Bs300 mindray service manual

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The Mindray number must appear on the outside of the shipping container. Returned shipments will not be accepted if the Mindray number is not clearly visible. Who Should Read This Manual This manual is written for clinical laboratory professionals to perform daily operating tasks; perform system maintenance and troubleshooting; learn about the BS200 hardware and software. WARNING The BS200 Chemistry Analyzer is to be operated only by medical professionals trained and authorized by Mindray or Mindrayauthorized distributors. What Can You Find in This Manual This operation manual covers principles, operations, daily maintenance and troubleshooting of the system. Please operate and service the system strictly as instructed by this manual. Conventions

Used in This Manual This manual uses certain typographical conventions to clarify meanings in the text. Bold font indicates a chapter title, such as 4 Maintenance Bold and Italic font indicates text displayed on the screen, such as Sample Request. Safety Symbols This chart explains the symbols used in this manual. When you see Then WARNING Read the statement following the symbol. The statement is alerting you to an operating hazard that can cause personal injury. BIOHAZARD Read the statement following the symbol. The statement is alerting you to a potentially biohazardous condition. Preface 2 When you see Then CAUTION Read the statement following the symbol. The statement is alerting you to a possibility of system damage or unreliable results. NOTE Read the statement following the symbol. The statement is alerting you to information that requires your attention. Labels Used on the System The labels attached to the panels of the system use symbols with the text to clarify the meaning of the text. The chart below explains the symbols on the labels. The following definition of the WEEE label applies to EU member states only The use of this symbol indicates that this product should not be treated as household waste.

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By ensuring that this product is disposed of correctly, you will help prevent bringing potential negative consequences to the environment and human health. For more detailed information with regard to returning and recycling this product, please consult the distributor from whom you purchased the product. In Vitro Diagnostic equipment Biohazard Warning risk of potentially biohazardous infection Warning risk of personal injury or equipment damage Warning risk of electric shock Warning risk of burn Alternating current AC ON MAIN POWER OFF MAIN POWER Preface 3 ON Power OFF Power Graphics All graphics, including screens and printout, are for illustration purpose only and must not be used for any other purposes. EC Representative Name Shanghai International Holding Corp. Ignoring any of these safety precautions may lead to personal injury or equipment damage. WARNING If the system is used in a manner not specified by Mindray, the protection provided by the system may be impaired. Preventing Electric Shock Please observe the following instructions to prevent electric shock. WARNING When the MAIN POWER is on, users

must not open the rear cover or side cover. Liquid ingression may lead to electric shock or equipment damage. In case of liquid ingression, shut off the power supply and contact Mindray Service Department or your local distributor. Preventing Personal Injury Caused by Moving Parts Please observe the following instructions to prevent personal injury caused by moving parts. WARNING Do not touch such moving parts as probe and mixing bar, when the system is in operation. Do not put your finger or hand into any open part when the system is in operation. Preventing Personal Injury Caused by Photometer Lamp Please observe the following instructions to prevent personal injury caused by photometer lamp. WARNING Light sent by the photometer lamp may hurt your eyes. Do not stare into the lamp when the system is in operation.

http://cqitracker.com/images/bosch-kts-550-manual.pdf

HYPERVISOR VI

Central Monitoring System

Service Manual

If you want to replace the photometer lamp, first switch off the MAIN POWER and then wait at least 30 minutes for the lamp to cool down before touching it. Do not touch the lamp before it cools down, or you may get burned. Preface 5 Preventing Infection Please observe the following instructions to protect against the biohazardous infection. Service Manual. For this Service Manual, the issued Date is 200604 Version 1.0. Intellectual Property Statement. SHENZHEN MINDRAY BIOMEDICAL ELECTRONICS CO., LTD. hereinafter called. Mindray owns the intellectual property rights to this Mindray product and thisMindray intends to maintain the contents of this manual as confidential information. Disclosure of the information in this manual in any manner whatsoever without theRelease, amendment, reproduction, distribution, rent, adaption and translation of thisChina and other countries. AllThey are the property of their. Responsibility on the Manufacturer Party. Contents of this manual are subject to changes without prior notice. Mindray shall notMindray is responsible for safety, reliability and performance of this product only inNeglect of this may result in machine breakdown or injury of humanMindrays obligation or liability under this warranty does not include anyMindray authorized personnel. This warranty shall not extend toReturn Policy. Return Procedure. In the event that it becomes necessary to return this product or part of this product to.

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Graphics. All graphics, including screens and printout, are for illustration purpose only andContents. Preface. i. Who Should Read This Manual. i. Conventions Used in This Manual. iPower Requirements. 21. Environmental Requirements. 22Installation Procedure. 23System Description. 31Features of Loading System. 11. Features of Photometric System. 11. Operating Interface. 12. General. 31Major Components. 32Functions of Boards. 41Main Control Board. 42Drive Board. 43. Reagent Refrigeration Board. 44. Level Detection Board. 45. System Power Supply. 45Control Software. 57. Maintenance and Service. 61Replacing. 66Adjusting. 619Checking. 623Maintenance and Test Software. 71Command. 73PARA and Speed. 710. Temperature.714. Photoelectric. 715. Appendix A Diagrams. A1. Appendix B Test Points of Boards. B1. Appendix C Spare Parts List. C1Supporting doublereagentLogitLog 5P, Exponential 5P, Polynomial 5P, Parabola and SplineEach position is available for the Mindray bottles onlyFeatures of Photometric SystemMinimum 500. WallOperation. Unit. Analyzing Unit. Minimum 500Unit mm. Power RequirementsThe system should be connected to a properly grounded power socket. If possible,The distance between the power socket and the system should be less than 3Improper grounding. Be sure to connect the system to a power socket that meets theThis system is for indoor use only. The bearing platform or ground should be able to bear 100Kg weight. The installation site should be well ventilated.A wellventilatedUse ventilationBut if so, be sure not to expose the system toThe site should be free of dust as much as possible. The site should not be in direct sun. The site should not be near a heat or draft source. The site should be free of corrosive gas and flammable gas. The bearing platform or ground should be free of vibration. The site should not be disturbed by large noise or power supply.

The system should not be placed near brushtype motors and electrical contactsDo not use such devices as mobile phones or radio transmitters near the system. Electromagnetic waves generated by those devices may interfere with operation ofThe altitude height of the site should be lower than

2000 meters.Storage temperature and humidity. The system should be stored in a 0C40C environment with fluctuation less than. The relative humidity should be between 30%RH80%RH and with noOperating temperature and humidity. When the system is running, be sure to fix the ambient temperature between 15C. The ambient humidity should be between 35%RH80%RH and with noIf the temperature or relative humidity does not meet theEnsure available installation fields in hospital enough space, electrical environment,PC, monitor and printer are prepared and can be installed the system software and. Maintenance and Test software at any moment.The reagent, calibrator, the tool kit, lubricating grease are prepared engineer alsoGo to the installation site and do the following beforehand check wok.The original copy is to be kept by the hospitalHold the mixing bar arm by hand, and move it up and down to its full travel forThen record the results in the following table. Item. Moving resistances of reagentResultRemarkMoving resistances of mixing barIf the moving resistances are different, lubricate the driver assemblies, andInstall the probeRemember to move the arm to the highest position for convenient operation.Exercise caution when insertingGently push the probeIf not, removeInstall the mixing barNote that pinch theMixing Bar. Retaining Nut. Knurled PartIf not, remove the bar and reinstall it. If so, proceed to the next step.Connect the deionized water tankDEIONIZED WATER on the rear side of the analyzing unit and turn theConnect the waste tankWaste TankWaste Tank. Connect the PC to the Analyzing UnitSerial Port on the.

Serial Port on the PCConnect power cable and grounding wire of the analyzerInstall the system software. Before installing the system software, check the operating system and settings of the. PC and make sure. Operating system Windows XP, Windows 2000. Memory Above 128M. Color no less than 8 bitsOtherwise, after selecting the Custom, click the Next button and go to theInstall the driver of the printer. Shut down the PCDo not mix the acid detergent with the alkaline one. Be sure to use the detergent recommended by Mindray. Otherwise, proper result may not be obtained. Mindray recommends the acid and alkaline detergents be usedAfter that, the system asks you to unload the first segment of cuvettes toBecause it is the firstDo not touchReactionAmbientWaste tank. Abnormal full. Normal not full. Deionized water. Abnormal empty. Normal available. Printer. No printer. Normal. Main unit. Unconnected. Reaction unit. UnconnectedRunning. System InstallationUnconnected. Mixing unit. Temperature unit. Wavelength nm. Dark Current. BackgroundIn case of anyCalibration screens, and then conduct a doublereagent blank.TestTest value 1. Test value 2. Test value 3. Test value 4. Test value 5. Test value 6. Test value 7. Test value 8. Test value 9. Test value 10Can the customer complete daily tests Yes No. Is the customer familiar with the analytical methods such asYes No. Is the customer familiar with the daily, weekly and monthlyYes No. Is the customer skilled in washing dust screens Is the customer skilled in cleaning and replacing the probe andYes No. Is the customer skilled in replacing the plunger assembly ofYes No. Is the customer skilled in replacing the lamp Does the customer know the positions, roles and preparationYes No The BS200 consists of the analyzing unit, operation unit and output unit. TheFigure 31 Overview of the analyzing unit and the operation unit. Figure 32 Front view. Cover. Syringe. Dispenser. Mixer. Reaction DiskUpper Cabinet.

Lower Cabinet optionalThe measurement flow of the BS200 is as follows. Figure 33 Work flow of the BS200. Start. LoadStartupIncubationCuvetteMixDoub. Singlereagent test. Absorbance. OutputReplaceTest ProceduresThe initializationYou can’t start testing unless the lampIt may skip to the next one whenWhen the incubation timeMajor Components. The analyzing unit of the BS200 consists of the dispensing system, temperatureThe dispensing system consists of the probe module, mixing bar module,The mixing bar module is the same as the probe module, except that the knurled axisFigure 34 Drive Assembly. The drive assemblies of the probe module and the bar module have a

horizontal andThe horizontal and vertical step motors preciselyThe synchronousThe shaft and the spline pair must corporate with each other precisely, so they shouldThe two bearing support are different in their upper connection block and their coders. The gaps of the coder define the positions where the disk should stop at. Each coderFigure 36 Coder of reaction disk. The step motors control the disk assemblies, and the synchronous belts serve as theThe temperature control assembly of reaction disk consists of temperaturecontrolledFigure 37 Structure of the temperature control assemblyTemperaturecontrolled chamber. The temperaturecontrolled pot, heatinsulator, photoelectric seat and the coverThe heatinsulator,There is a gap on the cover, which is used for. Heater. Total power 475W. The heaters compensate the heat for incubating the reagents and maintaining theFans. Fans are used in series in the temperaturecontrolled chamber, so as to circulate theThere are four fans inTemperature transducer. It feeds back the air temperature at the position near the reaction cuvette. With anControl. PID control. PID parameters can be selfadjusted at any time.

Safety precautionThe preheating assembly consists of two aluminum plates, a Teflon tube, heatingThe transducer detects the temperature, and then transmits itThus the heating assembly is controlled, and theThen the reagent isFigure 38 Reagent preheating assembly. Preheating. ModuleThe refrigeration module consists of refrigeration chamber 8, heatinsulator 9, cover,Figure 39 Reagent refrigeration moduleThe key components of refrigeration assembly include refrigeration accumulationFigure 310 Refrigeration assembly. If you want to replace any part of the refrigeration assembly, screw the eight screwsFigure 311 Reagent chamber bottom viewThe photometric system consists of measurement photometric systems and aThe former provides 8 monochromatic lights toIn the BS200, the 700nm is optional. You can see the fiber of 700nm in the analyzingThe lamp gives out the lights, which are divided with optical fibers. One becomes theOther 8 monochromaticThe absorbance is taken when the reaction cuvette rotates to the correspondingFigure 312 Photometric principles. TungstenhalogenBiconvexMainPlanoFilterPhotodiodeReferenceThe fluid system of the BS200 consists of deionized water tank, wash pump,Figure 313 Fluid systemMixing Bar. SyringeThe interior washing circuit begins from the deionized water tank, passes CV1Then the circuit goes through SVFinally, the waste water goes into the probeThe exterior washing circuit begins from the deionized water tank, goes through CV2When the pump is running, theThe waste water from C1 and C2 goes through C4 fourway, converging with theIt is the key part of the fluid system. Figure 314 Syringe assembly. The step motor, through the synchronous belt, controls the ball screw. TheThe BS200 chemistry analyzer is integrated with the following units. Main unit Main control board. Drive unit Drive board. Level detection unit Level detection board. Reagent refrigeration unit Reagent refrigeration board. Figure 41 Hardware system. Hardware System. Main Unit.

Drive Unit. Main Control. Board. Drive BoardConversion Boards. Data. Conversion Unit. BoardUnit. Reagent. Refrigeration Unit. Level Detection. Refrigeration BoardBoard. Power Supply. UnitFunctions of Boards. Figure 42 Connection of Boards. Refrigeration parts. Refrigeration temperature. Transducer. Refrigeration fanReagent refrigerationWaste transducer. Deionized water transducer. Reagent refrigerationMain controlReaction temperature transducer. Preheating temperature transducer. Power. Level detection boardDriver boardPump. Valve. Heater ofReagentLamp. Main Control Board. The main control board is the control center of the whole hardware system. It consistsEach functional unit has an. MCU. They communicate in multiunit mode and thus compose the whole controlThe main control board communicates with the 4 subunits through the extendedFigure 43 Structure of main control boardPhotoelectric. Temperature. Control Unit. UnitFunctions of BoardsThe main unit communicates with the PC through RS232C, and communicates withThrough the serial port, the photoelectric unit receives commands from the main unit,The temperature unit detects and controls the temperature for reacting and reagentControl vertical movement of the syringe. Detect signals sent from each relevant transducer.The mixing unit

receives commands from the main unit through the serial port andControlling the movement of the DC motor. Detecting signals sent from each relevant transducer.The drive board is to receive the control signals from the main control board andSee the figure below for details about the drive board.Figure 44 Drive board. Control signal from. Main Control BoardPhotoelectric. Conversion Board. Photoelectric. Signal adjustingSignal adjustingPhotoelectric data. Total 9 channels. Main Control Unit. MultiwaySignal adjustingAdjust the 9 channels of converted signals, convert them into digital ones and thenAdjust the gains of the photoelectric signals.

The photoelectric signals are converted respectively by the photoelectric conversionPhotoelectric conversion boards for differentThe reagent refrigeration board consists of four circuits, including refrigeration controlIn the BS200, the following fans are driven by the reagent refrigeration boardThere are several LEDs on the reagent refrigeration board to indicate the status ofRefer to the tableTable 41 LEDs on reagent refrigeration board. What to indicate. Net Name ofDescription. On. OffGreenPeltiersRed. Red. Green. TemperatureTemperatureTemperatureTemperatureRed. TemperatureTemperaturePower supply. Peltiers. RefrigerationPeltiers go wrong. CorrespondingCorrespondingFansLevel Detection BoardThe level detection board detects the fluid level of sample and reagent.The powers supplied by this unit includeEMI filter network. Providing APFC to conform to the IEC6100032. Supplying stable 12V4.5A for the lamp. Controlling the 24V, 12V4.7A and 5V outputs through the Power of the analyzingTransferring AC to the heater and controlling the heater. Converting the 390V into 24V. The 24V of this board is output under the control of the Power of the analyzing unit.The power supply of the BS200 is controlled by two switches MAIN POWER and. Power. The 12V10A is controlled by the MAIN POWER of the analyzing unitThe BS200 software is composed of the system software and the control software.Figure 51 System software interface. The BS200 system software manages the test and sample information entered byThese instructions inform the analyzing unit to startThe system software controls the analyzing unit through the control software. TheyThe system software is composed of 14 modules calculation, startup, shutdown,This module calculates the calibration parameters and the concentration of theThis module initializes the operation unit and analyzing unit to prepare for testing.