

# ***Solu-Plus***<sup>TM</sup>

***Reconstitution System***

***By***  
***Pharma Electronic Solutions***

**User's Manual**

# NOTES

## **IMPORTANT NOTICE**

**PLEASE READ THIS ENTIRE MANUAL BEFORE YOU ATTEMPT TO USE THIS PRODUCT TO ASSURE A LONG AND TROUBLE FREE LIFE OF YOUR SOLU-PLUS™ RECONSTITUTION SYSTEM PRODUCT. FAILURE TO DO SO MAY RESULT IN EASILY AVOIDABLE EXPENSIVE REPAIRS NOT COVERED BY ANY IMPLIED OR NON-IMPLIED WARRANTY.**

Thank you for purchasing this fine professional and accurate water dispensing product for the reconstitution of oral antibiotics.

This User's Manual will easily guide you through the use of and proper care of your new Solu-Plus™ Reconstitution System product. Following these instructions will ensure many years of trouble free operation.

### **Caution**

- Use only distilled or de-mineralized water with the Solu-Plus™.
- Care should be taken to listen for the "Over-Fill" Beeper when filling the reservoir and then **STOP** filling immediately to prevent spillage.
- After refilling, don't forget to replace the reservoir cap to avoid contaminating the water supply in the reservoir.
- Never move the unit while it has water in the reservoir or is plugged in.
- Clean the reservoir and flow-through cylinder every month as outlined on the Maintenance / Cleaning page 13.

### **Technical Assistance**

You may contact us during business hours if you need any help or service. Feel free to call us or contact us by E-Mail.

**Phone: Pharma Electronic Solution (450) 800-0187**

**E-Mail: [info@pharma-es.com](mailto:info@pharma-es.com)**

## CONTENTS

1. Contents.....	4
2. Features.....	5
3. Parts Shipped.....	6
4. Installation.....	7
5. Calibration/Purging.....	8
6. Calibration.....	9
6. Manual Mode.....	10
7. Barcode Scanner Mode.....	11
- Add New Product.....	11
- Modify a Product.....	12
- Delete a Product.....	12
8. Errors.....	13
6. Water Low / Refill.....	13
7. Language Change.....	13
8. Maintenance / Cleaning.....	14
- System Cleaning.....	14
- Emptying the Reservoir.....	15
10. Specifications.....	16
11. Warranty.....	17
12. Contact Us.....	17
13. Flowchart.....	18

## Solu-Plus™ Features

The revolutionary self contained Solu-Plus™ Reconstitution System sports new features that can't be found on similar products costing almost twice as much. You may choose between Manual water volume entry or Scan the product UPC code to automatically deliver the correct quantity of reconstitution liquid required. The Solu-Plus™ Reconstitution System is easily the most accurate and lowest priced full featured Reconstitution System on the market today.

- Reduced operation costs and increases work load efficiency.
- Low one-time investment cost without monthly replacement supplies.
- Works with Distilled or Demineralized water for your reconstitution needs.
- Capacitive Touch Keypad (over 500 million operations -Self Calibrating).
- Larger diameter Reservoir opening and cap for easier filling.
- Automatic Audible Warning feature when reservoir is filled to prevent spills.
- On screen water level gauge shows the amount of mixing liquid remaining.
- Purge function to remove inadvertent air bubbles in system on 1<sup>st</sup> startup.
- Two (2) stage calibration for more precise and accurate deliveries.
- Unique Reservoir/Valve evacuation/emptying system for easier monthly cleaning.
- Narrower unit profile to save precious wall and counter space.
- English or French LCD language choices.
- Fast user friendly learning curve with help from the detailed User Manual.
- No pressure Leaks, No messy reverse osmosis filtration to deal with.
- No Flow-Meter or filter cartridges to clog and replace (reduces operation costs).
- Included Laser Barcode Scanner with included list of common UPC Products.
- Products can easily be Added, Modified or Deleted from Product Database.
- Included 250mL Verification Cylinder or optional graduated 160mL Flow-Thru Cylinder for delivery verification.
- Included 100mL graduated Cylinder for Calibration.
- For hard to mix solutions the Solu-Plus™ allows 1 or 2 portion deliveries.
- Fast delivery times of actually tested true 7 seconds per 100ml.
- The included Solu-Plus™ User Manual and user friendly LCD screen makes using the Solu-Plus™ for the first time a breeze.

## **Parts Shipped**

You will find the following in your package. If any parts are missing please contact us immediately.

- 1- Solu-Plus™ Reconstitution System Unit with Evacuation Hose/Valve
- 1- Laser Barcode Handheld product Scanner with cable.
- 1- 12Volt Power Supply AC wall Adapter.
- 1- 100mL Graduated Cylinder for Calibrations
- 1- 250mL Verification Cylinder or optional 160mL Flow-Thru Graduated Cylinder with Shut Off Valve.
- 1- Wall mounting Kit including one Aluminum Bracket, Bubble Level, and hardware.
- 1- Touch Pen
- 1- Hard Copy of the Solu-Plus™ User Manual.

\*\* All parts are final function tested the day they are shipped.

## INSTALLATION

To easily install your Solu-Plus™ we have supplied an aluminum Wall Bracket and Bracket attachment parts/screws and even a bubble level. Please handle the Solu-Plus™ unit with care. It is a piece of precision equipment and must be handled gently.

Choose an appropriate location to install your new Solu-Plus™ unit. Make sure you are near a 120VAC electrical outlet and that you leave enough room to easily fill the reservoir and space for the 250mL Verification Cylinder or 160mL Flow-Thru Cylinder to comfortably prepare your reconstitution prescription.

- 1- Install the aluminum wall mounted bracket at the desired location making sure the bracket is level and solidly fixed. A spirit Bubble Level is included in the kit. Remember that the filled Solu-Plus™ unit can weigh up to 6kg.
- 2- Slide the Solu-Plus™ unit onto the center of the aluminum wall bracket. Once the unit is aligned it will be locked from sliding left or right by less than 2cm.
- 3- Plug the Laser Barcode Scanner into the RJ-45 Jack under the Solu-Plus™.
- 4- Plug the AC adapter into a working 120VAC wall power outlet and plug the AC adapter cable into the Power Jack under the Solu-Plus™ unit. The Solu-Plus™ and Barcode Scanner will initialize and beep twice. The Solu-Plus™ can be left 'ON' when not being used.
- 5- If supplied, attach the Flow-Thru cylinder to the Solenoid delivery exit tube by pushing it completely onto the white Flow-Thru top nipple. When aligned and properly fixed, secure the Flow-Thru cylinder with a supplied Ty-Rap.
- 6- If supplied with a 250mL Verification Cylinder, place it under the Solenoid delivery exit tube.
- 7- Go to the Calibration page (8) to calibrate your new Solo-Plus™ unit.

## CALIBRATION / PURGING

Once you have installed the Solu-Plus™ in an appropriate location and the Solu-Plus™ is powered 'ON' you can fill the Reservoir with Distilled or Demineralized water. Remember to remove the Reservoir Fill Cover.

### NOTE:

When the water level in the reservoir reaches near the top of the reservoir an "Over-Fill" Beeper will sound rapidly to let you know the reservoir is Full. **STOP** filling immediately and replace the reservoir cover. You can always cancel the "Over-Fill" Beeper by pressing the Keypad **[CLR]** button.

### Purging

You **MUST** Purge the system before the 1<sup>st</sup> use. Purging uses ~180mL of water. Make sure you have a 250mL Verification Cylinder or a Flow-Thru Cylinder under the Solu-Plus™ Solenoid delivery exit tube.

1-Press the **[MENU]** key 3 times to get to the Purge Mode.

You will see **[ [9] Key to Purge ]** . Press the **[9]** Key. The Solu-Plus™ will run **[Requires 180mL]**

through a sequence to purge the system of air bubbles.

2- Press the **[9]** key for another Purge or the **[CLR]** to return to the Main Screen.

3- It is advisable to Purge a newly installed Solu-Plus at least 2 times.

You can run this Purge routine any time you think the system has air bubbles or after emptying and refilling the reservoir completely.



## Calibration

**Note that the Reservoir MUST be completely full to do a calibration.**

- 1- Place the 100mL graduated cylinder under the Solu-Plus™ delivery fitting.
- 2- Press the **[CALIB]** button to get into the Calibration routine.
- 3- When you see **[TAKE SAMPLE 1=OK]** press the **[1]** key.
- 4- When finished read the level on the graduated cylinder accurately and enter the amount when asked **[Entr TEST ML \_ ]** . If for example the amount is 88.5mL then enter 885 and press **[ENTER]**. If the amount is 88mL then enter 880 and press **[ENTER]**. You must enter 3 digits.
- 5-You will now see **[ Hit [CLR] When]**. Empty the cylinder completely. Place it **[ Cylinder Empty]**  
  
under the delivery fitting and press the **[CLR]** key.
- 6- When you see **[TAKE SAMPLE 2=OK]** press the **[2]** key.
- 7- When finished read the level on the graduated cylinder accurately and enter the amount when asked **[Entr TEST ML \_ ]** . If for example the amount is 88.5mL then enter 885 and press **[ENTER]**. If the amount is 88mL then enter 880 and press **[ENTER]**. You must enter 3 digits.
- 8- Your Solu-Plus™ is now calibrated and ready to use. To verify that the calibration was performed correctly, manually ask for a 100mL delivery and check the result. If the amount is off by more than 1mL you can do another Purge and Calibration.

**NOTE:** Causes of mis-calibration are usually due to not completely emptying the graduated cylinder while calibrating or not reading the graduated cylinder precisely or air is still in the system.

## MANUAL MODE

- 1- From the Main Screen **[1=MANUAL 2=SCAN]** press the **[1]** key and you will see **[Enter ML \_ ]**. Enter the number of milliliters you require and press **[ENTER]**.
- 2- Now you will see **[XX ML? ENT/CLR]** . Press **[ENTER]** if the amount is correct or **[CLR]** if it is in error.
- 3- If correct you will see **[Portion? 1 or 2]**. Press **[1]** for 1 portion or **[2]** for a 2 portion delivery.
- 4- If a 2 portion delivery was requested 80% of the requested mL amount will be delivered and you will see **[For 2nd -> ENTER ]** and a beeper will sound to remind you to take the 2<sup>ND</sup> portion. Press **[ENTER]** after mixing the solution to get the remaining 20% of the delivery.
- 5- Once the total is delivered the Screen will show what was delivered and in how many portions **[ XX ML X Portion]** so that it can be verified on the product label, by the technician.

## BARCODE SCANNER MODE

The Solu-Plus™ is shipped with a pre-loaded commonly used product Database. In Scan Mode the Solu-Plus™ can recognize common product UPC codes and will deliver the exact amount of reconstitution liquid and in the correct portion for the specific product scanned according to the product label if the product is in the Database.

### To Scan a product Barcode

- 1- From the Main Screen press the **[2]** key. The LCD will show **[ScanProduct..]**. You have 8 seconds to scan a UPC product code. If it is in the Database the correct amount of reconstitution liquid will be delivered. Once the total is delivered the Screen will show what was delivered and in how many portions **[ XX ML X Portion]** so that it can be verified on the product label, by the technician.
- 2- If a product does not exist when scanned the LCD screen will display... **[NOT IN DATABASE ! ]**. Press **[CLR]** to return to the Main Screen.
- 3- If you inadvertently get into the Scan Mode, just wait 8 seconds and the screen will return to the Main Screen with a double beep.

### Add a New Product

- 1- From the Main Screen press the **[Menu]** key once.  
The screen will show **[1=NEW 2=CHANGE]**. Press the **[1]** key and the **[ 3=DELETE ]**  
  
screen will show **[Scan Product... ]**. Scan the new product UPC code and the screen will show **[Enter New ML \_ ]**. Enter the mL required as shown on the product label and press **[ENTER]**.  
The screen will now show **[Portion? 1 or 2]**. Enter the portions required by the product label. The product is now recorded into the Solu-Plus™ Database and you will be returned to the Main Screen.

## Modify an Existing Product

1- From the Main Screen press the [Menu} key.

The screen will show **[1=NEW 2=CHANGE]**. Press the **[2]** key and the  
**[ 3=DELETE ]**

screen will show **[Scan Product... ]**. Scan the product UPC code to be modified and the screen will show **[Enter New ML \_ ]**. Enter the mL change required and press **[ENTER]**. The screen will now show **[Portion? 1 or 2]**. Enter the portions change required. The modified product is now recorded into the Solu-Plus™ product Database and you will be returned to the Main Screen.

## Deleting an Existing Product

1- From the Main Screen press the [Menu} key.

The screen will show **[1=NEW 2=CHANGE]**. Press the **[3]** key and the  
**[ 3=DELETE ]**

screen will show **[Scan Product... ]**. Scan the product UPC code and the Product will be deleted from the product Database and you will be returned to the Main Screen.

## ERRORS

If an erroneous entry has been made the screen will show [ **Input ERROR** ] for one second and the beeper will sound twice. The screen will then go back to where the error occurred to allow you to re-enter the data.

## WATER LOW / REFILL

The 2<sup>nd</sup> line of the Main Screen shows the amount of water (in brackets) left in the reservoir at any time. The indications are (**Full**,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{1}{4}$  and **Low**). Press [CLR] from the main screen at any time to update the water gauge.

When the level of the water is below usable limits the beeper will sound and the screen will show [ **!! WATER LOW !!** ]. Unscrew the reservoir cap and carefully  
[ **Must FILL Tank..** ]

fill the Reservoir. The Reservoir **MUST** be filled completely. You may not fill the tank partially. It must be completely filled.

### NOTE:

When the water level in the reservoir reaches near the top of the reservoir an "Over-Fill" Beeper will sound rapidly to let you know the reservoir is Full. **STOP** filling immediately and replace the reservoir cover. You can always cancel the "Over-Fill" Beeper by pressing the Keypad [CLR] button.

## LANGUAGE CHANGE

To change the LCD screen language press the [MENU] key 2 times. The screen will show [ (-)=Fran (+)= Eng ]. Press the [-] key for French text or the [+] key for English Text. You will then be taken to the Main Screen

## MAINTENANCE/ CLEANING

Use a soft cloth and lightly soapy water to clean the outside of the Solu-Plus™ And the Barcode scanner. Do not touch the Barcode scanner's output screen. Do not use harsh abrasive cleansers or chemicals. Do not scrap at the name decals.

**DO NOT shine the Barcode scanner's Laser Beam directly into your or anyone elses eyes.**

## SYSTEM CLEANING

It is highly recommended to clean the Solu-Plus™ water system monthly with a diluted bleach solution.

Mix 3 teaspoons of bleach into 1 Gallon (~4 liters) of distilled or Demineralized water.

- 1- **DO NOT turn 'OFF' the Solu-Plus™. You need the "Over-Fill" Alarm Beeper to function.**
- 2- Remove the Evacuation hose/valve from it's holder on the right side of the Solu-Plus™ by lifting it a bit and pulling the hose through the mounting clip split opening.
- 3- Find a container to empty the reservoir bleach solution into. Place that container close to the Solu-Plus™. You may add a length of hose to the Evacuation valve if the container is too far away.
- 4- Fill the Solu-Plus™ reservoir with the diluted Breach solution to the top until the "Over-Fill" Beeper sounds rapidly. **STOP** filling immediately. Press **[CLR]** to stop the beeper.
- 5-Take a 50mL sample delivery to fill the system with the diluted Bleach solution.

## SYSTEM CLEANING

- 6- Let the diluted bleach solution sit for 15 –20 minutes for proper cleaning.
  - 7- Open the Evacuation Valve and drain the Reservoir into the container you prepared in step 3. When the reservoir is empty, close the Evacuation Valve.
  - 8- Rinse the Reservoir 2 times with clean Demineralized or Distilled water using the Evacuation Valve.
  - 8- Reinstall the Evacuation hose to the side of the Solu-Plus™ as before.
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- 9- Re-Fill the Reservoir with New Clean Demineralized or Distilled water and take two samples of 100mL to empty the system of diluted Bleach solution.
  - 10- You will need to go to the Calibration page (8) and perform a new Purge and Calibration if a sample of 100mL is not 100mL (+/-1mL) or any time you suspect the calibration may be off target.
  - 11- The Solu-Plus™ is now ready to be put back into service.
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## EMPTYING THE RESERVOIR

To empty the Reservoir at any time you can use the Evacuation Hose/Valve clipped to the right side of your Solu-Plus™. This feature allows you to quickly empty the Reservoir for cleaning without the use of the output solenoid or removing the Solu-Plus™ from the installed mounting location.

## SPECIFICATIONS

<b>Capacity:</b>	4 Liters
<b>Operating Voltage:</b>	12 VDC
<b>Current Standby:</b>	77 mA @ 12VDC
<b>Current Full Load:</b>	488 mA @ 12VDC
<b>Watts:</b>	0.92 - 5.86 watts
<b>Dimensions Enclosure:</b>	43cm X 19cm X 19cm
<b>Dimensions Overall:</b>	82cm X 19cm X 19cm (+Grad F/T Cyl.)
<b>Weight Empty:</b>	1.4 kg with Barcode Scanner
<b>Weight Full:</b>	5.4 kg with Barcode scanner



## WARRANTY

This Solu-Plus™ Reconstitution System precision product is warranted against manufacturing defects and labor costs for a period of 1 year from the date of purchase. This includes the Barcode scanner.

The Warrantee does not cover the following parts or any damage resulting from misuse or the following:-

- calibration cylinders
- verification or flow through cylinders and valves
- improper installation
- deliberately broken parts
- normal wear and tear
- a badly maintained Solu-Plus™ or Barcode Scanner
- accident, abuse or unauthorized repair
- use of the Solu-Plus™ other than stated in the User Instructions

All repairs and service are performed at our shop exclusively.

## CONTACT US

For Customer Support you can contact us at any time during business hours from Mon-Fri 6:00 AM to 3:00 PM at:-

**PHONE:** (450) 800-0187

**E-MAIL:** [info@pharma-es.com](mailto:info@pharma-es.com)

**WEBSITE:** [www.pharma-es.com](http://www.pharma-es.com)



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