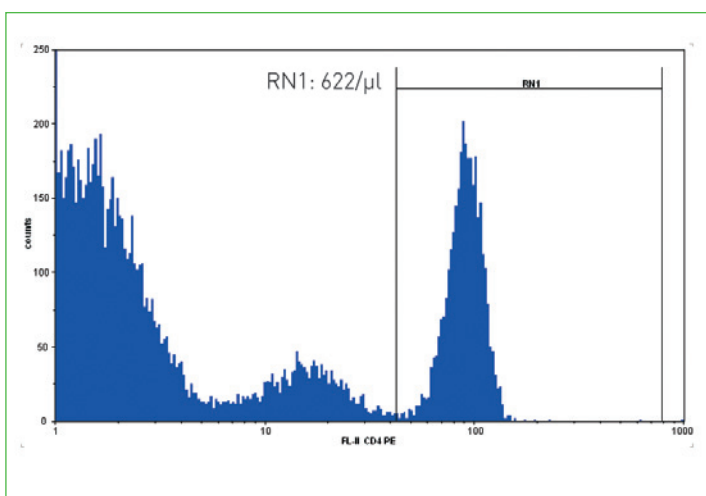


Fig. 3: Analysis of absolute CD4+ T-Lymphocyte cell concentration from whole blood.
 CD4 counting result: 622 CD4+ / μl

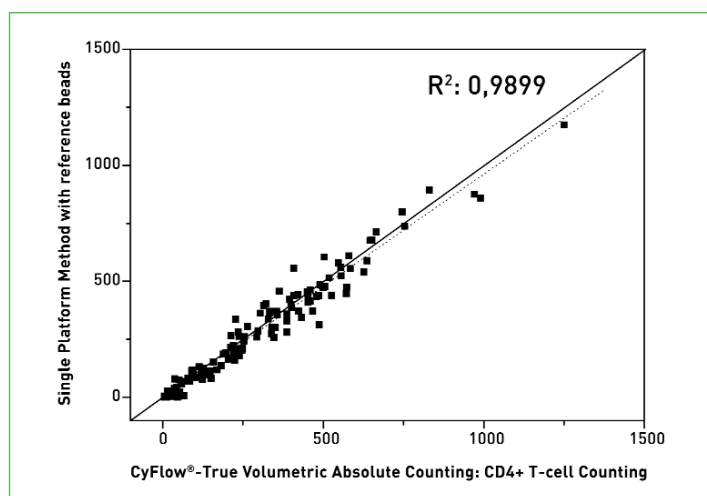


Fig. 5: CD4+ counting
 Comparison to conventional single platform results employing reference beads.
 (Data kindly provided by Dr. L.G. Lehman, University of Douala, Cameroon)

References:

- Cassens, U. et al.: A novel true volumetric method for the determination of residual leucocytes in blood components", *Vox Sanguinis* 2002; 82, 198-206
- Greve, B. et al.: A New No-Lyse, No Wash Flow-Cytometric Method for the Determination of CD4 T Cells in Blood Samples", *Transfus Med Hemother* 2003; 30:8-13
- Cassens, U. et al.: "Simplified True Volumetric Flow Cytometry Allows Worldwide Feasible and Accurate Determination of CD4 T-Lymphocytes in Patients with AIDS", *Antiviral Therapy* 2004; 9:395-405
- Imade, G.E. et al.: "Comparison of a New, Affordable Flow Cytometric Method and the Manual Magnetic Bead Technique for CD4 T-Lymphocyte Counting in a Northern Nigerian Setting," *Clinical and Diagnostic Laboratory Immunology*, Jan. 2005, pp. 224-227
- Greve, B. et al.: "New Protocols to Follow Up HIV-induced Immune Impairment in Paediatric Samples," *Business Briefing: Long-Term Healthcare*:2005, pp. 32-35

05_SPECIFICATIONS

CyFlow® SL_3 FCM System

GENERAL

The CyFlow® SL_3 is a fully-equipped portable / desktop flow cytometer with excitation in green. It analyses up to three optical parameters (SSC and 2 fluorescences) plus time parameter. It performs both fluorescence analysis and absolute cell counting without the need for reference beads.

LIGHT SOURCES

The instrument is equipped with a green solid state laser light source. Optionally available: red diode laser, blue solid state laser, UV laser, violet diode laser.

OPTICS

Modular optical system with 1 to 3 optical parameters. Each parameter is equipped with a photomultiplier tube (PMT) and integrated electronic preamplifier. Colour CCD camera for video flow monitoring.

FLOW SYSTEM

Synthetic quartz flow cuvette (channel dimensions: 200 µm x 350 µm) for laminar sample flow. True Volumetric Absolute Counting based on precise counting and fluid volume measurement. Computer controlled precision syringe pump for contamination-free sample transport and volumetric absolute counting, pump speed continuously adjustable from 0–1200 µl/min, sheath fluid pressure continuously adjustable from 0–500 mbar. Fluid level indicators for full waste and low sheath fluid.

ELECTRONICS

- parallel signal processing for each of the optical channels with selectable linear, 3- or 4-decade logarithmic scale
- pulse height, area and width analysis for doublet discrimination
- 16 bit analog-to-digital converters, trigger on any parameter or parameter combinations

COMPUTER

Processor ≥ Pentium 3.2 GHz, 512 MB RAM
Harddisk ≥ 160 GB
15" TFT (17", 19" optionally available)
Floppy disk drive 1.44 MB and DVD/CD-RW combo drive
Monitor, keyboard and mouse
Microsoft Windows™, Office®
Notebook optional

SOFTWARE

Partec FloMax® software based on the Windows™ operating system for multi-parametric data acquisition, display, data analysis, and instrument control. Simultaneous representation in single parameter histograms or correlated dual parameter plots during data acquisition. True Volumetric Absolute Counting with determination of cell concentration, concentration of subpopulations for each region or gate, reselection of subpopulations for absolute counting. Realtime acquisition. Individual instrument setups an acquisition displays can be saved in setup files. Multi-tube analysis can be predefined in panels. Automated panel acquisition. Report module: automated multi-tube report generation as MS

Word or MS Excel document. FCS flow cytometry file standard. Network connection to laboratory information systems (LIS), PCs, and Apple Macintosh.

POWER REQUIREMENTS

100/ 240 V AC, 60 VA, 50/60 Hz or 12 Volts DC/5A

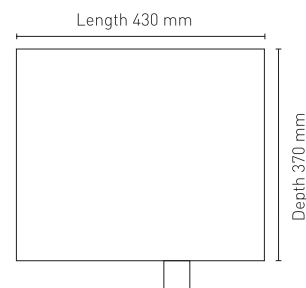
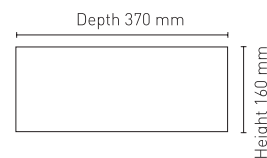
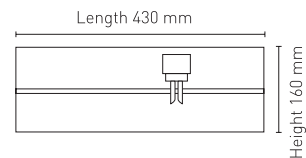
ORDER NUMBER

CyFlow® SL_3 CY-S-1023

Reagents

Partec CD4 easy count kit (100 tests) 05-8401
Partec CD4% easy count kit (100 tests) 05-8405
for CyFlow® SL_3

Partec CD8 easy count kit (100 tests) 05-8801
Partec CD3 easy count kit (100 tests) 05-8301



For in vitro diagnostic use.

partec

Partec GmbH · Otto-Hahn-Straße 32 · D-48161 Münster · Germany
Fon +49 2534 8008-0 · Fax +49 2534 8008-90
Mail: info@partec.com · Web: www.partec.com