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Sedimat® 15 Plus

USER'S MANUAL

LP ITALIANA SPA

Sedimat® 15 Plus Automated ESR Reader

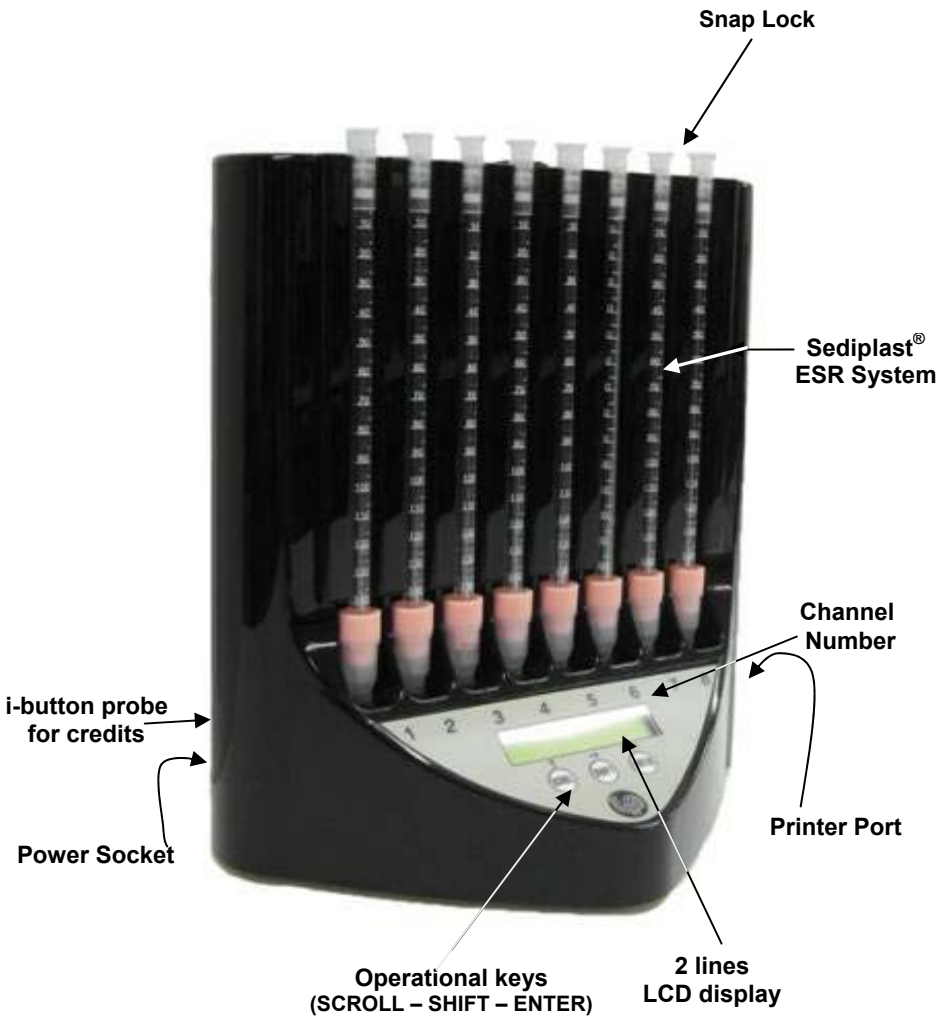


Fig. 1

1 At the predetermined time intervals **Sedimat® 15 Plus** will automatically scan the Sediplast® pipettes.

LCD displays **SCANNING CHAN.**

At the conclusion of the test, a beeping signal will be emitted indicating the end of the test.

LCD will read: **END CHAN**. The numbers of the channels where the testing ended are shown in the lower line.

2 For results press **ENTER** and return to **CHANNEL STATUS** if not already there. Press **ENTER** and then press **SCROLL** for the result of each channel.

If a printer is connected results are automatically printed. For other print options refer to PRINT MODE section.

NOTE:
Removal of pipette resets the channel to **READY** status and transfers results to **FILED READINGS**.
Results remain in memory (**FILED READINGS**) for each channel until the next completed test.

Results of the pipettes **still** in the channels can be:
.- read from **CAHNNEL STATUS** menu
.- printed from **PRINT OF DATA** > **LAST READINGS** menu

Results of the pipettes **just** removed from the channels can be:
.- read from **FILED READINGS** menu
.- printed from **PRINT OF DATA** > **FILED READINGS** menu.

Service and Maintenance

1 Unplug **Sedimat® 15 Plus** daily to ensure the running of the **AUTOTEST** function and self calibration.
2 On a regular basis or as needed, wipe channels with a cloth dampened with water or “Windex” (DO NOT USE Bleach or Alcohol) to remove dust or smudges that may cause improper scanner function.
3 Do not allow any liquid to come in contact with electronic components located inside the unit.
4 If further maintenance or service is required, contact:

LP ITALIANA SPA Technical Services

Tel. +39 02 3933061 – Fax +39 02 39313484
info@lpitaliana.com – www.lpitaliana.com

Daily step by step procedure

1 Plug power supply adapter into a wall outlet. **Sedimat® 15 Plus** automatically performs a self check.

LCD will read: **AUTOTEST**

2 Upon conclusion of the AUTOTEST phase, **Sedimat® 15 Plus** will check the operating status of each channel.

LCD will read: **WAIT** and then change to **CHANNEL STATUS**

3 Insert Sediplast® pipettes into any available channel.

Sedimat® 15 Plus will confirm the inserted pipettes for each channel.

LCD will read: **CONFirm CHANNEL #** (confirmation request for channel #)

4 Press **ENTER**: **Sedimat® 15 Plus** will scan the pipettes and start the internal timer for each channel

LCD will read: **SCANNING CHAN.**

After scanning of pipettes is completed, **CHANNEL STATUS** will appear on LCD.

Sedimat®15 Plus

Vers. 9.0.B

BODY FLUID PRECAUTION

BLOOD IS A BODY FLUID CAPABLE OF TRANSMITTING INFECTIOUS DISEASES. UNIVERSAL PRECAUTIONS FOR THE PREVENTION OF THE TRANSMISSION OF BLOOD BORNE PATHOGENS ARE IN EFFECT AT ALL TIMES. THIS INCLUDES THE USE OF PROTECTIVE COAT, GLOVES AND FACE SHIELD.

General Information

Intended Use

Sedimat® 15 Plus ESR instrument is an automatic reader for quantitative testing of Erythrocyte Sedimentation Rate (ESR) in venous whole blood samples using Sediplast® system. It is designed for use in a laboratory or point of care setting.

ESR Test Summary

A Sediplast® pipette prepared with patient sample can be inserted into any available channel. **Sedimat® 15 Plus** automatically detects the presence of the pipette in the channel and waits for operator's confirmation to begin the test. The instrument reads the pipette at predetermined time intervals. At the end of the testing cycle the instrument emits an alarm, calculates the Erythrocyte Sedimentation Rate, displays the result on the LCD screen and prints the result on an optional printer if connected. The instrument will also send the results to a PC and or to an optional LIS / HIS communication host if connected. **Sedimat® 15 Plus** has 8 sample channels and can test 1 to 8 Sediplast® pipettes at one time. Sediplast® pipette can be loaded in any vacant channel order and can be run independently of each other.

2) Mix the tube well for 5 minutes minimum: the sample must be placed in the mixer and mixed for a time proportional to the time elapsed from the sample collection.
   If mechanical mixing occurs within 15 minutes after collection, 5 minutes mixing are sufficient.

   For longer elapsed time from collection, 10-15 minutes of mixing are necessary.

   Above mixing times are general guidelines, as blood samples vary from each other, and one cannot predict beforehand what their requirement will be.
   For this reason only general guidelines are given.

   Without proper preparation some samples delay the start of their sedimentation, therefore distorting ESR results.
3) Check that the internal tube's surfaces are completely blood dampened then gently insert the Sediplast® pipette to the bottom of the tube.
   Check that the blood column reaches the zero mark, that there are no air bubbles nor blood foam along the blood column.
4) In the shortest time possible put into one channel of the **Sedimat® 15 Plus** and start the testing.

Hazards

- For *in vitro* diagnostic use
- **Sedimat® 15 Plus** is an electrical device; to avoid shock hazard do not operate in wet conditions. The power adapter should be plugged into receptacles rated at 220 Vac-50 Hz / 110 Vac-60 Hz
- Sediplast® pipettes and tubes are designed to minimize potential exposure of the operator to blood fluids; however, leaks or spills may occur which result in exposure. Use universal safety precautions for the prevention of the transmission of blood borne pathogens when operating this instrument or handling blood samples.
- Follow local regulations for disposal of biohazardous waste.

Calibration

Sedimat® 15 Plus instrument does not require calibration by the user.

Precautions and Limitations to Instrument operation

- Only **Sediplast®** pipettes and tubes can be placed into the **Sedimat® 15 Plus** channels. No other pipettes can be used.
- When opening a new package of **Sediplast®** pipettes and tubes, the memory i-Button contained in the package must be downloaded otherwise **Sedimat® 15 Plus** will not perform testing with the new pipettes and tubes.
- Ensure the **Sediplast®** pipettes and tubes are properly filled before testing (zero mark reached, no air bubbles nor blood foam along the column). **Sedimat® 15 Plus** will wait for the **CONFirmation** by the operator.
- Ensure contents of **Sediplast®** tubes are adequately mixed before inserting the pipettes.
- Once a pipette and tube has been inserted into a channel of **Sedimat® 15 Plus** and testing has begun do not touch nor rotate the pipette and tube until testing is complete.

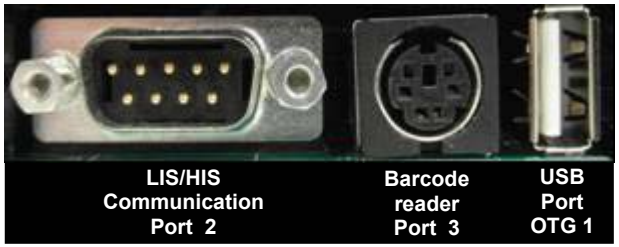
Preparation of Sediplast® samples

Samples to be used with Sedimat® 15 Plus must be carefully prepared, if results corresponding to Westergren want to be obtained. Fill the Sediplast® tube with fresh blood to the fill mark, place cap back on tube.

1) Tubes with blood and anticoagulant must be turned upside down until all internal surfaces are dampened. Be sure that one single reversal is enough to move the whole sample towards the bottom or the cap and vice-versa.

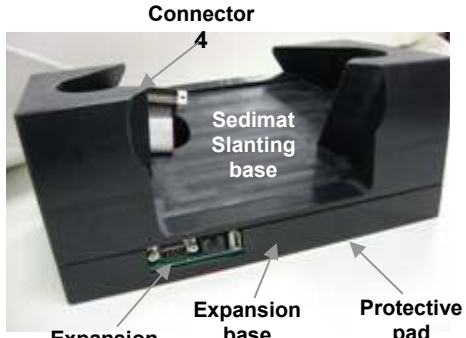
Instrument rear view

Expansion Base (LIS – HIS) rear view



Installation and Use

1. Carefully unpack **Sedimat® 15 Plus** from the shipping carton and inspect for damage. If any physical damage is found, or if **Sedimat® 15 Plus** fails to operate when first powered up, please contact LP ITALIANA SPA - Technical Service for assistance**.**



If applicable:
Assembling the expansion base for LIS / HIS communication and Bar Code reader.

2. Pass connector 4 of the cable (and part of the cable itself) through the hole in the body of the slanting **Sedimat® 15 Plus** base, entering from the bottom towards the slanting surface.
3. Turn upside down both bases and fasten them to each other using the four large screws attached.
4. Connect the free connector 4 of the flat cable to the socket in the bottom (Port 5) of the **Sedimat® 15 Plus** (secure with the two small supplied screws).
5. Put **Sedimat® 15 Plus** into the slanting seat of the base and place this upright on a flat level surface near a 110/220 V ac, 50/60 Hz power source.
   For operation refer to section "**Sedimat®15 Plus** Operation" page 11
6. Connect a printer, if desired, following instructions in the **Printer Connection** section.
7. Connect a LIS / HIS communication host connection if desired, to Port 2 of the Expansion base of **Sedimat® 15 Plus**
8. Connect a bar code reader, if desired, to Port 3 of the Expansion base of **Sedimat® 15 Plus**
9. **Sedimat® 15 Plus** is provided with a power supply. Plug the connector on the DC power supply cord into the Power socket on the back of **Sedimat® 15 Plus**

Sedimat® 15 Plus has an independent timer for each of its 8 channels which can be randomly selected and started.
The instrument has an LCD Display with 2 lines, a push pad with 3 keys to interact with and a barcode reader, if present (optional).

Sedimat® 15 Plus detects the presence of Sediplast® pipettes inserted into any channel. Pressing **ENTER** the device automatically:

- Starts and controls the timing of each channel
- Reads at predetermined time intervals, sedimentation rate levels. After 15 minutes, gives the result corresponding to the conventional 60 minutes Westergren ESR.
- Buzzes when the test is complete.

2.1.4 Message Terminator Record (L)

Message Terminator Record (L)		
Name	Max digits	Contents
Record Type	1	[L]
Sequence Number	1	[1] Fixed
Terminator Code	1	N: Normal end. "N" is always sent.

Example of Result Output

The results are sent to the host computer in the following sequence
H, O, R and **L.**
Data is sent in the following sequence for both of the real time sending.
Ensure that the host computer does not send [**ENQ**] or [**text**] to **Sedimat® 15 Plus**

(I): Data is sent from **Sedimat® 15 Plus** to Host Computer.
(H): Data is sent from Host Computer to **Sedimat® 15 Plus**.

Ex.: Specimen ID=97500008, Value 105 mm/Hr

(I) [ENQ]

(H) [ACK]

(I) [STX][1]H||^&||| Sedimat|||||||20110121134500 [CR][ETX][SUM1][SUM2][CR][LF]

(H) [ACK]

(I) [STX][2]O|1|97500008||^^^ESR [CR][ETX][SUM1][SUM2][CR][LF]

(H) [ACK]

(I) [STX][3]R|1|^^^ESR|105|mm/hr|||||||20110121134500 [CR][ETX][SUM1][SUM2][CR][LF]

(H) [ACK]

(I) [EOT]

2.1.2 Level 2: **Test Order Record (O)**

Message Order Record (O)		
Name	Max digits	Contents
Record Type	1	[O]
Sequence Number	1	[1] Fixed
Specimen ID	16	Output of barcode information pasted on the specimen that is to be read by **Sedimat® 15 Plus**
Universal Test ID	6 (Fixed)	Outputs the manufacturer's code after three component element partition symbols. "^^^ESR"

2.1.3 Level 3: **Result Record (R)**

Result Record (R)		
Name	Max digits	Contents
Record Type	1	[R]
Sequence Number	1	[1] Fixed
Universal Test ID	6 (Fixed)	Outputs the manufacturer's code after three component element partition symbols. "^^^ESR"
Data or Measurement Value	3	Outputs 3 digit measured value (integer)
Units	5 (Fixed)	Indicates units of the analytic data. Use "mm/hr"
Date/Time Test Completed	14	Based on ASTM 1394-97

To ensure the correct working of **Sedimat® 15 Plus**:

- Do not touch, move or rotate any "confirmed" pipette during its working time (from CONFIRM CHANNELS to END).
- Do not remove any pipette when the LCD screen shows "SCANNING" even if the time has elapsed.

Principle of Operation

Sedimat® 15 Plus is based upon the ability of red blood cells to block the transmission of infrared light. 8 infrared emitting diodes and detectors are located on either side of each channel.
When a properly prepared Sediplast® pipette is inserted, the transmittance of infrared light is blocked due to the presence of blood inside the pipette.

The pipette channels are inclined at a precise and predetermined angle to accelerate natural blood sedimentation.

At predetermined time intervals the sensors (coupled diodes) scan the plasma (which permits infrared light transmission) and the settled red blood cells (which block infrared light transmission).

The infrared light detected by the receiver is transformed into an electrical signal.

The system <<emitter – sample – receiver>> transmittance progressively increases the signal as the red blood cells settle.

At the conclusion of the test the determination of the result is calculated through an algorithm which equates to the conventional 60 minutes Westergren ESR.

Printer (optional) connection and Setting

1 Connect **Sedimat® 15 Plus** RS232 serial port to the printer's serial port, using a cable as per Fig. 2

2 Connect and power up the printer according to manufacturer's instructions

3 Set up the printer as follows:

***Suggested parameters**:*

Pitch (character spacing)	10 cpi
Skip-over-perforation	off
Auto line feed	off
Page length	11 inches
Auto tear off	off
Tractor	single
ETX/ACK	off
Auto CR	off
software	ESC/P

***Fixed parameters**:*

Interface	serial
Bit Rate	9600 bps
Parity	none
Data length	8 bit
Stop bit	1

4 Feed paper or labels in the printer.

5 Select desired printer font.

6 The printer is now ready to print results from **Sedimat® 15 Plus**

Quality Control

The use of control test is recommended to verify procedural steps, accuracy and precision of results.

All data managed by **Sedimat® 15 Plus**, new or stored can be exchanged exclusively with LIS / HIS system and are not accessible by any other external device.

If the reply from the host computer is "NAK", the last record will be re-sent 6 times. If the system fails to recover, **Sedimat® 15 Plus** proceeds to the end phase, then waits for 15 seconds and starts re-sending the test result file from the beginning.

If there is no reply from the host computer within 15 seconds, **Sedimat® 15 Plus** starts re-sending the "ENQ" phase.

2. High Level Protocol

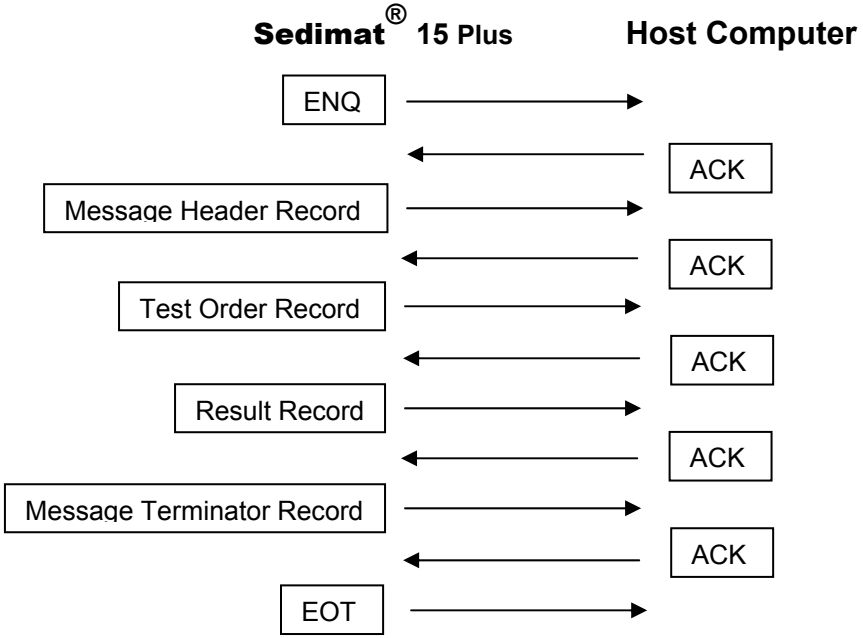
The following item applies, based on ASTM 1394-97:

2.1 Contents of the Valid Record and the Valid Field

2.1.1 Level 0: **Message Header Record (H)**

Message Header Record (H)			
Name	Max digits	Contents	
Record Type	1	[H]	
Delimiter Definition	4	Field Delimiter	Vertical bar [|]
		Repeat Delimiter	Back slash [\ ]
		Component Delimiter	Caret [^]
		Escape Delimiter	Ampersand [&]
Sender Name or ID	7 (Fixed)	"**Sedimat® 15 Plus**"	
Date/Time of message	14	Based on ASTM 1394-97	

Normal communication for one specimen

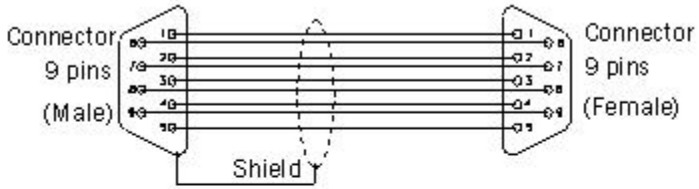


Sedimat® 15 Plus saves the test results in its internal memory which have **not yet been transferred** to LIS / HIS system. This data is stored until the following occurs:

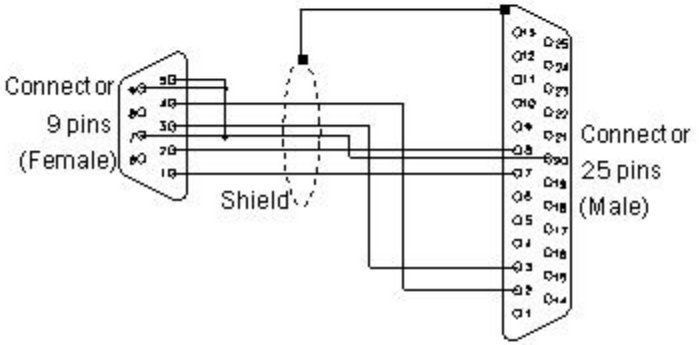
- Re-establishment of the connection with LIS / HIS system; data transmitted – blank memory

Principle of storage: FIFO. Sedimat® 15 Plus memory contains the data not yet transmitted to a LIS / HIS communication. Data will be transmitted at the next connection. The new incoming data is stored in place of the oldest one.
The transmitted data is permanently erased.

Serial port CABLE RS 232 - 9/9 for printer connection Fig. 2

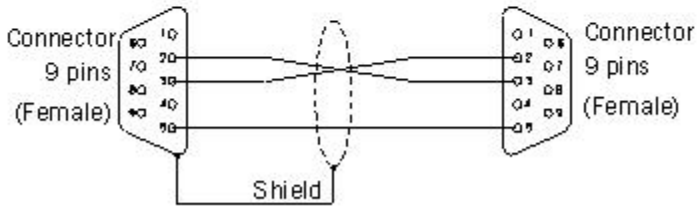


Simplified serial port CABLE - 9/25 for printer connection



PRINTER SETTING DATA (refer to printer manual)				
Baud Rate	Data Length	Stop bit	Parity setting	Flux control
9600 bps	8 bits	1	No	Xon/Xoff

LIS/HIS Communication simplified serial CABLE 9/9 - (null modem)



Technical Information

Capacity	8 simultaneous tests (up to 32 per hour)
Pipettes	Sediplast®
Pipette loading	Random
Measuring method	Infrared light
CPU	Microprocessor
Display	LCD 16 characters / 2 lines
Alarm	Buzzer
Language	English
Printer Port 1	RS232 (9 pin)
Barcode reader Port 3	PS2
OTG1 port	USB
LIS / HIS connection Port 2	RS232 (9 pin)
Power supply	12 V DC
Line voltage	110/220 Vac – 50/60 Hz
Dimensions	230 x 180 x 250 mm (9” x 7” x 10”)
Weight	2.1 kg (4.63 lb)
Working temperature range:	15 - 35 °C
Working relative humidity:	max 80% up to 30°C

Sedimat® 15 Plus operates correctly with incident light not exceeding 1,000 lux.
Maximum reading capacity is 140 mm. Results of 140 mm or greater are reported as “> 140” mm.

Specifications

Sedimat®15 Plus is light and compact and can be moved and installed very easily. Because of its small footprint it requires little bench or counter space to set up.

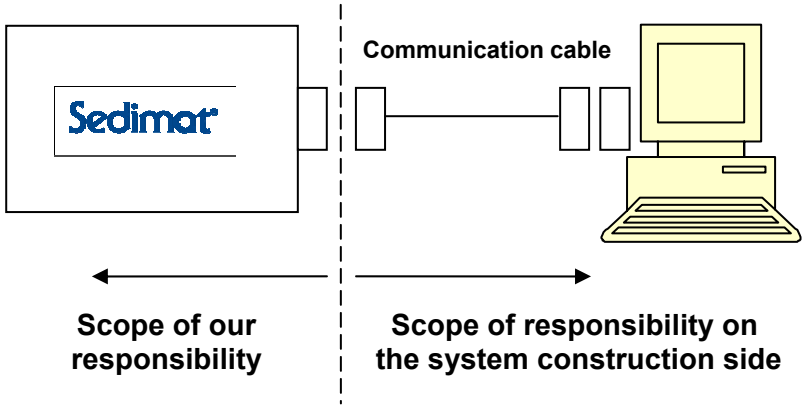
1.3 Communication Procedures

Sedimat® 15 Plus does not wait for a text message from host computer, but only waits for reply. If an irregular signal is received, carry out processing according to the transition table.
Ensure that the host computer does not send [ENQ] or [text] to the **Sedimat® 15 Plus**. If the host computer sends data other than [ACK] or [NAK], take action according to the transition table.

Transition table

Receiving / Status	Sedimat Receive ENQ	Sedimat Receive ACK	Sedimat Receive NAK	TimeOut	Sedimat Receive EOT	Sedimat Receive txt
IDLE	Sedimat sends NAK	Ignored	Ignored	-	Ignored	Ignored
W1: Waiting after ENQ was sent	Sedimat wait 1 sec and returns in IDLE	Sedimat Reset RC and goes in W2	Sedimat INC RC; if RC >6 , Reset RC , Send EOT, returns in IDLE	Sedimat Send EOT, returns in IDLE	Same of ACK	Same of NAK
W2: Waiting for reply after [H] [O] [R] [T] Were sent	Sedimat INC RC; if RC >6 , Reset RC , Send EOT, returns in IDLE	Sedimat Reset RC and sends record up to [T] one; after sends EOT and returns in IDLE	Sedimat INC RC and resend previous record; if RC >6 , Reset RC , Send EOT, returns in IDLE	Sedimat Send EOT, returns in IDLE	Same of ACK	Same of NAK

Responsibility Dividing Line
Our responsibility extends to the RS-232C connector of the Sedimat®



Sedimat® 15 Plus is responsible for the patient's privacy only up to the communication port with LIS / HIS. From this point on the LIS / HIS system is responsible for the patient's privacy.

1. Low Level Protocol

1.1 Transmission Conditions

(1)	Transmission system	: Voltage Type
(2)	Synchro system	: Asynchronous system
(3)	Transmission system	: Full-Duplex system
(4)	Transmission speed	: 9600 bps
(5)	Data length	: 8 bit
(6)	Parity	: None
(7)	Stop bit	: 1 bit

1.2 Connector Wiring (see page 9 - **Fig.2**)

The bottom of the base of the instrument is coated with soft and high grip pad to maintain good contact and grip on the counter surface.
On the front of the instrument there are 8 channels for placing the sample pipettes when performing a test.
Under the channels there is an LCD screen that displays operating conditions and sample result for each channel.
The back of the instrument (page 5) has from left to right:
- a male RS232 serial Port 1, for connecting a serial printer
- an i-button probe as interface for recharging **Sedimat®15 Plus** with the number of tests that can be performed. A memory i-button is placed in each Sediplast® package. This memory i-button is used to transfer authorization to the instrument to perform as many tests as there are pipettes in the package. The instrument will not run tests unless it has been authorized to do so.
- a female socket for the DC power supply connection.

The rear of the Expansion Base has, from left to right (page 5):
- a male RS232 for LIS / HIS communication (serial Port 2)
- a barcode reader port (serial Port 3 - Mini-DIN connector)
- a USB port as OTG 1

Sedimat® 15 Plus operation

1. If not already set, insert **Sedimat® 15 Plus** reader into the slanting seat of the base supplied. Make sure the bottom of the **Sedimat® 15 Plus** fits all the way into its seat in the base and the flat cable is completely contained in the hole (not crushed).
   All other desired devices (printer, barcode reader, LIS / HIS communication, USB) should be connected before powering the **Sedimat® 15 Plus**
   - For LIS/HIS communication please refer to page 25
   - For barcode reading please refer to pages 23 - 24
2. Put the connector of the power supply into the socket and plug the power supply in a wall power outlet. At this point, power is immediately applied to the **Sedimat® 15 Plus** unit; **there is no additional on/off switch to be concerned with**.
3. **Sedimat® 15 Plus** will begin the "**AUTOTEST**", performing an automatic electro-mechanical check. Ensure that all channels are empty.

STARTING – AUTOTEST

During the Autotest the LCD screen displays the following in sequence:
The name LP ITALIANA or Laboratory name (if set) and Version number of the resident software.
Then CREDITS followed by the total number of tests the instrument is authorized to perform at that moment.
Then AUTOTEST and **please wait**
In the final phase, an automatic calibration of each channel is performed (LCD screen shows CH#-->TESTED and Calib. Channels)

At the end of AUTOTEST if any pipette has been detected the display shows “REMOVE PIPETTE and press CR” .
Remove any pipette and press **ENTER** to complete the AUTOTEST
When AUTOTEST is completed the upper line of LCD screen will show CHANNEL STATUS which means the instrument is ready to perform tests, or
If the AUTOTEST is unsuccessful, an error message is displayed:

- **ERR 1 - ERR 2 - ERR 3 - ERR 4**:
  Call for Technical Service

- **ERR-5 C - #** (where # stands for the number of the channel out of service). **Sedimat® 15 Plus** can work with other channels not appearing as failed. Press **ENTER**. **Sedimat® 15 Plus** displays “**CHANNEL STATUS**” and is ready to work. By pressing **ENTER** once more and **SCROLL**, LCD changes through **C 1-8** channels to **C 1 READY.**
  Press **SCROLL** until “**C # FAILURE**” which shows which channel will not accept pipettes.
  If one of “**CHANNEL STATUS**”, “**C # READY**” or “**C # FAILURE**” is not displayed call Technical Service).

- **ERR 6** (error message during a test) appears when a confirmed pipette is removed.

A warning message appears on the display if a barcode of a sample still under test is read twice

****PATIENT ID ALREADY SCANNED****

A warning message appears on the display if a pipette is inserted into one channel without the associated barcode being read first.

NO PATIENT ID SCANNED

In this case the pipette to be removed is the one that was inserted last, not yet “CONFIRMED”

LIS / HIS Communication

The following are the specifications for communication between **Sedimat® 15 Plus** and a host computer.

Sedimat® 15 Plus communicates with a LIS / HIS system using the protocol format according to ASTM 1381-02 and ASTM E1394-97 standards. The record consists of the following segments:

H = Header Record
O = Order Record
R = Result Record
L = Terminator Record

This specification covers the communication specifications used for communication between the **Sedimat® 15 Plus** and a host computer.

Test with Barcode reader

1. Connect a barcode reader to Mini-DIN connector (serial port 3).
2. Power on **Sedimat® 15 Plus** and wait until AUTOTEST has ended (CHANNEL STATUS displayed on the screen)
3. Refer to the package cover of Sediplast® pipettes for instructions on sample preparation for testing.
4. Using barcode reader, scan the barcoded label on the tube (or barcode label holder) of the Sediplast® pipette to be tested. Pressing the button a single beep is heard and the red light of the reader lights up. If the data transmitted is acknowledged the **Sedimat® 15 Plus** also emits a beep.
5. On the lower line of the **Sedimat® 15 Plus** display the patient's ID number (which has been read) is shown.
6. On the top line of the **Sedimat® 15 Plus** display "**CH: _?**" appears.
7. Insert the previously read Sediplast® pipette in any free channel.
8. Make sure to set the pipette into the channel within 10 seconds from the appearance of "**CH: _?**", otherwise the information is erased from **Sedimat® 15 Plus** and the procedure must be repeated.
9. The timer will count down throughout the test time
10. When testing is complete the instrument beeps and the result in mm can be displayed through the CHANNEL STATUS menu. The results can also be printed if a printer is connected (see PRINTER CONNECTION section) and / or sent to a computer system through serial Port 2 (see LIS / HIS COMMUNICATION section) or to a pc. **Sedimat® 15 Plus** operates even if not connected to a computer system.

11. Remove the pipette from the channel and dispose of properly. When a pipette is removed the channel is free and can be loaded with the next sample (from CHANNEL STATUS the screen shows "Ch # ready

After AUTOTEST is performed it is possible to enter one of the following menus:

CHANNEL STATUS / FILED READINGS / TEST / DATE-TIME / PRINT OF DATA / CREDITS, selectable by pressing the SCROLL key. **Sedimat® 15 Plus** is ready to accept correctly prepared Sediplast pipettes. Any free channel can be used at any time. The LCD screen will show the inserted pipette in each channel by "CONFirm CHANNELS" in the upper line and the number of the Channels to be confirmed in the lower line. If LIS communication and barcode reader are active the patient identification must be performed previously, see pages 24-25.
To start test, press **ENTER**, **Sedimat® 15 Plus** performs an initial scanning and starts timing for the working channel.

No further operator intervention is needed.

If the operator wants to see the status of the timing, from **CHANNEL STATUS**, press **ENTER** and then **SCROLL.**
Sedimat® 15 Plus displays "**C # AA**" → **BB m**", where **C #** is the channel number, **AA** the minutes elapsed and **BB** the time of the next scan (from 1 to 15) and **m** stands for minutes.
Press **ENTER** to go back to **CHANNEL STATUS**.

At the conclusion of each test, the LCD will display "**END CHAN**" → (top line) and . . .#. . . (lower line), which is the number of the channel.
Press **ENTER** to go back to the previous menu and **SCROLL** till **CHANNEL STATUS** menu.
Press **ENTER** to have "**C1 ready**" (if no test performed) or "**C1 NN**" (press **SCROLL** again till the required channel is shown) where NN is the ESR result, corresponding to the 60 minutes Westergren).
Press **ENTER** to go back to **CHANNEL STATUS.**
Removal of tested pipettes resets channels and transfers data to **FILED READINGS**.

Results are printed automatically, if set, and transferred to LIS host if applicable, or re-printed through the menu **PRINT OF DATA.**

Channel Status

Purpose: Check the status of all 8 channels:

a) READY to use
b) FAILURE (inoperable)
c) C # AA → BB m (elapsed time and time of the next scan)

Procedure:

1 If one of **CHANNEL STATUS** / **FILED READINGS** / **TEST** / **DATE-TIME** / **PRINT OF DATA** / **CREDITS** is not displayed, press **ENTER.**

2 Press **SCROLL** until **CHANNEL STATUS** is displayed.

3 Press **ENTER**: the status of channel 1 will be displayed.

4 Continue to press **SCROLL** to scroll through all 8 channels.

5 At any time, pressing **ENTER Sedimat® 15 Plus** returns to **CHANNEL STATUS**.

Press **SCROLL** to go to **FILED READINGS.**

Filed Readings

Purpose: review of previous results for each of the 8 channels.

*Note: If a pipette is currently in the channel, the result displayed **IS NOT** for that pipette but for the previously removed pipette.*

Procedure:

1 If one of **CHANNEL STATUS** / **FILED READINGS** / **TEST** / **DATE-TIME** / **PRINT OF DATA** / **CREDITS** is not displayed, press **ENTER.**

7. The timer of each channel will count down throughout the test time. The time remaining to the end of the test of each channel (sample) can be displayed (refer to CHANNEL STATUS section).
8. When testing is complete the instrument beeps and the result in mm is displayed on the screen (in the CHANNEL STATUS menu). Press ENTER to stop. The results can also be printed if a printer is connected (see printer connection section) or sent to a communication system or to a pc.
9. Remove the pipettes from the channel and dispose of them properly. When a pipette is removed the channel is free and can be loaded with next sample (from CHANNEL STATUS the screen shows “Ch # ready”).

Barcode reader set up (if equipped)

When using the barcode reader **for the first time**, the following steps must be followed:

1. Turn off the instrument power
2. Insert barcode reader Mini-DIN 6 pin PS/2 connector into serial Port 3 of the expansion board of the **Sedimat® 15 Plus**.
3. Power the instrument on.

For more information or programming options refer to the manufacturer’s manual provided with the barcode reader.
Contact LP ITALIANA - Technical Services for further assistance.

Readable Barcodes

The barcode reader can be easily connected to the **Sedimat® 15 Plus** ESR instrument to allow sample identification to be transmitted through LIS / HIS communication. Readable codes include:

Code 39 with or without check**, Code 128,** Interleaved 2 of 5**, Codebar (NW7), UPCa, UPCe, EAN 13, EAN 8.**

Credits

If at any time the character "!" appears in the lower left hand corner of the LCD screen, proceed as follows:
Select the CREDITS menu, press ENTER and read the total number of tests that the instrument is authorized to perform at that moment (to add new credits please refer to the i-button instructions inside the Sediplast® pack). When new credits have been added into the instrument the character "!" disappears and the updated credits amount can be read through the CREDITS menu.

Test without Barcode reader

1. Power on **Sedimat® 15 Plus** without any barcode reader connected and wait until AUTOTEST has ended (CHANNEL STATUS displayed).
2. Refer to the Sediplast® tubes box for instructions on preparation of sample for testing.
3. Place a correctly prepared Sediplast® pipette into any available functioning channel.
4. When a pipette is placed in a channel the instrument beeps and the words "CONFIRM CHANNELS #" are displayed, where the # (lower line) stands for the number of the channel containing the pipette to be tested.
5. When all the pipettes (max 8) have been placed into their respective channel press **ENTER** to start the tests. One or more pipettes can be added into any free channel at any moment, in any order. Their timing will start immediately after the **ENTER** key is pressed.
6. Immediately after any confirmation (when **ENTER** is pressed), the instrument performs one down / up run to check the correct installation of the pipette. In case of problems with the pipette an Error message is displayed (see Error messages section).

2 Press **SCROLL** until **FILED READINGS** is displayed.

3 Press **ENTER** to display the filed readings from channel 1.

4 Press **SCROLL** as necessary to scroll through channels 1-8.

5 Press **ENTER** to go back to the **FILED READINGS.**

Press **SCROLL** to go to **TEST**

Test

Purpose: Change or select the following functions.

a) BUZZER
b) PRINT HEADING
c) AUTOMATIC PRINTING
d) LABEL PASS
e) NUMBER OF COPIES
f) RESET MEMORY

No change can be made if Sedimat® 15 Plus is in use: LCD will display WORKING

Procedure:

1. If one of **CHANNEL STATUS** / **FILED READINGS** / **TEST** / **DATE-TIME** / **PRINT OF DATA** / **CREDITS** is not displayed, press **ENTER.**
2. Press **SCROLL** until **TEST** is displayed.
3. Press **ENTER**: The word **PASSWORD** and 6 zeroes (the first digit is blinking) are displayed.

To input a password, press SCROLL to increment the blinking digit, and use SHIFT to move cursor to the next blinking digit.

a) BUZZER

- Operator can select buzzer mode by entering the password **010240**.
- When the 010240 code is displayed press **ENTER**
- BUZZER SETTING: is displayed in the top line and, in the lower line,
- 0-> NO SOUND or, selectable by **SCROLL**
- 1-> 10 SEC. DUR. (sound lasts 10"), or
- 2-> CONT. SOUND (continuous sound)

If the buzzer is set to 1 or 2;

- A short and continuous sound is heard when no problems have been detected at the end of the AUTOTEST.
- When the associated activity is finished.
- One input (correct Pipette insertion or pipette confirmation) has been accepted
- The correct password has been entered and accepted.
- An error message (Password Error) when the entered password is incorrect.
- A discontinuous sound lasting 5" if any problem is detected during an activity (Example: Removal of a pipette).
- To signify the end of a test.

(The buzzer can always be stopped by pressing **ENTER**)

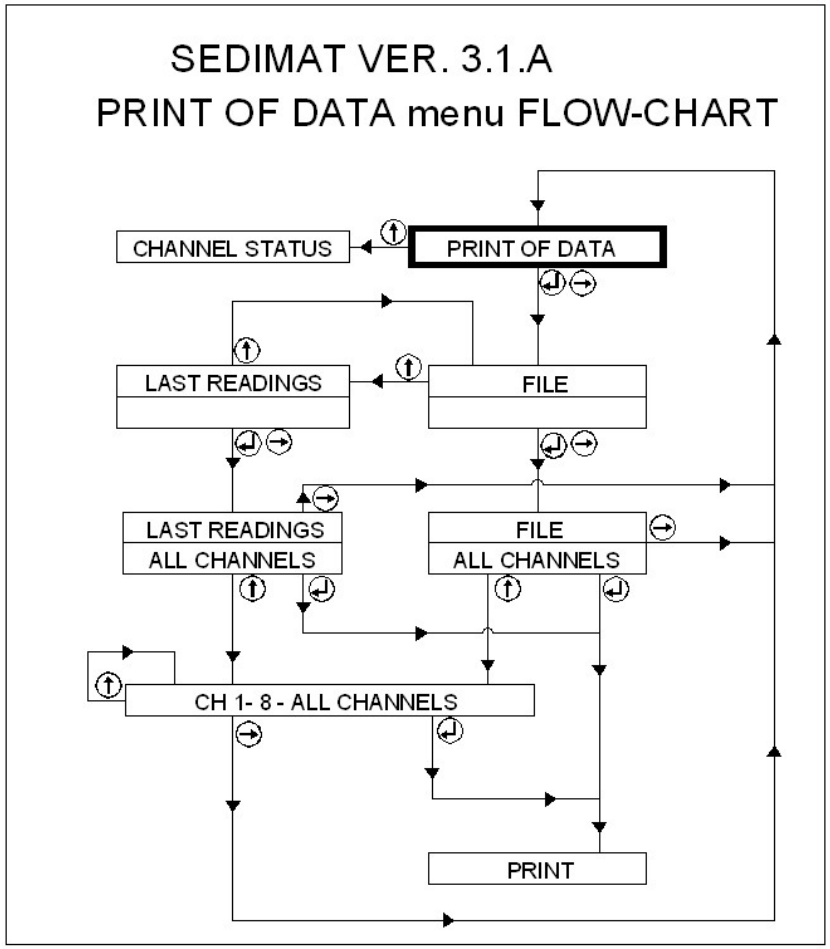
Press **SCROLL** and confirm the selected mode by pressing **ENTER**.

b) PRINT HEADING

Password **020480** allows the selection of *b), c), d), e)* options in the **TEST** menu.

Press **SCROLL** to select letters or symbols and **SHIFT** to set them.

Company name is stored as native name. This can be changed to store a personal laboratory name (max 16 digits).



Note:

1) At the end of printing, **PRINT OF DATA** is displayed automatically
2) During printing **PRINT IN PROGRESS** is displayed. If the printer is not working or disconnected, **PRINTER OFF LINE** is displayed and the buzzer sounds. Press **ENTER** to stop it and go to the initial step.

From **PRINT OF DATA**, press **SCROLL** to move to **CHANNEL STATUS** or to move to any other menu of interest.

A. RESULTS OF FILED TESTS (pipettes just removed)

From **3.1 ALL CHANNELS**

Press:
a) **ENTER**: for printing the results of the channels from which the pipettes have been removed.
b) **SCROLL** to scroll through the 8 channels. Press **ENTER** to print the selected channel result.
c) **SHIFT** to go back to **PRINT OF DATA** without printing, whatever **PRINT** message is displayed

B. RESULTS OF LAST READINGS (pipettes still in the channels)

From 3.2 **LAST READINGS** is displayed in the top line
Pressing **SCROLL** repeatedly **FILE** and **LAST READINGS** are displayed alternatively
3.2.1 Press **ENTER** or **SHIFT: ALL CHANNELS** is displayed in the lower line
3.2.2 Press **SHIFT**: **PRINT OF DATA** is displayed

From 3.2.1 **LAST READINGS / ALL CHANNELS**

Press:
a) **ENTER**: for printing all the data of the pipettes that are still in the channels which were tested last.
b) **SCROLL** through the 8 channels until the required **CHANNEL -#-** is displayed. Press **ENTER** to print the selected channel result.
c) **SHIFT** to go back to **PRINT OF DATA** without printing whatever **PRINT** message is displayed.

If there are no pipettes in the channels and printing is confirmed, LCD screen shows "GO TO FILE and press CR" and buzzes. Press ENTER to go to PRINT OF DATA

Characters are listed in the following order:

blank ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [¥] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z (back to blank).

NOTE – If **RESET MEMORY** (next page) is entered, the original native name is restored.

Pressing **ENTER** at any time during this procedure confirms displayed character and moves to:

c) PRINT MODE

Display shows:

AUT PRINTING ON: At the end of each test the result is automatically printed. Press **SCROLL** to select.

AUT PRINTING OFF: To disable Auto Printing even if the printer is on. Results are saved and can be printed later on request.

Press **ENTER** to confirm and go to:

d) LABEL PASS

LABEL PASS 02: Label pitch is preset for 2 lines.

This depends on the selected labels and therefore can be set up to 99 lines.
To select label pitch: press **SCROLL** to change the blinking digit and **SHIFT** to move from one digit to the next one.

Press **ENTER** to confirm and go to:

***e)* NUMBER OF COPIES**

Number of Copies is set to 1 (default)

1 copy (label) is printed for each result. To select different number of copies (max 9) press **SCROLL** to increase and then **ENTER** to confirm and go back to **TEST**.

***f)* RESET MEMORY**

Press **ENTER** to display "PASSWORD".

- To reset default parameters, enter the password: **131072.**
  Press **ENTER** to confirm the password displayed.
- The display shows **RESET MEMORY** and will go back to **TEST** in approximately 3 seconds

Press **SCROLL** to move to **DATE – TIME**

Date Time

Purpose: **local date and time**

Procedure:

1. If one of **CHANNEL STATUS** / **FILED READINGS** / **TEST** / **DATE - TIME** / **PRINT OF DATA** / **CREDITS** is not displayed, press **ENTER.**
2. Press **SCROLL** until **DATE-TIME** is displayed in the top line. In the lower line MM stands for the month; DD for the day; YY for the year; hh for the hour and mm for the minutes.
3. Press **ENTER** to show the date and time currently set.
4. Press **SHIFT** to have each date and time digit blinking alternatively.

5. Press **SCROLL** to modify the blinking digit.
6. Press **ENTER** to confirm your choice and return to **DATE-TIME**

*Press **SCROLL** to move to **PRINT OF DATA***

Print of Data

*A 9-pin RS 232 serial port in the back of the **Sedimat® 15 Plus** case allows printer or computer connection, results can be printed and read as soon as they are ready. With a computer connection, results can be stored for further use.*

Purpose: printing data of **A. Results of filed tests**
B. Results of last readings

Procedure:

1. If one of **CHANNEL STATUS** / **FILED READINGS** / **TEST** / **DATE - TIME** / **PRINT OF DATA** / **CREDITS** is not displayed, press **ENTER**
2. Press **SCROLL** until **PRINT OF DATA** is displayed
3. Press **ENTER** or **SHIFT**: **FILE** is displayed in the top line

3.1 Press **ENTER** or **SHIFT**: **ALL CHANNELS** is displayed in the lower line
or as an alternative:
3.2 Press **SCROLL**: **LAST READINGS** is displayed