HORIBA

Yumizen H1500/H2500

Innovations for better care

End to end hematology solution for your lab needs

Expert blood cell counter, **Yumizen H2500** and **Yumizen H1500** Automated Hematology Analyzer to answer the expectations of a solid diagnostic platform with rapid and consistent result delivery

- Improved TAT (Turn Around Time): throughput - 120 samples/hour
- 360º homogenous mixing
- 9-part hematology analyzer with extended differentials
- Optical PLT
- Complete Reticulocyte Profile using Gold standard dye "Thiazole Orange"
- LPF (Large Platelet Fraction)
- Different analysis modes
- Body fluids
- NRBC by default in CBC, CBC + DIFF, DIR, CBC + Ret modes
- CVD Curves (Complexity, Volume & Distribution) for WBC differentials
- DIF_LV Mode - for Pancytopenia samples

Yumizen H2500
57 parameters

Yumizen H1500
46 parameters

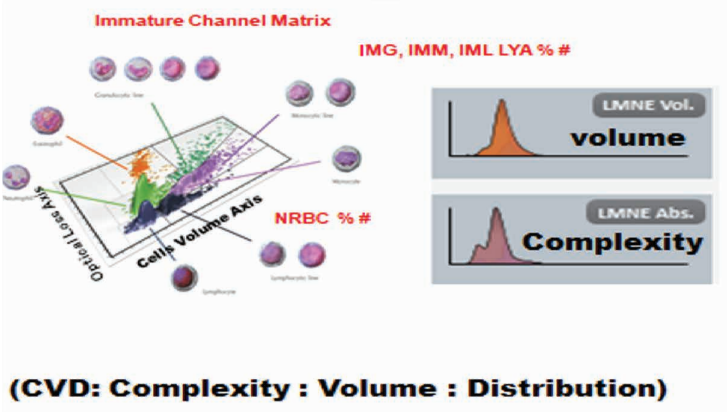
Better inventory management with less reagents

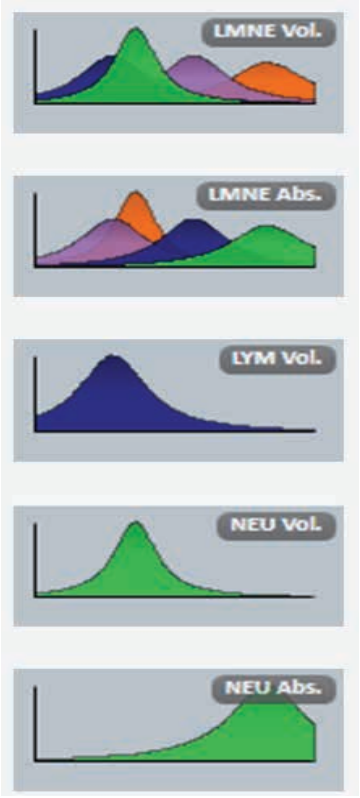
- Only 6 in Yumizen H2500
- Only 5 in Yumizen H1500
- Reagents loaded in inverted position ensures minimal dead volume
- Ready to use reagents

Yumizen H2500

Unique CVD curves for WBC differentials

Expert menus for 3-Dimensional analysis
(CVD: Complexity, Volume & Distribution)





In Blood Mode

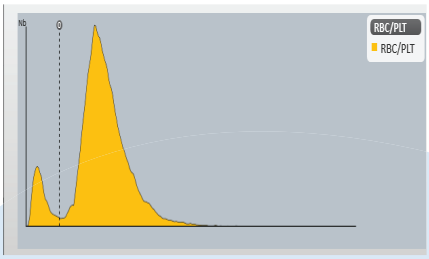
- LMNE Vol.: LMNE impedance multi-histogram
- LMNE Abs.: LMNE absorbency multi-histogram
- LYM Vol.: Lymphocytes impedance histogram
- NEU Vol.: Neutrophils impedance histogram
- NEU Abs.: Neutrophils absorbency histogram

In Body Fluid Mode

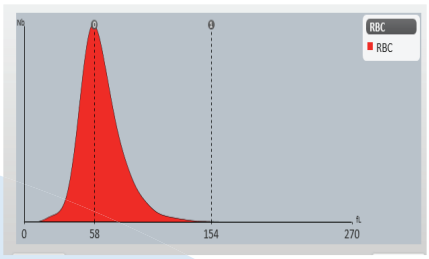
MP Vol.: Mononuclear cells/Polymorphonuclear cells impedance histogram

MP Abs.: Mononuclear cells/Polymorphonuclear cells absorbency histogram

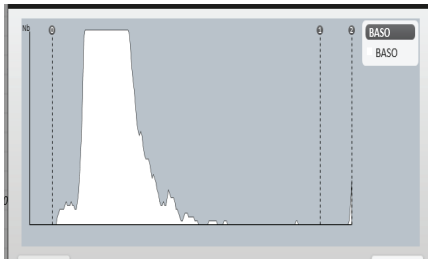
Histograms for WBC, RBC, PLT, RBC/PLT & Baso



RBC/PLT

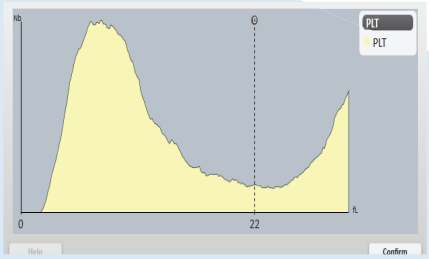


RBC

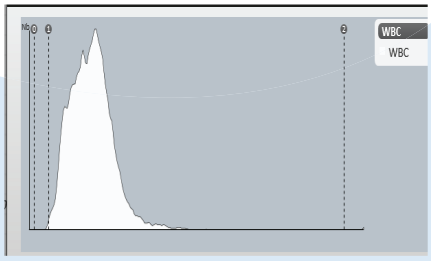


BASO

Histograms clearly demarcating different type of cell populations based on morphology & quantification



PLT



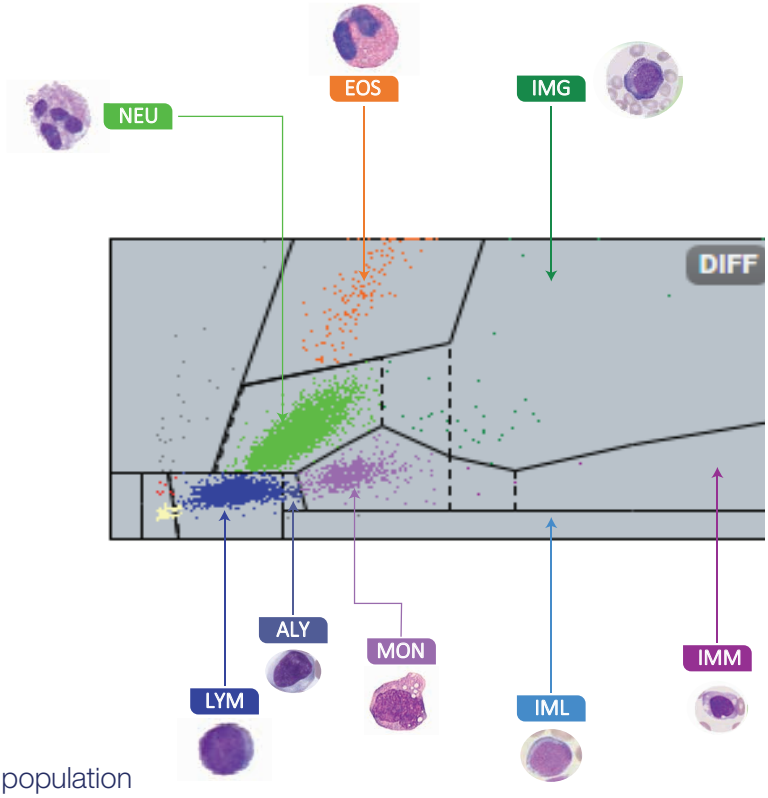
WBC

Extended diff matrix & measurement of WBC in **Near Native State** for better screening of morphological changes in abnormal cases

Counting WBC from three different chambers and three different lyse for accurate WBC Counting & to enumerate Immature cell lines.

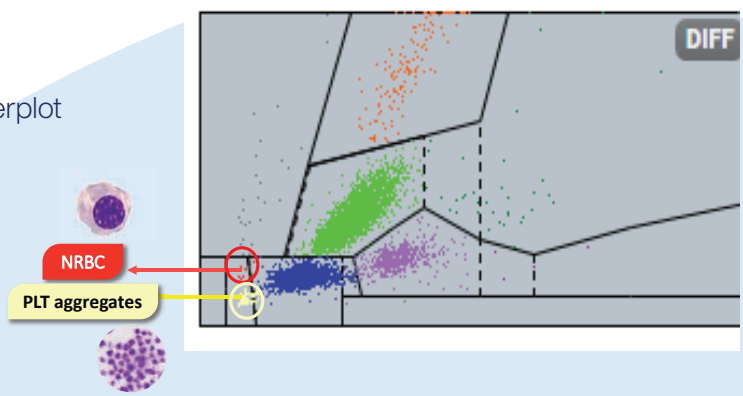
22 parameters for WBC differential

- WBC
- Total nucleated count
- Neutrophil % & # count
- Eosinophil % & # count
- Basophil % & # count
- Monocyte % & # count
- Lymphocyte % & # count
- Immature granulocyte % and #
- Immature lymphocytes % and #
- Immature monocytes % and #
- Large immature cells % and #
- Atypical lymphocytes % and #
- Count with direct measurement of each Leukocyte population
- LMNEB & IMG % & # Reportable



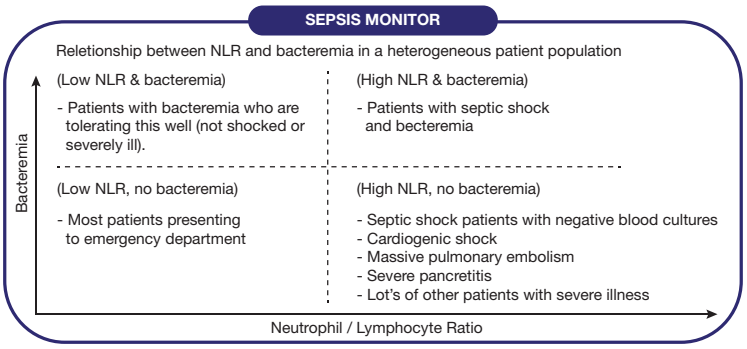
Proper segregation of NRBC & Platelet aggregates

- **NRBC % & # values by default in CBC, CBC + DIFF, DIR, CBC + Ret modes**
- Separate NRBC & PLT aggregate indication on Scatterplot
- No extra reagent required
- Corrected WBC Count

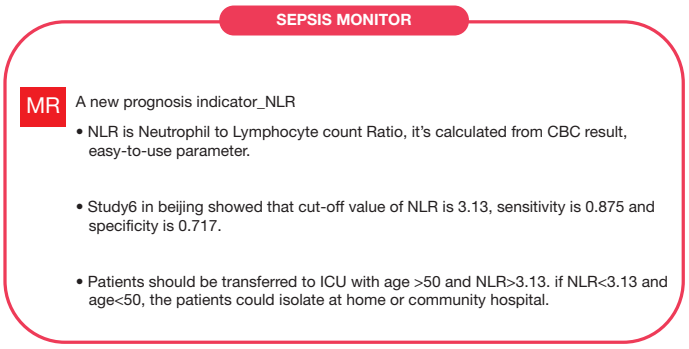


NLR (Neutrophil to Lymphocyte Ratio)

Prognostic value in cardiovascular diseases, infections, inflammatory conditions



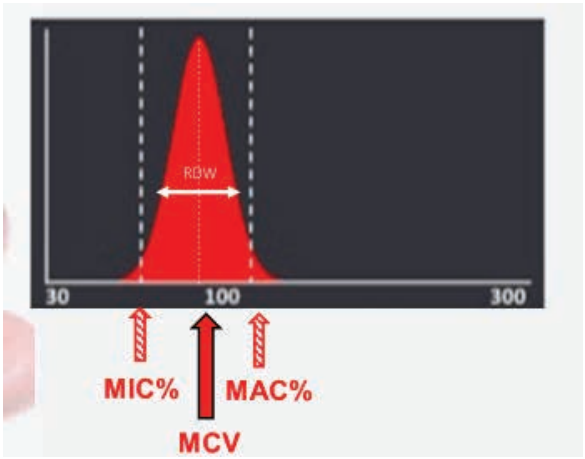
Reference
Takayuki Honda – International journal of clinical chemistry
Jiawei Jang – The American Journal of emergency medicine
Cornelis PC de Jager et al – Journal of Critical care



Reference
Jingyuan et al - Journal of translational medicine
Kuiken T et al – The Lancet
Drosten C et al – The new England Journal of Medicine

MIC & MAC for Anemia Classification

- Percentage value of Microcytic (MIC) & Macrocytic (MAC) population of RBC
- Gives additional insight about RBC morphology
- Helpful in segregation of iron deficiency anemia and Vitamin B12 deficiency anemia

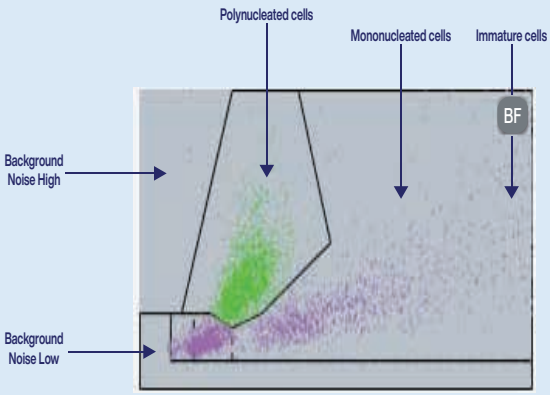


DIF_LV mode

- Dedicated mode exclusively designed for Low value of WBC, RBC & PLT (pancytopenia samples)
- Gives CBC + WBC Differential for low values

Body fluid application

- 6 reportable body fluid parameters – BFWBC, BFRBC, BFPN#, BFPN%, BFMN#, BFMN%
- Applicable for: CSF, Pleural, Peritoneal fluid & Synovial fluid
- 2 Histograms –
  - MP Vol.: Mononuclear cells/Polymorphonuclear cells impedance histogram
  - MP Abs.: Mononuclear cells/Polymorphonuclear cells absorbency histogram

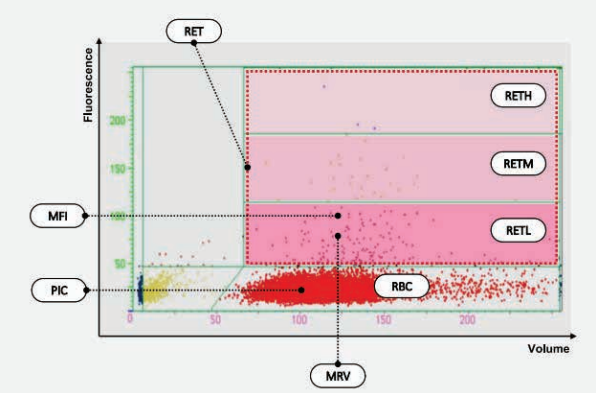


Reticulocyte count

(only available in Yumizen H2500)

- Dedicated Retic mode based on Fluorescent flowcytometry
- Staining Dye - Gold standard : Thiazole orange
- Reticulocyte immaturity gradient (High, Medium, Low)

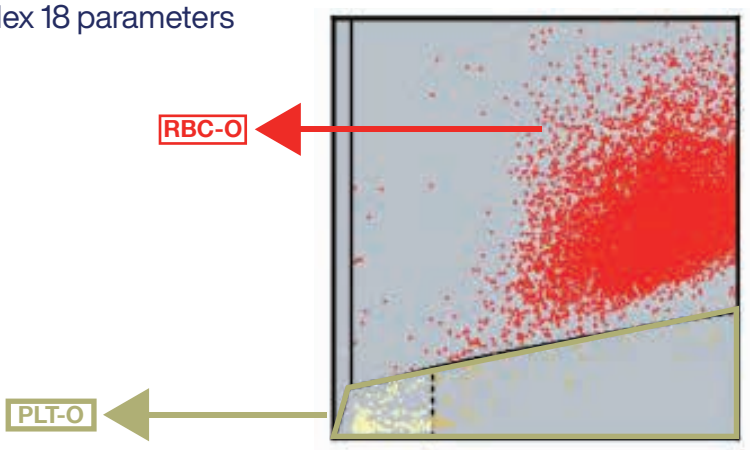
RET Parameters	Definition
RET%	Reticulocytes percentage
RET#	Reticulocytes absolute value
RETL%	Reticulocytes with a low RNA content
RETM%	Reticulocytes with a medium RNA content
RETH%	Reticulocytes with a high RNA content
CRC	Corrected Reticulocyte Count
MRV	Mean Reticulocyte Volume
IRF	Immature Reticulocyte Fraction
RHCC	Reticulocyte Hemoglobin Cellular content



Optical Platelet mode for better clarity between Microcytic RBC & Macro Platelet (only Yumizen H2500)

Based on Optical extinction and Refractive Index 18 parameters

- RBC
- Hemoglobin
- Hematocrit
- MCV
- MCH
- MCHC
- RDW-CV
- RDW-SD
- MIC%, MAC%
- PLT
- MPV
- PDW
- P-LCC
- P-LCR
- PLT-O
- LPF

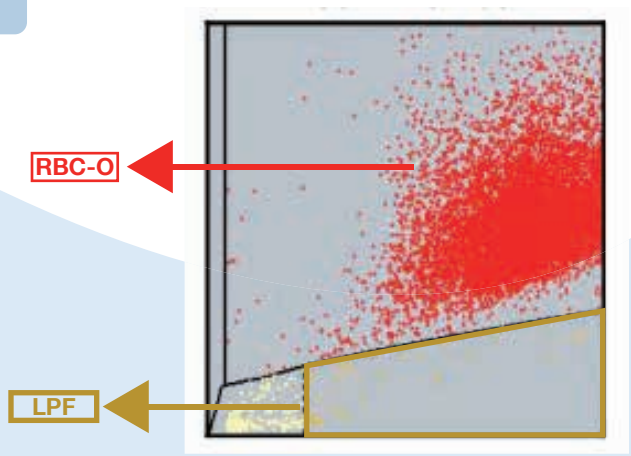


RBCo/ PLTo Matrix

LPF (available only in Yumizen H2500)

- The LPF (Large Platelet Fraction) parameter represents young platelets and is based on Optical extinction and refractive Index.
- Rise of LPF is an indicator of early BM activity, this information can be helpful in avoiding unnecessary PLT transfusion
- LPF counts all young PLT including PLT with low RNA content which are generally missed in laser based technology.

PLT	11	*	L
PLT-Ox	24	*	L
MPV	11.3	*	h
PCT	0.013	*	l
PDW	17.5	*	
P-LCR	20.6	*	
P-LCC	2	*	l
LPF	13.9	*	h



LPF in PLT-O Scatter

Improve your laboratory workflow with **Yumizen P8000** : AI based Middleware

- Middleware and expert validation station with Multi site management capacities
- Centralized patient's results validation and Quality Controls management
- Supervision (Real time alerts): TAT monitoring, Multi instruments connectivity, global worklists
- Facilitated technical & application support : remote access
- Standardized rules package: ISLH
- Integrated more than 190 rules
- Offering flexibility to customize rules for rerun, reflex tests, comments and the automatic validation process
- Complete traceability for accreditation
- Storage: up to ~ 20,00,000 results
- Delta check, Patient moving average feature

Yumizen P8000

Yumizen SPS

- Automatic mode with dedicated needle: Programming reflex tests (Yumizen P8000): Results (parameters, alarms, delta check, etc.) Demographics (service, prescriber, age, etc.) bi-directional/query, reflex testing
- Manual stain mode (body fluids, bone marrow, leuko-concentrations...)
- Compatible with both Yumizen H1500 & Yumizen H2500
- Turn around time – 120 slides/hour
- Adaptable smearing process
- Availability of different staining protocols (May-Grunwald Giemsa, Wright, Wright Giemsa, etc.)
- 160 slide loaders (continuous loading)
- Loader for 8 slide-holding racks (continuous loading), 20 slides per rack

IEC61010-1: 2010

IEC61010-2-81: 2015

IEC6101-2-101: 2015

IEC61326-1: 2013

IEC61326-2-6: 2013

Specifications

HORIBA Evolutive Laboratory Organisation 2.0

HELO* solution compatible

PHYSICAL SPECIFICATIONS

Yumizen H2500 & H1500:
Dimensions (HWD; cm/in) & Weight (kg/lbs): 73 x 87 x 67 & 99 kg
28,7 x 34,3 x 26,4 & 218 lbs
Power supply: from 100 V to 240 V (+/- 10%), 50 Hz to 60 Hz
Maximum power consumption: 450 VA
Maximum heat output: 715 kJ/h (675 BTU/h)

Compressor Unit:
Dimensions (HWD; cm): 31 x 20 x 47; 15 kg (33 lbs)
Power supply: 100/120/220/240 V (+/- 10%), 50 Hz to 60 Hz
Maximum power consumption: 180 VA
Maximum heat output: 530 kJ/h (500 BTU/h)

Yumizen SPS:
Dimensions (HWD; cm): 44 x 91 x 72 & 60 kg (132 lbs)
Power supply: from 100 V to 240 V (+/- 10%), 50 Hz to 60 Hz
Maximum power consumption: 200 VA
Maximum heat output: 432 kJ/h (409 BTU/h)

Yumizen H2500 & H1500 with CIM:
Dimensions CIM (HWD; cm): 42 x 36 x 33 & 8 kg (18 lbs)
Power supply: from 100 V to 240 V (+/- 10%), 50 Hz to 60 Hz
Maximum power consumption: 450 VA
Maximum heat output: 790 kJ/h (750 BTU/h)

OPERATIONAL CONDITIONS

Altitude: until 2000m (6562 ft)
Sounds level: 57 dB
Operating Temperature : +15°C (+59°F) to +30°C (+86°F).
Operating Temperature (with SPS) : +19°C (+66.2°F) to +26°C (+78.8°F)
Humidity: Relative humidity of 85% maximum, without condensation.
Humidity (with SPS) : Relative humidity of 50% maximum for temperatures up to +26°C (+78.8°F).
Storage and Transport conditions: from -20°C (-4°F) to +60°C (+140°F).

CONFIGURATIONS

Yumizen P8000: Expert validation station associated with Yumizen H1500 & H2500, Yumizen H500 & H550
Yumizen SPS : Slide maker stainer available on both models
Yumizen T6000: Track configuration available for Yumizen H1500, H2500, SPS.
Printer: Optional on Yumizen P8000
Protocols:
Yumizen H1500 & H2500 with host: ASTM
Yumizen P8000 with host: HL7

SOFTWARE SPECIFICATIONS

Color LCD touch screen: 12.1 in.
Operating System: Windows® 10 IoT Enterprise 2016 LTBS
Processor: Intel® Celeron® J3455 2.3 GHz
RAM (Random Access Memory): 4 GB
Hard drive: SSD 256 GB disk, 2.5 SATA3
Ethernet, USB connections
Capacity: 100 000 results

PARAMETERS & PERFORMANCE DATA

Analytical Measurements Range:

Parameters	Limit of Quantification	Linearity Limits	Visible Range	Unit
WBC	0,1	0 - 300	0 - 600	10^3/mm
RBC	0,2	0 – 8	0 - 18	10^6/mm
HGB	0,8	0 - 24	0 - 30	g/L
HCT	2	0 - 67	0 - 80	%
PLT	7	0 - 5000	0 - 6000	10^3/mm
PLT Ox	10	0 - 2500	0 - 5000	10^3/mm
RET#	0,01	0 - 1,2	0 - 1,8	10^3/mm
RET%	0,3	0 - 35	0 - 100	%
BFWBC	5	0 - 10 000	0 - 600 000	10^6/L
BFRBC	1500	0 - 5 000 000	0 - 9 999 999	10^6/L

Precision (Repeatability):

Parameters	CV (%)	Nominal values
WBC	2%	4 - 10
NRBC#	+/- 0.12 or 25%	0 - 0,15
NRBC%	+/- 1,5 or 25%	0 - 2,5
RBC	2%	3,6 - 6,2
HGB	1%	12 - 18
HCT	2%	36 - 54
PLT	5%	150 - 500
PLT Ox	6%	150 - 500
LPF	+/- 25	2 - 12
RET#	+/- 20	0,02 - 0,15
RET%	+/- 0,5 or 12%	0,5 - 3
BFWBC	+/- 15	100 - 600
BFRBC	10%	5000 - 5 000 000

Parameters: Yumizen H1500 (46) / Yumizen H2500 (57)

CBC (20): WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW-CV, RDW-SD, PLT, P-LCC, P-LCR, MPV, PCT, PDW, MIC, MAC, NRBC# , NRBC%, TNC

DIFF (20): LYM#, LYM%, MON#, MON%, NEU#, NEU%, EOS#, EOS%, BAS#, BAS%, ALY#, ALY%, IMG#, IMG%, IML#, IML%, IMM#, IMM%, LIC#, LIC%

RETICULOCYTES (9): RET#, RET%, CRC, IRF, RHCC, MRV, RETH, RETM, RETL (available only on Yumizen H2500 model)

BODY FLUIDS (6): BFWBC, BFRBC, BFPN#, BFPN%, BFMN#, BFMN%

OPTICAL PLATELET (2) : PLT-Ox, LPF (available only on Yumizen H2500 model)

Throughput (automatic mode):

CBC or DIFF : 120 samples / hour
Reticulocyte or PLT-Ox or Low Value Cycle : 60 samples / hour
SPS: 120 blood smears / hour

CE IVD

Certified
ISO 9001:2015
ISO 14001:2015
ISO 13485:2016
MDSAP - Medical Device Single Audit Program
OHSAS 18001:2007

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