Erythrocyte Sedimentation Rate (ESR) Monitor

OPERATOR'S MANUAL

mindray Beijing Precil Instrument co., Ltd.

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- Product is used in accordance with the instructions for use.

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WARNING

- It is important for the hospital or organization that employs this equipment to carry out a reasonable service/maintenance plan. Neglect of this may result in machine breakdown or injury of human health.
- Be sure to operate the analyzer under the situation specified in this manual; otherwise, the analyzer will not work normally and the analysis results will be unreliable, which would damage the analyzer components and cause personal injury.

NOTE

- This instrument must be operated by skilled/trained clinical professionals.

Table of contents

Overview

Fully Automatic dynamic erythrocyte sedimentation rate analyzer, based on Westergren method principle and integrated with optical, mechanical and electronic modules, is suitable for erythrocyte sedimentation rate and hematocrit assay.

The analyzer is composed of host and control software, can be connected with computer.

1. Model

Table 1 Model and channel

Model	Channel
LBY-XC 20/40 B	20/40
LBY-XC 40	40

2. Instrument Specifications

Weight: less than 8 kg;

Dimensions: 40cm × 33cm × 25cm

Computer and Printer (Optional)

Precision: ±5%.

Identity of different channels: 5%.

Repeatability error: less than 3%.

Temperature precision: ±0.5℃.

Temperature stability: ±0.2℃.

3. Working conditions

Environmental conditions:

Temperature: 10℃ ~30℃;

Relative humidity: less than 70%;

Atmospheric pressure: 86kPa~106kPa;

Keep the analyzer away from electromagnetic field disturbance, violent shocking and corrosive gas;

Make sure well ventilated and avoid direct sunlight

Power source requirement: rated voltage AC (220±22) V; frequency (50±1) Hz.

4. Basic function

After switch on the analyzer, it should with below functions:

Display environmental temperature;

Automatic scan testing;

Select to test hematocrit;

Automatic generate test report;

Print test result by operator’s instructions;

Set measuring time of 30 min, 60 min;

Data can be exchanged to the computer installed with the software.

5. Description of instrument

Operating panel: see Figure 1.6.1-1

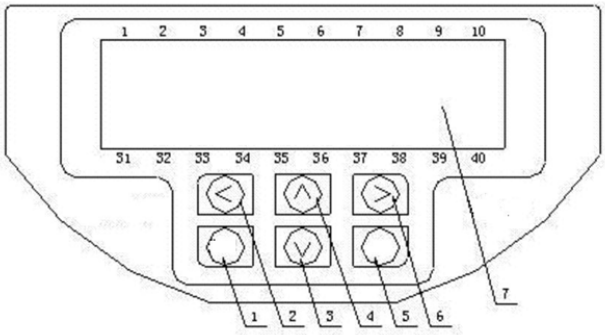


Figure 1.6.1-2 Operating panel with

1. Exit 2. Left 3. Down 4. Up

5. Ok 6. Right 7. LCD

Rear side: see Figure 1.6.2

1. Socket 2. Switch

3. Re232 4. Connect to printer

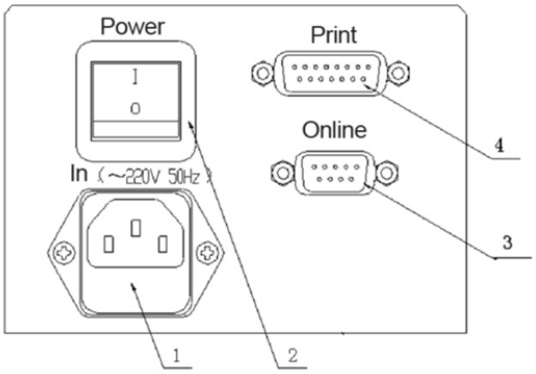


Figure 1.6.3 Rear side

6. Test parameters

ESR: mm/h;

erythrocyte sedimentation time history plot;

HCT: %(select “Yes” in “HCT” at “Parameter” menu);

ESR.K:K value.

Installation and temperature

Adjustment

Wire connection

Connect power cable.

Connect to communication cable of printer.

Connect to communication cable of computer.

Software installation

Start computer system and insert installation disc.

Finish installation steps by tips.

Establish application file shortcut at table under c:\program

files\control software.

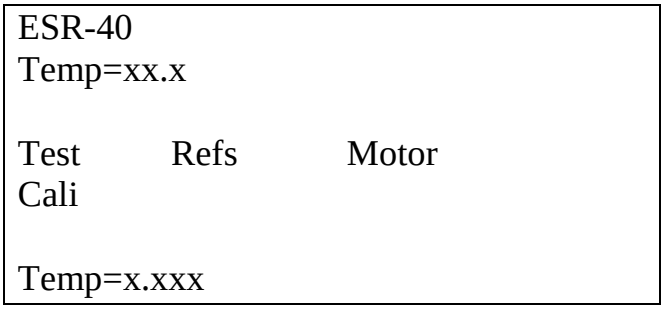
Temperature adjustment:

the analyzer has the function of environmental temperature display.

The temperature is adjusted when it out of the factory, however the temperature sensor is so sensitive to environmental temperature, so when install the analyzer the identity between temperature shown on analyzer and room temperature should be checked. Temperature factor should be properly adjusted if temperature precision is out of the range±0.5., the steps is as below:

Notice:It is unnecessary to adjust if temperature precision is meet the requirement.

How to enter “Adjustment” menu: continuously press “Ok” when switch on the analyzer, then it enters “Adjustment” menu:



How to adjust:move cursor to“Temp”and press “Ok”, then move left or right key to adjust temperature factor, at last switch off the analyzer and switch on again the data is saved.

Adjustment principle: if temperature factor changes 0.01, then temperature displayed modify 0.3℃

For instance: if temperature factor is 1.000 and room temperature is 26.7℃., then if operator want to analyzer shows 27.0℃, just modify temperature factor to 0.990.

Switch-on checking

Switch on analyzer and LCD works well.

Switch on computer and press shortcut, then it shows main menu.

Basic function

Display environmental temperature: the analyzer shows environmental temperature in main menu.

Automatic scanning test function: in test menu when insert erythrocyte sedimentation tube for sedimentation or hematocrit, the analyzer automatically scanning in routine interval.

Select hematocrit function: select “Ok” or “No” in “HCT”, if “Ok” is selected, then after sedimentation test, centrifugate the sedimentation tube and put it back to original channel for HCT testing.

Automatically generate test report: display test result after sedimentation and hematocrit testing.

Print test result by operator’s instructions: select “Ok” under “Print” menu, then it print report after testing, the print report includes sedimentation value, hematocrit value, K value and erythrocyte sedimentation time history plot.

Select test time function: select“30 min” or“60 min” under “Time” menu.

Data can be exchanged to the computer installed with the software.

Operating steps

1. Introduction of operating panel

“∧”and“∨”:to change value.

“<”and “>”: to move cursor.

“OK”: to confirm the modified value.

“Exit”: return to previous page.

2. Introduction of LCD

Switch-on analyzer menu:after self-checking it automatically enter

“Test” menu:

ESR Monitor V X.XX
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Main menu: hold “Exit” key for a while and it enters main menu:

Precil ESR-40 T=XX.XX
Test Para

Explanation:

ESR-40: channels T/Temp: room temperature

Test: test menu Refs: Refs menu

It can enters test menu automatically after switch on, or at main menu to move cursor to “Test” and press “Ok” to enter this menu:

e_	e_	E	e_	e_	e_	e_	e_	e_	e_
e_	e_	e_	E2	e_	e_	e_	e_	e_	e_
e_	e_	e_	e_	…	e_	e_	8	e_	e_
e_	e_	e_	e_	e_	Hct	e_	H48	e_	e_

Explanation:

e_: this channel has no tube

E: sedimentation tube is inserted and waiting for test

E2: this channel is performing sedimentation testing; digit stand for scanning times.

…: this channel is scanning testing.

h: this channel is waiting for inserting tube.

Hct: this channel is performing hematocrit testing.

8: sedimentation value of this channel is 8mm/h.

H48: erythrocyte hematocrit is 48%.

Notice: Do not press "Exit" during test, if press it by mistake then it would not interrupt after returned, the analyzer will scanning till test is finished.

Refs menu: move cursor to "Refs" and press "Ok", it enters below menu:

System set	
Time=XX min.	Method=XX
HCT=X	
Print=X	Temp. cali=X
Mode=XX	

Explanation:

Time: select test time; include 30 minutes and 60 minutes.

Method: include Westergren and Wintrobe method.

HCT: do not print HCT result that is print sedimentation result immediately after sedimentation testing.

Print: print HCT and sedimentation result together.

Temp. Cali: adjust parameters by manufacturer. Unauthorized person has should not adjust this value.

Mode: include static and dynamic mode. For dynamic mode, it routinely scanning during testing; it is scanning after test if static mode is selected.

Operating method of erythrocyte sedimentation assay

Switch-on self-checking: after self-checking it enters test menu with voice of scanning motor.

After switch on the analyzer if it cannot pass through self-checking step, or there is no voice of scanning motor, or cannot get in main menu user should check if power cable is connected well and power supply is ok, or contact with manufacturer if it is still cannot work.

Switch on computer if control software is installed, then enter Control

Software, see detailed in Appendix.

Dispense anticoagulant in one-off sedimentation tube(below scale) and input it in test hole, then it starts scanning automatically till the test is completed.

After test sedimentation if HCT of this sample need to be measured, then centrifugate the tube and insert the tube in same test hole, at last it automatically measures HCT, or test hematocrit directly.

Value is shown after all tests are finished, print the results out.

It stops scanning after all tests are finished.

Maintenance

Keep analyzer and test hole clean, it is forbidden to insert any subjects in it.

Avoid direct sunshine and keep it away from strong heat subjects and strong electromagnetic disturbance source.

Place analyzer at level platform.

Prevent from dampness and corrosion.

Power voltage: AC 220V±10%; stabilizer should be used if local voltage is unstable.

Input power: less than 100×(1+15%)VA(W).

Replacement of fuse: switch off the analyzer when replace fuse (specifications of fuse:2A/250V/ 20mm) stand for grounding.

Precaution

Place analyzer at level platform.

It is recommended using matched one-off sedimentation tube.

When room temperature is changed, please make sure the precision of temperature shown is reach to requirements, if it is out of range please adjust accordingly, see details at “Installation and temperature adjustment” in this book.

Avoid direct sunshine, and keep it away from strong heat subject. Do not make sedimentation tube exposed to strong light during test.

Please contact manufacturer if sample is spilled out in analyzer.

When connect to net power please pay attention to if the grounding is connecting well. Do not use one wire as neutral and grounding.

Do not disassemble analyzer without authorization.

Keep packing box and put analyzer in the box during transportation.

Storage & transportation

Packed analyzer should be stored within the temperature range of -20℃~55℃, and relative humidity less than 85%, 500hPa~1060hPa, well ventilated and no corrosive gas.

Warranty

Precil warrants to the purchaser that this analyzer is to be free of defects in workmanship under normal use for a period of one year from the date of purchase.

During the warrantee period if it is damaged due to improper operation, manufacturer has rights to charge for it.

Do not disassemble the analyzer.