Celltac F

Automatic Hematology Analyzer
MEK-8222J/K

Technical Data

Fighting Disease with Electronics

NIHON KOHDEN

DESIGN FEATURES

22 parameters standard with 5-part WBC differential

Celltac F measures 22 parameters including WBC 5-part differential (lymphocyte, monocyte, neutrophil, eosinophil, and basophil) with high accuracy and precision.

Low reagent consumption

Celltac F requires only 55 µL of whole blood for 22 parameters measurement. It has very low reagent consumption: 0.6 mL of hemolysing reagent for CBC and requires only 0.4 mL of hemolysing reagent for WBC 5 part diff.

High reproducibility and accuracy

Nihon Kohden *Celltac* series always assure high reproducibility and accuracy by unique mechanism such as twin dilution sampling nozzle, double mixing chamber for effective hemolysing, and automatic sampling nozzle cleaning.

80 samples per hour throughput

Two unique features of *Celltac F* allow high speed processing on a compact machine. One is a simplified and minimized fluid path including a double mixing chamber for effective hemolysing and dilution. The other is an effective auto-load sampling system which allows parallel processing such as mixing the blood sample, removing air pressure from a cap pierced sampling tube and aspirating the blood sample for measurement.

Auto loading and manual sampling mode

Celltac F has two sampling modes. One is closed-tube sampling mode which is performed automatically and up to 50 samples can be loaded in a sampling rack. The other is open-tube (manual) mode which is available as emergency measurement at any time during routine auto-loading measurement. Manual mode also allows capillary measurement.

Emergency Sample Measurement

There are two types of interrupt measurement mode. One is manual measurement and the other is when a closed-tube is put into the interrupt position of the sampling rack. Interrupt measurements are processed as priority at any time even during measurement by auto-loading mode.

CBC or CBC with 5 part diff modes

CBC or CBC with WBC 5 part diff can be selected. CBC mode requires just 35 µL of whole blood. This helps save reagent consumption.

Capillary blood measurement

10 µL or 20 µL capillary blood measurement for CBC is available in the open-tube sampling mode. This is very useful for measuring neonatal and pediatric patients.

Data storage without PC

400 numerical data and 60 histograms and scattergrams can be saved in the analyzer memory. A PC with optional data management software can store 100,000 or more numerical data, histograms and scattergrams.

2 types of bar code readers (option)

Celltac F can use two types of bar code readers: hand-held type for manual and built-in type for auto loading.

High resolution clear color TFT LCD display with touch screen

The numeric data, histograms and scattergrams are displayed on a clear 8.4 inch high resolution color TFT LCD screen. The touch screen allows easy and intuitive operation of the hematology analyzer.

Effective patient data control on a work list

Up to 500 data can be entered on the work list for patient data control. Individual measurement commands can be sent from a connected PC with optional data management software to a work list in the *Celltac F.* You can specify the sample and parameters to be measured so that time and reagent can be saved.

Useful QC management programs

3 levels such as “Normal”, “Low” and “High” of X bar-R graphs can be displayed for easy QC management. Also X bar Batch graph for QC based on human blood is available. *Celltac F* provides continuous X bar Batch management of up to 20 batches (400 samples). X bar Day CV program helps good data control on a daily basis.

3 levels of security and password

To prevent measuring condition change by unqualified persons, some screens or functions can only be entered or changed by an operator who has the authority and password. There are 3 levels of authority: “Manufacturer” for service and maintenance staff, “Lab technician” for laboratory technicians and “Other” for other staff such as emergency staff.

Useful flag messages

13 kinds of WBC flags, 6 kinds of RBC flags and 3 kinds of Platelet flags can be shown on the display.

High reliability

Celltac F uses high reliable parts for key devices such as a very compact and robust optical laser system for flow cytometry, ceramic core for dilutors and high reliable Nihon Kohden made electric valves for fluid valves.

Local language display

Celltac F can display in your local language. It requires installation of translated image data at your side. (Some languages are not available. Contact us for details.)

Space saving design

The compact design with advanced laser optical technology is the smsllest in the world (for a hematology analyzer with 5 part diff built-in display, 50 sample auto-loader and data storage function). This allows more effective use of your work bench space.

Easy maintenance

Celltac F has a self-check program to verify optimum function. A maintenance history program keeps track of the operation life of critical parts such as filters and tubes, and a screen message reminds you when to check or replace each item. *Celltac F* is also designed for easier replacement of key maintenance parts for rapid maintenance.

USB interface

Celltac F has a USB interface for high speed data transfer to a PC with optional Data Management Software. The PC can connect to an LIS (Laboratory Information System) or HIS (Hospital Information System) as gateway. (The connecting software must be developed by the customer. Nihon Kohden will provide the architecture for LIS and HIS connection.)

160 sample throughput and low cost backup system by *DPC-Celltac* (option)

The DPC-Celltac (Dual Process Controlled-*Celltac F*) system can control dual *Celltac F*'s by optional data management software. This increases throughput to 160 per hour and provides a low cost backup system in your lab.

MEASURING PARAMETERS

Measured parameters	Measuring range	Reproducibility to Specimen from Venous Blood (CV: Coefficient of Variation)
WBC: White blood cell count	0 to 300 $\times 10^3/\mu L$	within 2.0 %CV (4.0 to 9.0 $\times 10^3/\mu L$)
NE%: Neutrophil percent	0 to 99.9%	within 5.0%CV (WBC: 4.0 to 9.0 $\times 10^3/\mu L$, NE%: 40 to 70%)
LY%: Lymphocyte percent	0 to 99.9%	within 5.0%CV (WBC: 4.0 to 9.0 $\times 10^3/\mu L$, LY%: 20 to 45%)
MO%: Monocyte percent	0 to 99.9%	within 12.0%CV (WBC: 4.0 to 9.0 $\times 10^3/\mu L$, MO%: 2 to 10%)
EO%: Eosinophil percent	0 to 99.9%	within 20.0%CV (WBC: 4.0 to 9.0 $\times 10^3/\mu L$, EO%: 2 to 10%)
BA%: Basophil percent	0 to 99.9%	within CV30.0% (>2%) or average value ±1% (0 to 2%) (WBC: 4.0 to 9.0 $\times 10^3/\mu L$, BA%: 0 to 3%)
NE: Neutrophil count	0 to 99.9 $\times 10^3/\mu L$	
LY: Lymphocyte count	0 to 99.9 $\times 10^3/\mu L$	
MO: Monocyte count	0 to 99.9 $\times 10^3/\mu L$	
EO: Eosinophil count	0 to 99.9 $\times 10^3/\mu L$	
BA: Basophil count	0 to 99.9 $\times 10^3/\mu L$	
RBC: Red blood cell count	0 to 14.9 $\times 10^6$/mL	within 1.5%CV (5.0 $\times 10^6/\mu L$)
HGB: Hemoglobin concentration	0 to 29.9 g/dL	within 1.5%CV (16 g/dL)
HCT: Hematocrit	0 to 99.9%	
MCV: Mean cell volume	20 to 199 fL	within 1.0%CV (70 to 120fL)
MCH: Mean cell hemoglobin	10 to 50 pg	
MCHC: Mean cell hemoglobin concentration	10 to 50 g/dL	
RDW: Red blood cell distribution width	0 to 50%	
PLT: Platelet count	0 to 1490 $\times 10^3/\mu L$	within 4.0%CV (3.0 $\times 10^3/\mu L$)
PCT: Platelet crit	0 to 2.9%	
MPV: Mean platelet volume	0 to 20.0 fL	
PDW: Platelet distribution width	0 to 50%	

SPECIFICATIONS

◆ Detection Method

Blood cell count: Electrical resistance detection
Hemoglobin: Cyanmethemoglobin optical detection
Hematocrit: Histogram calculation
WBC population: Light scatter by laser
Platelet crit: Histogram calculation
RBC distribution width: Histogram calculation
Platelet distribution width: Histogram calculation

◆ Standardization Analysis Methods

WBC: ICSH 1988
ICSH: The assignment of values to fresh blood used for calibrating automated blood cell counters. Clin Lab Haematol, 10:203-212, 1988
RBC: ICSH1988
ICSH: The assignment of values to fresh blood used for calibrating automated blood cell counters. Clin Lab Haematol, 10:203-212, 1988
HGB: NCCLS H15-A2
H15-A2: Reference and Selected Procedures for the Quantitative Determination of Hemoglobin in Blood Second Edition; Approved Standard (1994)
HCT: NCCLS H7-A2
H7-A2: Procedure for Determining Packed Cell Volume by the Microhematocrit Method Second Edition; Approved Standard (1993)
PLT: Brecher & Cronkite

◆ Counting Time and Throughput

Approximately 45 s/sample, 80 samples/hour

◆ Dilution Ratio

Venous blood (55 µL sample)
WBC/HGB: 200 : 1
RBC/PLT: 40,000:1
Capillary blood (10 µL sample)
WBC/HGB: 1200:1
RBC/PLT: 240,000:1
Capillary blood (20 µL sample)
WBC/HGB: 600:1
RBC/PLT: 120,000:1

◆ Display

Display: 8.4 inch, TFT type color LCD with touch screen keys
Resolution: 800 × 600 dots
Size: 170 H × 128 W mm
Display items: Numerical data, histograms, scattergram, measuring conditions, alarm message and other messages, touch screen keys

◆ Data Storage

Numerical data for all counted parameters for up to 400 samples, and histograms and scattergrams for up to 60 samples. Optional data management software allows storage of 100,000 or more numerical data, histograms and scattergrams.

◆ Bar Code Reader (option)

Readable bar code for hand held bar code reader: JAN/EAN.UPC(A.E.), NW-7, ITF, INDUSTRIAL 2 OF 5, IATA, CODE39, CODE93, CODE128, EAN128
Readable bar code* for built-in type bar code reader: CODE39, CODE128, ITF, NW-7, INDUSTRIAL 2 OF 5, COOP 2 OF 5, JAN/EAN.UPC(A.E.)
*Up to 4 types of bar code at a time can be set.

◆ Sample Tubes

Usable sample tubes for auto loader:
Nihon Kohden: T440A sample tube, 75 mm × 12.3 mmø, 2 mL
Becton Dickinson: HEMOGARD, 367846, 75 mm × 12.3 mmø, 2 mL
Becton Dickinson: VACUTAINER, 360004, 75 mm × 13 mmø, 2 mL
Becton Dickinson: VACUTAINER, 367862, 75 mm × 12.3 mmø, 4 mL
Becton Dickinson VACUTAINER, 360003, 75 mm × 16 mmø, 2 mL
Terumo: VENOJECT II, VT-052DK, 75 mm × 12.4 mmø, 2 mL
SARSTEDT: S-Monovette*1, 80.5 mm (with cap) × 11.6 mmø, 2.7 mL
KABE: Art.-Bez.: E772G3.5*2, 80 mm (with cap) × 12.4 mmø, 3.5 mL
GREINER: VACUETTE, 454036, 75 mm × 12.5 mmø, 4 mL
*1: When using this sample tube, the T413 Monovette rack must be used. For the built-in bar code reader, use the ZK-821VG bar code reader.
*2: When using this sample tube, the T412 Kabe rack must be used. For the built-in bar code reader, use the ZK-821V bar code reader.

◆ Safety

Safety standard: IEC-61010-1 2nd Edition (2001), EN61010-1 (1993) Amendment 2 (1995)
Laser: IEC60825-1 (1993) Amendment 1 (1997), EN60825-1 (1994) Amendment 11 (1996)
According to the type of protection against electrical shock: Class I EQUIPMENT
According to the degree of protection against harmful ingress of water: IPX0 (Ordinary EQUIPMENT)
According to the degree of application in the presence of a flammable anaesthetic mixture with air, or with oxygen or nitrous oxide: Equipment not

suitable for use in the presence of FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OR WITH OXYGEN OR NITROUS OXIDE
According to the mode of operation: CONTINUOUS OPERATION
EQUIPMENT types (classification): Indoor stationary EQUIPMENT
Installation category: II EQUIPMENT
Pollution Degree: 2 EQUIPMENT
Requirements for marking of in vitro diagnostic instruments: EN1658 (1996)

◆ Electromagnetic Compatibility

IEC61326-1 (1997) Amendment 1 (1998) Amendment 2 (2000)
EN61326-1 (1997) Amendment 1 (1998)
CISPR11 (1997), Group 1, Class B
EN55011 (1998) Amendment 1 (1999), Group 1, Class B

◆ Environmental Conditions

Storage temperature: –20 to 60°C
Operating temperature: 15 to 30°C
Storage humidity: 10 to 95% (Non-condensing)
Operating humidity: 30 to 85% (Non-condensing)
Atmospheric pressure: 70 to 106 kPa

◆ Power Requirements

Power requirements:
MEK-8222J: 110, 117 or 127 V ±10% AC, 50 or 60 Hz
MEK-8222K: 220. 230 or 240 V ±10% AC, 50 or 60 Hz
Power consumption: 360 VA

◆ Dimensions and Weight

Dimensions: 613 W × 550 H × 583 D mm
Net weight: Approx. 55 kg

Data Management Software (option)

Design Features

- Huge data storage: depends on the PC hard disk size. (on the recommended PC, 100,000 or more numerical data, histograms, scattergrams can be saved)
- DPC-Celltac (Dual Process Controlled-*Celltac F*) system can control dual *Celltac F*'s and increase throughput to 160 per hour.
- Bi-directional communication between *Celltac F* and PC for work list data transfer.
- Editing of acquired data on the PC
- Creating bar code labels for thermal printer
- Gateway between *Celltac F* and LIS or HIS

System Environment

Operating system: Microsoft Windows 2000 Professional (local purchase)
Hardware: local purchase
Minimum specifications of PC:
CPU: Pentium II 350 MHz or higher
Main memory: 256 MB or more
Video RAM: 8 MB
Hard disk: 6 GB or more
CD drive
Floppy disk drive: (depends)
LAN: 10/100 Base T Ethernet (Depends)
Display: XGA (1024×768)
Keyboard
Mouse
Safety standards: IEC-950
EMI: FCC class B

STANDARD ACCESSORIES

Fuse	2
Time-lag 3.0 A for MEK-8222J	
Time-lag 1.6 A for MEK-8222K	

OPTIONAL ACCESSORIES

Accessory kit
The following accessory kits are available, grouped according to the power cord type. Absolutely needed.
YZ-0244 (W, 100 V area)
YZ-0245 (N, 200V area)
YZ-0246 (GB, 200V area)
YZ-0247 (UL, 117V area)

The accessory kits consist of:

Power cord	1
Ground lead	1
Diluent tubes (marked blue)	2
Waste tubes (marked red)	2
Detergent tube (marked green)	1
Detergent tube (marked white)	1
Pump tube (N) assy, YS-001B1	3
Hemolynac5 tube assy	1
Hemolynac3 tube assy	1
18 L tube assy (8222)	1
Cleanac tube assy (8222)	2
Sampling nozzle (0.8) for manual mode	1
Sampling nozzle (820) for closed mode	1
Cap pierce nozzle	1
Screwdriver	1
Hex wrench (thick)	1

Hex wrench (thin)	1
Filter assy	3
Hemolynac3 cap	2
18 L cap	3

Impact printer[*1]**,** WA-711V
Printer[*2]**,** WA-820V, Thermal printer
Card printer[*3]**,** WA-460V
*1: Substitution: local purchase LQ-300+ made by Epson (www.epson.co.jp/world/)
*2: Substitution: local purchase TM-L90 made by Epson
*3: Substitution: local purchase TM-U295 made by Epson

Handy bar code reader, ZK-820V, hand-held type

Bar code reader, ZK-821V, installed in the MEK-8222, use with T411/T412
Bar code reader, ZK-821VG, installed in the MEK-8222, use with T413
T411 **Rack**
T412 **Kabe rack,** for Kabe type sample tube
T413 **Monovette rack,** for Monovette type sampe tube

		NK, other	Kabe	Monovette
Bar code reader	ZK-821V	√	√	
	ZK-821VG			√
Rack	T411	√		
	T412		√	
	T413			√

Mixing plate, YZ-0253
Data management software

CONSUMABLES

T436D Diluent, ISOTONAC•3, 18L container
T438D Detergent CLEANAC•3, 5L container
T438 Detergent CLEANAC, 5L container
T489 Hemolysing reagent HEMOLYNAC•3, 500mL × 3
T496 Hemolysing reagent HEMOLYNAC•5, 500mL × 3
Cleaning bottle kit, YZ-0252
T466A Reagent bottle set, 2L
T905 7 µL polymer microsphere suspensions Hematology control, CBC-3DN, CBC-3DH, CDC-3DL, local purchase recommended, R & D System, Inc.
YZ-0261, Sampling nozzle for closed mode
YZ-0262, Cap pierce nozzle
T444B Sampling nozzle for manual mode
T802 Hemoglobin filter assy, 10 filters/box
T462 Pump tube (N) assy
YS-002B4, Tube A, 1.5 m
T463 Connection tube (5.0 m)
6114-003748, Cleanac tube 8 (1.5 m)
T812 Micro cap (20 µL), 100 pcs/set
T813 Micro cap (10 µL), 100 pcs/set
T857 Sample cup (5.0 mL), TA-8, 500 pcs/set
T421 Sahli pipette, (0.02 mL)
T422 Dispenser for capillary sample, MODEL 8100
T435 Sample container set, 200 pcs/set, 5 sets
T440A Blood sample tube with EDTA-2K, 100 pcs
T723 18 L diluent container cock
390649A, Sleeve brush, 5 pcs/set
Y075 Touch pen
B291 Recording paper for WA-820V, 78 m (NTP080-80)
B292 Label for printing bar code, 33 m, (NTL060-80)
C975 Hematology data sheet for WA-711V printer, narrow type, 1000 sheets/set
C962 Hematology data sheet for WA-711V printer, wide type, 2000 sheets/set
C976 Hematology data card for WA-460V card printer, 100 cards × 4 copies

ORDERING INFORMATION

When ordering, please specify the following information:
1) Power line voltage and frequency
2) Requirements for optional accessories
3) Requirements for consumables
4) Specify part order code in ☐

Factory option: Following are factory option units. Be sure to specify when ordering.
- Bar code reader: ZK-821V/ZK-821VG
- Maker of sample tubes if you use sample tubes not by Nihon Kohden sample tube

NIHON KOHDEN

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TD.No.MEK-8222J/K NK021115 (1102)

Printed in Japan