



## J157, J257, J357, J457 Rudolph PC Refractometer Revision History

### **20240426 - Refractometer PC Interface V 8 0 5 1002**

1. #20679 Coefficients are not reset before starting a validation..

### **20240318 - Refractometer PC Interface V 8 0 5 1001**

2. #20498 Water Zero error where expected RI is shown as zero is fixed.

### **20240112 - Refractometer PC Interface V 8 0 5 0**

1. #20300 Water Zero is now using the set temperature and temperature scale of the method currently loaded on the home screen.
2. #20282 Number of measurements is set to 5 in QC temperature method.
3. #20299 UAC version number is now not shown in system information screen.
4. #20289 History screen truncating trailing zero is fixed.
5. #20288 Error in factory restore is fixed.

### **20231220 - Refractometer PC Interface V 8 0 4 0**

1. Development tools upgraded to Visual Studio 2019, .NET Framework 4.7.2, Grapecity Spread 13.45 and GDIPicture.NET 14.
2. Single user interface to support landscape and portrait displays.
3. Database changed from Microsoft Access MDB to ACCDB.
4. Rudolph UAC module integrated.
5. Active Directory support included.
6. Includes support for AutoFlex 21CFR11.
7. #19924 USP 831 changes to temperature validation included.

### **20230727 - Refractometer PC Interface V 4 5 4 1001**

1. #19804 - a. Support for Win 10 IoT Universal Write Filter [UWF] included.  
b. Manifest file included to run the program with elevated privileges.

#### **20230112 - Refractometer PC Interface V 4 5 4 0**

1. #19406 Live reading was not updated during time-delay count down. This is fixed.
2. #19107 Changes made in External control screen for AutoFlex settings.

#### **20220708 - Refractometer PC Interface V 4 5 3 0**

1. #18930 Caption of toggle button on top is changed from "Go To R837" to "Go To AutoFlex". Caption of toggle button on menu panel is changed from "Automation / Density Meter" to "AutoFlex" if AutoFlex is connected and "Density Meter" if Density meter is connected.
2. #18955 FACTORY DEFAULTS option under Group permissions had problem saving the value. This is fixed.
3. #18914 AutoFlex path setting can now be empty in External Control settings screen.
4. #18975 Glycerin at 20C method was missing while enabling 21CFR11 from license file. This is fixed.
5. #16434 MasterAdmin account is part of Administrators group and cannot be deleted.
6. #15496 Now SG scale can be set to have less than five decimal places.
7. #16806 Control Panel now allows the user to exit to main Screen after warning about disk Protection.
8. #17849 Log folders are recreated automatically if deleted or moved.
9. #18520 Bug in custom scale limit where lower and upper limits are treated opposite is now fixed.
10. #15646 Fuel System Icing scale lower limit is set to -10 and upper limit to +110.
11. #16946 Issue in enabling 21CFR11 using license is fixed.
12. #18839 Word Automation is changed to AutoFlex in settings screen.
13. #18967 Method option is included in Key Lock settings.
14. #18145 Default COM port for firmware communication is changed COM7 from COM 5



15. #15681 'Automated' method is included for AutoFlex.
16. #18749 Remote ON/OFF serial commands are included for AutoFlex support.
17. #18757 Refract parameters not displayed in AutoFlex if there is a NONE in the list is fixed.
18. #18481 Print settings now controls both print and export contents.
19. #18185 Refract UI freezing when hosted on Autopol and OBM communication not established is fixed.
20. #18171 To handle the missing Refract results in AutoFlex, Semaphore is implemented AutoFlex-Refract communication.
21. #18153 Back to Autopol button that was not working is now fixed.

#### **20210323 - Refractometer PC Interface V 4 5 2 1007**

1. #17880 Autopol 880 Legacy
  - a. Brix and Brix TC values are formatted like ###.## in response string
  - b. Following command added for Autopol 880 Legacy <ESC>?! - Indicates to the Autopol that the refractometer is present and ready.

#### **20210318 - Refractometer PC Interface V 4 5 2 1006**

1. #17880 Legacy Autopol 880 communications:
  - a. Autopol Legacy option added in External Control Settings
  - b. Autopol Legacy response string Temperature formatted like "xxx.x"
  - c. <CR> included at the end of response string as termination character.
2. Following commands are included for Legacy 880 communication:
  - a. <ESC>T - Sample Temperature (Prism Temperature)
  - b. <ESC>B - Get Brix
  - c. <ESC>C - Temperature Corrected Brix
  - d. <ESC>R - Reference Temperature - the temperature used for temperature correction

#### **20210303 - Refractometer PC Interface V 4 5 2 1005**

1. #17845 Fresh Database - Audit trail backup folder created during upgrade
2. #17846 Create log file when we starting the application using shell launcher

#### **20210303 - Refractometer PC Interface V 4 5 2 1004**



1. #17835 For 21cfr11 mode (always PDF export) - do not allow the Password Enabled check to be unchecked (always set it) and do allow the user to change the password but do not allow it to be blank.
2. #17842 Change communication logging: write un-parsed bytes.
3. #17835 Enclose With' should not greyed out in 21CFR11.
4. #17836 The database backup path and the Audit Trail path no longer changed to defaults on an upgrade install.
5. #10611 XLS is removed from PERFORMANCE and CSV export added instead of XLS
6. #17821,#17828 PC Client Default DB database backup setting updated all paths to installation folder
7. #17830 change the language of EXCLUDED to INCLUDED

#### **20210224 - Refractometer PC Interface V 4 5 2 1003**

1. #17823 ENCLOSE WITH option to export settings:
  - a. Add a Group box below 'Export Option'. Set the text as 'Enclose CSV file with'.
  - b. Add a dropdown list in the group box with enclose option as in AutoFlex.
  - c. This group box should remain enabled always except when 21CFR11 is enabled.
  - d. CSV file generated from the main screen button and through export should use the same encloser.
2. #17823 Default DB database backup set to install folder.
3. #17819 Extra character in the CSV export file.
4. #17822 PC external client - Comment prompt is off screen

#### **20210222 - Refractometer PC Interface V 4 5 2 1002**

1. #10611 Main screen:
  - a. In main screen, change the icon of excel button from excel to txt.
  - b. When PDF button is clicked, create a PDF file and open it. The file will be opened depending on the program associated with the file type in Windows.
  - c. When excel button is clicked, create a text file similar to what you create when excel is not available. Extension of this file should be CSV.
2. Export format screen:
  - a. In Export Format screen, remove the option "Excel to file".
  - b. When CSV file is selected for automatic export, set the extension of the file to CSV.

**20210216 - Refractometer PC Interface V 4 5 2 1001**

1. #17710 Turn communications log on by default.
2. #17799 Date on X- axis should be between min and max date on data.
3. #17800 Do not allow the graph to zoom/resize.
4. #17507 21cfr11 Mode – Allow access to the SAMPLE DETECTED flag setting.
5. #17793 AM and PM are missing in the validation graph.
6. #17794 Validation Graph - The point plotted on the graph is wrong when the value is fall in out of range.
7. #17784 Flash controls are replaced with T-Chart control for the following menus.
  - a. Trend Analysis
  - b. Trend Analysis History
  - c. Validation History
  - d. Data storage
8. #17507 SAME SAMLE PRESENT message window checkbox removed when 21CFR11 is enabled.
9. #17746 Refractometer\_PC\_Interface\_V\_4\_5\_2\_101. Standard deviation and %RSD implement the calculation as it is done in Density meter where it is straight forward.

**20210107 - Refractometer PC Interface V 4 5 2 0**

1. #17702 Autoflex log folder is not recreated.
2. #17450 Edit Language Text password issue.

**20210105 - Refractometer PC Interface V 4 5 1 0**

1. #17643 Create Autoflex Communication when Autoflex Measurement log is created.
2. #17622 Fix Autoflex Communication log creation.
3. #17622 Autoflex Communication Log enabled when Autoflex is set in External Control Settings menu.
4. #17639 Default number of logging days set to 1 max 60



5. #17622
  - a. Log features Added. "Autoflex" folder created inside Log folder.
  - b. Autoflex request and responses logging J457AutoflexCommunication and
6. #17573 Autoflex : Address issue with single quote in method name interfering with method load and receiving measurement.

#### **20200917 - Refractometer PC Interface V 4 5 0 0**

1. #17235 Increase Measurement Time interval to accommodate 10800 secs (1 hr) between multiple measurements. Change the message accordingly.

#### **20200616-Refractometer PC Interface V 4 4 9 0**

1. #16944 External Client: No longer takes multiple attempt to clear COM error.
2. #16750 License File: Generated license file applies enabling 21CFR11 feature.

#### **20200610-Refractometer PC Interface V 4 4 8 0**

1. #16924 - Temperature validation added when user changes the Temperature.
2. #16923, #16907 Additional scales and methods for ADMT - 18500,18376,18066,11863,18040
3. #16899 Water Zero – Display correct RI if change the temperature scale
4. #16922 Temperature scale labe not updated when changing temperature scale because of empty zero point temperature.
5. #16899 Water Zero use the Set Temperature and Temperature Scale of the method currently loaded on the Home Screen
6. Temperature scale selection added in water zero.
7. #16809 Failed Network Drive Mapping no longer clears fields.
8. #16818 Audit Trail to print selected records in order by date and time.
9. #16810 21CFRFilelist.pdf no longer created when 21CFR11 enabled.
10. #16813 Database backup backs up data folder and database.

#### **20200415-Refractometer PC Interface V 4 4 7 0**

1. #15030 If Communication fails, application retries up to 5 attempts and log created for communication fail.
2. ADMT added in Customer Packages
  - a. #16721
  - b. #16752
  - c. #16755
  - d. #16756
  - e. #16757 Set the LOGO and the Header to some default that is related to the customer package
  - f. #16760 Standard Method should be hidden by default when we choose ADMT
  - g. #16751 User scale dropdown list size adjusted in method screen
  - h. #16721
3. #16173 Validation added in method for measurement stability precision that user should enter the precision set in "Display Configuration" tab.
4. #16109 Temperature in Validation report. Temperature column added in Menu->Calibration->Performance.

#### **20190904-Refractometer PC Interface V 5 4 6 0**

1. #16173 Changing Precision round off other parameters in the method but not validate saving from Display Parameter tab but validation message shown from Measurement control tab.

#### **20190829-Refractometer PC Interface V 5 4 5 0**

1. #16152 Import Methods Only
2. #15895 Temperature precision
3. #16066 Fahrenheit Error : Temperature scale handled properly as per settings in water zero, adjustment, validation and measurement.
4. #16062 Unicode font set for print and PDF
5. Out of range measurements saved in database.
6. Statistics are calculated for the measurements within range but it included out of range measurement also in "N" (count).
7. Pressing 'Accept' puts 'Measured RI' column in result window when measurement mode is set to 'Single' and Enable printing is set to 'On command'
8. Constant value (99991.4) is shown in result window for negative result.

9. Powder RI method - Measurement data shows previously taken result when it was terminated before first measurement
10. Powder RI method, enable printing is set to 'Print automatically after capture'. Measurement data shows '0' in result column for sample, Nominal and Exact.
11. Scrollbar hides the statistics table in Trend analysis Graphical display screen.
12. Single - On command/Always, Continuous - On command: Application allows pressing 'Print' button more than one time for same result. Duplicate entries are created in database and those duplicate results are shown in measurement data screen.
13. In History - Trend analysis graphical display shows wrong statistics when the first measurement is excluded.

#### **20190204-Refractometer PC Interface V 4 4 4 0**

1. #15369 Go TO R837 button opens Automation button addition to the existing feature of toggle feature.
2. Measurements in report are empty when the readings are not in instrument range.

#### **20190105-Refractometer PC Interface V 4 4 3 0**

1. #15395 Secondary display parameters set to NONE - still display on screen. Conflicts with AutoFlex.
2. #15347 Changes to handle time outs
3. #15381 DB backup path changed to USB automatically. Only user is allowed to change the path.
4. #15231 \$ character in the file extension is replaced with | (Pipe) character.
  - a. Filename is split using | character in order to retrieve Total measurement
  - b. Windows operating system doesn't allow | symbol in Folder/File name
  - c. Existing functionality was not changed
5. #15297 In AutoFlex and J457 combination, if there is a COM error on J457 during startup, message box goes behind the main screen and J457 appears to be frozen.

#### **20180807-Refractometer PC Interface V 4 4 2 0**



1. #14897 Add/Edit User and Add/Edit Groups can grow large enough that the scroll bar cannot get to all of the entries
2. #14895 Upgrading from previous version which AB enabled shows UREA method on main display but "RI 20 C" method button is highlighted in main window.

#### **20180727-Refractometer PC Interface V 4 4 1 0**

1. #14875 Time does not preserve 24 hour format on power cycle .
2. Menu "Factory Defaults" not shown in group menu list.
3. "Restore M And B" menu should not be shown in group menu link
4. "Calibration" menu should be under "Backup And Restore", currently it shows under "Service Settings"
5. "Factory Restore two Point Calibration" menu changes makes 2 entries in Audit trail.

#### **20180726-Refractometer PC Interface V 4 4 0 0**

1. #14703 Screen lock occurs over and over again on lot Id/Sample ID prompt when event count is set to 1 and also, multiple Audit Trail Entries are created as lock/unlock occurs multiple times for the measurement within a few seconds.
2. #14856 In group permissions, when "Print Settings" is from operation parameters, it is captured in audit trail but also an additional entry that Time/Date is changed is recorded. When "Control panel" option is removed, additionally External Control Settings is included in AT.
3. In Pc version additional AT entries are recorded when control panel option is removed.
4. Embedded version additional AT entry is recorded when control panel option is removed.
5. #14703 Screen lock during measurement cases handled in report and audit trail.
6. #14711 Inconsistency in the dates displayed in the Restore Database list and the Warning screens - related to regional settings
7. Restore: Date of Restore file is different in list than in restore message
8. #14740 Databases must be opened in exclusive mode.
9. #14825 Secondary display 8th position color changed in both method and main screen. This color change is applied only if secondary display option is selected in Print Settings menu.



10. #14639 Numeric values displayed in Chart/Graph are not in regional format.
11. #14675 Following commands are included for Third Party.
  - a. s - Start measurement.
  - b. r - Poll refract. Return + (plus) when measuring and ! (exclamation) when measurement is complete.
  - c. pc - Return measured value in the following format: Result <tab> Scale <tab> Temperature <tab> Temp correction.
12. #14705 External Client Lock Screen pops up even if client is minimized
13. #14577 Issue with Database Backup when there are large number of readings in the DATA folder - GREY Screen. Animation added to copy and gray screen while on copying large size issue fixed.
14. #14688 Enabled UREA and made 21CFR11 available by applying license file system restart urea comes up as default.
15. #14680 AND #14702 Cannot perform measurement when generating license file using one regional settings and application running in different region
16. #13929 "Firmware Communication" button is added to the "Version Settings" screen.
17. #14704 External Client Lock screen is too small on Refract External Client
18. #14690 Search Date Formats are inconsistent
19. #14700 If method is set to Start on presser Down or start key and system is restarted immediate measurement occurs
20. #14684 Generating pdf UNICODE font is set whenever the culture string is set to a non-USA.
21. #14697 Set Time Update pops up at every restart and it cannot be closed on external client
22. #14692 Added feature to the database to show the Time/Date prompt.
23. #14684 Address issues with PDF in regional settings
24. #14683 Delayed Review in Regional China and Thailand and several other regions does not show and readings to review
25. #14682 Search window: Date format is missing year information.

**20180612-Refractometer PC Interface V 4 3 9 0**

1. Language text is updated for dynamic label
2. Audit Trail entries are missed when same database is backed up twice and restored again.
3. #14398 Add option to minimize/maximize User field window to view Live reading.
4. #14617 Appearance of Shell Launcher when printing.
5. #14634 Urea method is loaded in main screen but "Refractive Index 20 Smart Display" is highlighted.
6. #14636 RI upper limit is modified to 1.72.
7. #14622 (reference issue #13804) Implement the PC version with title bar with close and minimize buttons.
8. Updates for regional settings
9. #14637 Urea Custom scale does not work with German Regional Settings
10. #14628 "Disk Protection" warning should not be shown in PC version.
11. #14070 (reference #13656) Restore menu
  - a. Add a 'Browse' button on the bottom left of the 'Restore' screen.
  - b. Move the existing two buttons to bottom right of the screen.
  - c. When browse button is clicked, show a browse folder dialog to enable the user to select a different folder.
  - d. Show the backups available on that folder in the grid.
  - e. User can select a backup from the grid and click 'Restore' to restore.
12. Additional folder created whenever click save in Configure menu
13. Auto backup is created before reached set time.
14. Onscreen Keyboard is updated to support regional settings characters.
15. #14608 Urea scale index and concentration values are updated.
16. #14070 (reference #13656) Backups
  - a. Do not limit backups to three.
  - b. In the 'Configure screen, add a label 'Number of backups to retain' and a text box for input.
  - c. Allow 1 till 30 as valid values.
  - d. 0 to disable this feature.

- e. When the number of backups exceed the set value, delete the first backup. Maintain this as First In First Out.
17. Catch-up backups.
- a. When the instrument/software is down for n days and restarted, check whether any backup is pending. If a backup is due, perform backup.
  - b. Perform only one backup when catching up. I.e. If the backup interval is 1 day and if the system is restarted after 5 days, perform 1 backup.
18. Multilanguage: Application messages edit options, report edit option are provided in "Instrument Specific Settings > Edit Application Language" menu
19. #14595 Brix Zero range:
- a. Input parameter is added in Instrument Specific Settings > Instrument Range for brix zero range. Default is set to 0.0000
  - b. If BRIX value falls within the Brix Zero Range, then brix value will be set to 0.
20. #14576 Include the path to which database was backed up in Audit trail entry
21. #13912 Enable Printing:
- a. Change the word "print" to "data capture"
  - b. Change the button "always" to "print automatically after capture"
22. #14390 Updating current method in database is ignored for calibration method.
23. #14071 Database Restore must warn the user and then force a restart. Application should be restarted after restoring database. The user is prompted with "OK" for restart information.
24. #14577 Warning added in restore database. "WARNING - This will force the system to restart."
25. #14229 Method library name was changed from ""corn refiners scales"" to ""corn refiners' methods
26. Scale name is shown as 0 in Measurement Data print.
27. Measurement Data search fixed for user defined scales.
28. For German regional settings, incorrect values are shown for custom scale co-efficient and Index values
29. For German regional settings, unable to enter dot character in Measurement Data search textbox

30. #14553 21cfr11 Delayed review - no readings file is created when the file is reviewed
31. Graph is not shown in validation Performance screen
32. Graph is not show when Trend Analysis display method loaded
33. Storage Monitor graphical view is not displayed
34. Storage set warning time is not listed in dropdown list
35. Excel file is not exported
  
36. #14398 Sample ID window and Multiple measure multiple load measurement input window locations are changed and made to movable for viewing Live Reading.
37. #14396 Regional settings:
  - a. Data/Time and Decimal format are updated based on the current region set in Windows.
  - b. Seconds Display, Date format, Hours Formats removed from 'Time/Date' Settings.
  - c. SQL queries updated to support different regional settings formats.
38. #14074 21CFR11 Menu Items disabled if 21CFR11 is not enabled.
39. #13916 Network Drive Choice Letter Invalid - starts with A (invalid choice)
40. #14426 Multiline property is removed from textbox controls.
41. #14348 Water Zero: If the sample quality is bad then we should not allow the user to save the result.
42. #14318 Exception in Validation Screen and second exception in results screen. Serial input buffer is flushed before sending command.
43. #14318 Memory leaks when debugging or logging is turned on. logs updated in rich text box are removed.
44. #13211 % RSD calculation is not correct whenever the result is in exponential form.
45. Issue: #14121 Database changes to make more robust
46. Check and fix that the single quotes in query expression



### **20180516-Refractometer PC Interface V 4 3 8 1001**

1. #14360 The Sample Quality bar gets very slow and communications is out of sync.
2. #14595 Brix Zero range:
  - a. Input parameter is added in Instrument Specific Settings > Instrument Range for Brix zero range.
  - b. Default is set to 0.0000
  - c. If Brix value falls within the Brix Zero Range then brix value will be set to 0.
3. #14614 Issue with sample quality - COM settings
4. #14608 Correct the parenthesis in the urea calculation.
5. #14449 Water Zero: If the sample quality is bad the user is not allowed to save the result.
6. #14398 Sample ID window and Multiple measure multiple load measurement input window locations are changed and made to movable for viewing Live Reading.
7. #14426 Multiline property is removed from textbox controls.
8. #14387 Log update in rich text box is removed to address memory leaks that occur when debugging or logging is turned on.
9. Communication log icon in main window is removed.
10. #14360 Exception in Validation Screen and second exception in results screen: Serial input buffer is flushed before sending command.
11. #14608 Urea Scale:
  - a. Table requires additional data points
  - b. No constant in calculation
12. #14595 Brix Zero Range:
  - a. Included in License file
  - b. Brix Zero Range input box max length is set to 6.
13. Exception occurs when %RSD calculation returns infinity for brix value is 0.
14. Updating TPN ignored from license when existing settings and current settings are same.

### **20171103-Refractometer PC Interface V 4 3 8 0**

1. Coffee and Chemical Concentration scales are included in license file  
55 Newburgh Road, Hackettstown, New Jersey 07840 U.S.A. ♦ 973-584-1558 ♦ Fax 973-584-5440

2. Custom Scale : Display range not saving corrected.

### **20171011-Refractometer PC Interface V 4 3 7 0**

1. QC method Temperature stability changed to 60 and the number of measurements changed to 5
2. All the QC 20,30,40 methods changed to 20,30,40,50,60 methods
3. Third party communication - Terminated string CR works but LF and CRLF are not working.
4. Commands that are not implemented in Third Party commands are removed from help command response list('s', 'r', 'pc', 'on').
5. RS232 communication for Third Party and Export settings are separated.
6. RS232 Communication settings for Tab separated to RS232 port, Tab separated to both file and RS232 port, Roll print format to RS232 port, Roll print format to both file and RS232 port included in Export Format screen under Operational Parameters menu.
7. In export settings screen, users can set same port for export to RS232 and Third Party.
8. New custom scales:
  - a. "Chemical Concentrations" library created.
  - b. "Chemical Concentrations" library is enabled by default in Industrial Packages menu.
  - c. There are 57 scales are created and corresponding methods also created.
9. Autopol 123 Z with Refractometer communication - Temperature correction applied per 880 specification.
10. Verilink: Number of Measurement button removed from Method Screen
11. Storage Monitor - Make default to ON.
12. Storage Monitor Message: Warning added "Consult manual regarding database purge to free up disk space"
13. PC external client: After setting the version to PC on the external device the user is now prompted to close the application and reopen it as is done on the Autopol.
14. The Method Import/Export dialog shows Adjustment Test as the dialog header - this should Read Method Library
15. When the user is on the external keyboard and a Load and Go mode and they shall hit the ENTER or CR key on the PC keyboard the method will exit and go back to the main screen.

### **20170621-Refractometer PC Interface V 4 3 6 0**

1. Method Import export is included in 21CFR11 group settings
2. 40 Column Printer:
  - a. Company name is not changed. It always shows "Rudolph Research Analytical"
  - b. If the line width exceeds 40 characters, it gets cut off. It should instead wrap.
  - c. If the selected printer is 40 column printer, set the orientation to portrait.
3. Storage Monitor:
  - a. Pie graph included to show 'Available Disk Space' and used by Log,Data and Application.
  - b. Warning Settings added to check and show message to user for low disk space.

### **20170531-Refractometer PC Interface V 4 3 5 0**

1. Verilink : "Modify Database" feature changes were removed

### **20170530-Refractometer PC Interface V 4 3 4 0**

1. Verilink database modification:
  - a. Modify Database menu added under Instrument Specific Settings.
  - b. All reference fields are shown. Delay and variation also included with these fields. User must press the table cell to input the values.
    - i. Add button creates a new row to add reference.
    - ii. Delete [X] option is included at last in each row to delete a reference from the list
    - iii. Delay and Variation cells are automatically filled with default values. User can edit these values.
    - iv. Search UIN option is provided to edit existing UIN in database. User cannot delete existing reference in the database
    - v. Press "Save" to save the reference
    - vi. Press "Cancel" to exit from the window. References will not be saved.
    - vii. Delay and Variation are included with user fields in User Field prompt.
    - viii. The Time delay before first measurement of "Measurement Accuracy" is set as sum of Time Delay set in method and Delay set in Reference
2. Min Pixel and Max Pixel values are shown in LED INTENSITY screen.
3. Adding TPN Method to Verilink loses the existing Verilink library
4. Termination option grayed out for the following External Control options
  - a. Automation
  - b. Density meter



c. Autopol

5. Window color changed from sky blue to orange when it is opened from External communication screen.
6. Automation, Density Meter, External instrument menus removed from INS menu. "0" characters removed from the response text
7. Lot ID and Sample ID is set OFF by default in "Print Settings"
8. External Control Settings feature is implemented as in "Autopol 123 S2"
9. External Control Settings menu added in communication settings menu. "External Com Port Settings" menu is replaced with "External Control Settings" menu.
10. External Control Settings screen is added with following options \* None \* Rudolph External \* Third Party \* Automation \* Density meter \* Autopol
11. - "None" option is set as default "External Type"
12. Removed Screens \* Automation \* Density meter \* External Com Port \* Remote Connection \* RS232 Port settings from "Export Format" screen
13. "German" language is included.
14. Glycerin at 20C Scale and method created
15. Restore m & b : "Zero" button moved to top and "Save" button added. Pressing "Save" button will save the settings by sending "Save Settings" command and pressing "Cancel" button will undo the settings by sending "Undo Settings" command.

**20170314-Refractometer PC Interface V 4 3 3 0**

1. Results are rounded to scale precision before comparing with range to update Pass/Fail.
2. Water zero :
  - a. Add a countdown to the warning message.
  - b. Set Default Time delay to 25.
  - c. Warning message added in "Water Zero" screen: Warning "Instrument is zeroing on water. Do not touch the sample area."
  - d. The factory cal value is removed from the result window.
3. When the options of either comma separated, comma separated append, tab separated, table separated append are chosen then please record the date and time with each reading.

### **20170123-Refractometer PC Interface V 4 3 2 0**

1. Water Zero:
  - a. Live Reading label caption shown as "Live Reading previous" when the water zero menu is entered.
  - b. Live Reading label caption shown as "Live Reading Factory" when coefficient set to 0.
  - c. A result window will be shown with Previous value, Factory Cal. Value and New Value. New value is reading after calculating and applying new coefficient.
  - d. "Save" and "Cancel" options prompted to the user.
  - e. "Save" will save the Calibration. "Cancel" will restore previous value.

### **20161019-Refractometer PC Interface V 4 3 1 0**

1. Option to print Secondary display parameters at eighth position. If the eighth parameter is selected in print settings, the eighth parameter will be added in result window.
2. Log file: Creating log files implemented like in Autopol. Delete files by given number of days added. "Copy files" button added to copy the log files
3. Temperature recalibration: Live Reading and Sample Temperature added at the top of the window.
4. Secondary display Parameter: "BrixTC20" option added in secondary display parameter option in Method screen.
5. Water Zero and Air Zero :
  - a. Reset Secondary Coefficients before performing zero.
  - b. Reset MQC coefficients before performing zero.
  - c. Water RI tolerance changed from 0.0003 to 0.0004.
  - d. Coefficient values are added in 'History', print and Export.
  - e. Coefficient values and Instrument Serial Number are shown in "Temperature Span" screen and Serial number are added in printout and export.
6. Verilink: Following default materials were added.
  - a. Drug ID: Fentanyl  
Concentration: 50 mcg/mL  
Manufacturer: Hospira
  - b. Drug ID: Water  
Concentration: 100 %



Manufacturer: Hospira USP Sterile Water

- c. Default material information deleted from the database when Verilink feature is turned off.

#### **20161019-Refractometer PC Interface V 4 3 0 0**

1. After movie completes instrument hang up on message box.

#### **20161017-Refractometer PC Interface V 4 2 9 0**

1. "Set As New" menu moved to "Instrument Specific Settings > Accessories > Factory Options"
2. "Software Upgrade" menu removed.
3. Temperature Recalibration:
  - a. "Temperature Span" button is added in Instrument Specific Settings
  - b. In "Temperature Span" menu the following buttons added:
    - i. History: To view history.
    - ii. Add row: To add extra Temperature
    - iii. Export: To Export measurement results
    - iv. Save: To save measurement in database
    - v. Clear: clear current list.
  - c. Measurement will be performed for each temperature and the result will be recorded into the table in Actual reading column.
  - d. Default temperature values added
  - e. 10 minute wait added
  - f. Eliminate double reads sometimes, see video Moorthi is posting
  - g. Method temperature is set to backend when exit from the screen.
4. If user scale lower limit is 0, the negative limit is calculated from 20% upper limit.
5. Coffee scales added:
  - a. Coffee 20
  - b. Coffee 25
  - c. Espresso 20
  - d. Espresso 25
6. New methods added for DP model
  - a. Automation 20
  - b. Automation 25



7. When in 21 CFR 11 and user checks Print Date check box show warning "Print date cannot be recorded within the rules of 21 CFR 11"
8. Custom scales menu shows only the scales of packages which are enabled in "Industry Packages" menu. It does not show all the scales.
9. "Create License file" menu is added. This file contains all data needed to recreate all settings on that Refractometer
10. Verilink : Data entry field prevention in User Field.

#### **20160711-Refractometer PC Interface V 4 2 8 0**

1. MSCOMM32.OCX included

#### **20160622-Refractometer PC Interface V 4 2 7 0**

1. Database options included in setup program:
  - a. Default Database
  - b. Previous version of database
  - c. Default database.
2. Accessory reorganization
3. All the scales should be 1 decimal.
4. "Corn Refiners" library was created and Corn syrup scales and methods were created.
5. Log file feature added.
6. Copy Method feature added. Copies the methods from source database to destination database which are not present in destination database. Also copy the user scales from source database.
7. When enable printing is set to "Always", PDF is printed automatically instead of printing from database
8. Butyro and Urea 0-55 methods added
9. The maximum range updated by calculating Scale value input by the user plus 20%
10. The minimum range updated by calculating Scale value input by the user minus 20%
11. Custom Scales : Ethylene Glycol, Ethylene Glycol Freeze Point, Propylene Glycol, Propylene Glycol Freeze Point, Butyro scales were updated

12. Custom Scales: Iso Propyl Alcohol scale updated.
13. Custom Scales : Canola Oil IV 45C, Soybean Oil IV 45 updated
14. Order of fit input box removed
15. Verilink: Reference user fields information are included in printouts
16. 6 (linear with fit quality evaluation number) changed to "6 points (linear with R<sup>2</sup> value)"
17. During R-Square calculation, use the subtracted X array.
18. The Z = Button was removed
19. Following options added for No. of points
  - a. 2 (linear)
  - b. 6 (linear with fit quality evaluation number)
  - c. 6 (3rd order polynomial with fit quality evaluation number)
  - d. 10 (5th order polynomial with fit quality evaluation number)
20. Lowest index value is taken from the user input for Z and Z label is included at last in list along with A,b....
21. Fixed 2 point "calculation complete, fit quality cannot be defined with 2 points" and the only option was continue issue
22. Fixed 6 or 10 were selected it would say "calculation complete, fit quality XXX %" with the options being "back" or "continue"
23. R<sup>2</sup> calculation implemented
24. Load & Go
  - a. Make the screen symmetrical by putting bar on the other side:
  - b. Calibration - Print button moved to final screen
  - c. Sample quality on load and go screen
  - d. Load and Go display 'freeze' and 'Continuous' mode options added

#### **20160415-Refractometer\_PC\_Interface\_V\_4\_2\_6\_0**

1. Number of events must be greater than 1 for 'Backup Audit Trail'
2. Language Edit mode moved under factory settings

3. License file update included in UI.
4. Calibration Adjustment screen button captions changed as "Accept" to "Save" and "Reject" to "Cancel"
5. 21CFR menu 'Back to Main Window' changed to 'Back to Menu'
6. When enabling 'BACKUP' for reviewer group in group settings an additional entry is made for Reference Library.
7. TPN Method
  - a. TPN Method switch added in Verilink Menu
  - b. TPN and other Verilink methods are moved to More screen when TPN is enabled menu
  - c. Prompt added to input Dextrose and Amino Acids
  - d. Result window shown for TPN Method like in Verilink result screen.
8. Print and Export implemented.
  - a. Print feature added in Performance result screen
  - b. Date not appearing on the PDF result report
9. Instrument will not restart cleanly
10. Printing option added in adjustment methods results screen
11. 21CFR11 - changes made to adjustment method not recorded in Audit Trail
12. Com port display wrong

#### **20160218-Refractometer PC Interface V 4 2 5 0**

1. The maximum field length for 21CFR user fields:
  - a. Do not allow fields with no limit
  - b. Username - 20 characters - no space allowed
  - c. Full name- 30 characters, spaces allowed
  - d. Password - 20 characters
2. "Comments" tab added in method. Saving new comments and updating existing comments is recorded in Audit Trail.
3. Verilink user fields are enabled by default



4. Water Zero method: Time delay before measurement called before starting measurement for zero.

#### **20160206-Refractometer PC Interface V 4 2 4 0**

1. Last calibration date is wrong in report.
2. Enable Key Stroke Tap when Set As New performed.
3. Verilink:
  - a. The default Time Delay setting for water zero on the Verilink changed to 60
  - b. Service password prompt is shown for Reference Library
  - c. Verilink result: Pass / fail label size is increased.
  - d. Verilink: Archiving option included in Reference library.
  - e. Verilink: Record number column is removed. Average and Date are moved to last columns.
  - f. Search screen default is set to "All".
4. Enable Key Stroke Tap when 21cfr11 is turned ON
5. Screen Lock/Unlock Entries are updated in Audit Trail.
6. Multilanguage: Feature implemented to edit existing language string by prompting existing string with edit option when the user right click on the control. Updated text will be saved in database.

#### **20151218-Refractometer PC Interface V 4 2 3 0**

1. Statistics Std. Dev and %RSD is shown as "--" when measurement count is 1.
2. Following scales created:
  - a. Propylene Glycol %
  - b. Propylene Glycol Freeze Point
  - c. Ethylene Glycol %
  - d. Ethylene Glycol Freeze Point
  - e. Canola Oil IV 45C
  - f. Soybean Oil IV 45 C
  - g. USP Sucrose g/ml
3. Following libraries created:
  - a. Coolant
  - b. Edible Oil
4. Following methods created:
  - a. Ethylene Glycol
  - b. Propylene Glycol
  - c. Canola Oil IV 45C

d. Soybean Oil IV 45 C

**20151023-Refractometer PC Interface V 4 2 0 0**

1. Default Measurement stability set point value set to 0.00002 for RI and 0.02 for Brix.
2. Default set point value will be updated in the input box when changing Measurement stability scale option.

**20151005-Refractometer PC Interface V 4 1 9 0**

1. Load Go and Trend Analysis methods removed from the 21CFR11 validation methods
2. MDB password protection implemented
3. Landscape mode included in PDF viewer, print preview and printout.
4. NDR result status "Possible Diversion" included in PDF and printouts.
5. The application can be installed in any drive/folder in the PC
6. Write permission is assigned to the sub-folders for which we require write permission and read/execute for other folders
7. Fix SD and RSD values
8. Change External Control wording to read "Remote Connection"
9. A message is shown to user when the user turned ON external without setting remote com port.
10. Measurement timeout included in PDF report.
11. MENU -> OPERATIONAL PARAMETERS -> TIME/DATE not required for PC version.
12. Fixed issue where a measurement that times out due to poor sample quality, it is recorded in Audit Trail as 'Measurement completed and waiting to be reviewed.'
13. Default password complexity is set to 'Numbers'.
14. Change the password complexity menu to read:
  - a. At least one upper case character
  - b. At least one lower case character
  - c. At least one number
  - d. At least one special character
15. Changed message to "Unable to change password. The value provided for the new password does not meet the length, complexity or history requirements."
16. Password history requirement changed from hard coded 6 to a setting
17. In Audit Trail screen, increase the width of column 'Modified time' to fit the contents.
18. %RSD included in statistics, secondary display and reports.
19. 40 column printer multiple measurement no longer prints header for each measurement.
20. Following Audit trail entries are updated
  - a. Deleting a network drive
  - b. Set presser coefficients
  - c. Set LED intensity
  - d. When edit group rights at first time in fresh db, additional 6 entries for old unused menus were updated in Audit trail.
21. "Interface parameters" menu was added
22. The following menus are moved to "Interface Parameters" menu from "Operational Param menu"



- a. Change password
  - b. Sound
  - c. Keylock
23. The digit displayed by the extra resolution now turned into a dash when the sample is removed
  24. Extra resolution feature turned on by default
  25. Automation ON/OFF switch included in Operational parameter menu.
  26. Automation in INS menu was changed to "Available/Not Available"
  27. Allow users to review their own results feature implemented
  28. Additional 21CFR11 features added to make density meter and the refractometer similar.
  29. 21CFR11 Delayed Review
  30. The standard method is not 21 CFR 11 compliant and when 21 CFR 11 is changed to available then the standard method should not be loaded.
  31. Once Automation is enabled on the Refractometer's UI on boot up the Automation Software starts immediately after the refractometer's UI is done
  32. The system brings the AutoFlex UI in front once the Refractometer gets started.

#### **20150723-Refractometer PC Interface V 4 1 7 0**

1. Powder density prompt window input text "sample 0 powder density" changed to "Powder density"
2. "Exact %" display wrong in powder RI
3. In Method library menu move method from active to library group created duplicate in library
4. New Method libraries added.
5. Methods are reorganized to corresponding library.
6. Comma separated for Individual and Append options added in File Export menu
7. After the database is created, time / date screen displayed
8. 40 column printer.

#### **20150609-Refractometer\_PC\_Interface\_V\_4\_1\_6\_0**

1. Stability settings checked when performing the calibration. Stability checked only if stability enabled in Method screen.
2. Water zero - "Default Zero" method is loaded instead of "RI 20 C"
3. Button names changed:
  - a. Restore M&B to Restore Factory Two Point Calibration
  - b. Restore MQC to Restore Factory Measurement Status Monitor
4. Restore Factory Two Point Calibration button and Restore Factory Measurement Status Monitor buttons moved to new menu "Factory Restore"
5. Add the message to the Unable to Measure error page: "If the instrument has been loaded with an appropriate sample and this error continues to appear then reset the Two Point Calibration and Status Monitor to factory defaults".
6. Shell launcher menu will be closed after application bootup and open only when the user clicks "Shell Launcher" button on "Factory" menu.
7. "Recreating data base, this may take several minutes" - message is put during database upgrade when initial use.

8. Lack of negative sign
9. New Factory QC methods created.
10. Old QC methods were deleted.
11. Temperature limit now checked for ramp temperature settings

#### **20150514-Refractometer PC Interface V 4 1 5 0**

1. Add continue button to the Thank you screen
2. All the Range lower limit to 1.258 for QC
3. Temperature range is now 10 to 110C and this should be set in the default
4. Changes to the following method temperatures:
  - a. The 15 to 95 should be changed to 15 to 105
  - b. The 95 to 15 should be changed to 105 to 15
5. Custom refractometer "Carel" included.
6. Prior to Water Zero, reset MQC coefficients.

#### **20150420-Refractometer PC Interface V 4 1 4 0**

1. Fix issue where 21CFR is not enabled and filename selected in 'Print settings'
  - a. If an export file is selected, '\$5' is appended to the file name in reports.
  - b. If export file is not selected, value for file name field in reports is '\$5'
2. 21CFR is ON, and the measurement is terminated before the 1st measurement, PDF created as in AP456.
3. Column 'Total Readings' in '21CFR11 Data' now shows 0 not 'Terminated'
4. In 21CFR11 Data screen, column 'TempCorrection' showed 0 for 'TempCorrectStatus' OFF. Now shows '--'.
5. Fixed columns name such as 'Temperature Correction'
6. Reduced line spacing to fit report with all fields selected on one page if possible.
7. Display method name in the header when in the 'Edit' method menu.

#### **20150417-Refractometer PC Interface V 4 1 3 0**

1. Add "Date" and "Time" fields in '21CFR11 Data' screen.
2. "S.No" in descending order with the latest measurement on top
3. Expanding a reading, the 'Reading ID' should be measurement number (1,2 etc) and not 16,17,18 etc
4. Remove the text 'Reviewer comments:' in the 'Comment' field of 21CFR Data screen
5. If 'Cancel' is clicked in the 'Reviewer' login screen, shows the 'Terminator' login screen as in AP456. If terminated, the measurement should be marked as 'Terminated'.
6. Audit trail entry for measurements changed to 2 entries 'Measurement started' and 'Measurement reviewed' in AP456 for 'non-Delayed review'. Delayed review has 3 entries.
7. Shows the 'terminator' login when 'Stop' is clicked before first measurement or before last measurement. Handle this as in AP456.
8. Clicking 'Stop' and terminating creates records in Audit Trail as 2 different entries 'Measurement started' and 'Measurement terminated'.

9. Line spacing consistent between lines in the footer of the report. Removed extra lines between reviewer information.
10. Adjust the spacing between Operator name, Date and time and Signature and Reviewer name, Date and time.
11. The day is included in the report 'Measurement Date' field value as in AP456
12. Another column 'Terminator' added in 21CFR11 Data screen and shows the terminator name

#### **20150330-Refractometer PC Interface V 4 1 2 0**

1. Audit Trail backup feature implemented like in Autopol.
2. "Export" option added in ""Audit Trail"" menu.
3. Dash string shown for Live Reading, Main display result and reports when the result is out of range.
4. Fixed spelling of Terminology
5. Powder RI
  - a. The word "real" changed to known in the instructions.
  - b. % sign after the entry box as a guide
  - c. Fix calculation divide input number by 100 before using in the equation
6. NDR methods "Fentaynl" and "Other Narcotics" added.

#### **20150219-Refractometer PC Interface V 4 1 1 0**

1. Temperature boost feature implemented
2. Operator cannot Review own result - 21 CFR

#### **20150127-Refractometer PC Interface V 4 1 0 0**

1. J457NDR printout and screen match
2. "Fuel System Icing inhibitor" range changed from 1 to 101 to - 1 to 101

#### **20150120-Refractometer PC Interface V 4 0 9 0**

1. Validation interval:
  - a. "Interval" option in Validation menu
  - b. Reminder for "Manual", "Compulsory", "Advisory" implemented
2. The "copy of" methods now able to be deleted.
3. Fuel System Icing inhibitor scale created.
4. "ASTM" new library included.
5. D1218, D1747 and D5006 methods created.
6. Delete movies available switch
7. NDR Identifier changed from "Sample Id" to "Lot Id"
8. For Roll printing data will be transferred according to the settings in Print Settings menu
9. "Database Maintenance" menu added in "Service Settings" menu and the following two options added.
  - a. Delete ID : To delete existing Lot Id

- b. Rename ID : To Rename existing Lot Id
- 10. Two new items under the menu "Backup and Restore"
  - a. Calibration – Contains all the items previously in the restore calibration menu
  - b. Database – Contains all the items previously in the backup and restore menu
- 11. "Maintenance" added under the Database
- 12. Print config menu Lot ID field always checked and greyed out when NDR enabled.
- 13. Lock LOT ID to the header
- 14. Printer functionality from Autopol
- 15. Fix Lot ID autofill
- 16. On startup and at 2.00am every morning the refractometer goes to the validation menu and looks at ALL validations that are set to "advisory"

#### **20141119-Refractometer PC Interface V 4 0 8 0**

- 1. Display name filled in as the other name is typed
- 2. Library import export removed and "Method Libraries" renamed as "Method Import Export"
- 3. User scale ""Display Name"" feature implemented
- 4. Method library Import and Export feature implemented
- 5. Splash screen on bootup with ""Thank you"" message implemented
- 6. Help video completed notification window
- 7. After the measurement completed Print Dialog skipped when Print settings is set to ""Always"".
- 8. Date Format changed to ""mm/dd/yyyy"" format in Measurement Data Search and Audit Trail Search.

#### **20141004-Refractometer PC Interface V 4 0 7 0**

- 1. Fixed issue updating the database.
- 2. Inappropriate window resizing: After resizing the columns in measurement window during measurement it has resized itself.
- 3. Extra resolution switch added in INS
- 4. Add Human Urine SG Scale to the display parameter list
- 5. "Available Libraries" feature added in INS Menu.
- 6. Method name defaults to on in all methods
- 7. Default temperature display in all methods is 2 decimals
- 8. Input presser coefficients
- 9. Extra resolution implemented
- 10. Water Zero Improvement
- 11. Date range search included for all criteria in Measurement data
- 12. Water Trend Methods added
- 13. Data Storage Switch option provided

#### **20140801-Refractometer PC Interface V 4 0 5 0**

- 1. "Density Transfer" method created in the factory methods



2. Time delay before first count down implemented for every load in "Multiple Measure Multiple Load" mode
3. Only one file generated when user fields selected and measurement data is saved with as excel
4. Date and time are grayed out in measurement data search.
5. Default the videos available button to on

#### **20140801-Refractometer PC Interface V 4 0 5 0**

1. "Density Transfer" method created in the factory methods
2. Time delay before first count down implemented for every load in "Multiple Measure Multiple Load" mode.
3. User field data now included in measurement file solving the issue were user fields selected and measurement data is saved with as excel, two files are created one with the data and the other with the user fields
4. Added ability to search measurement data by data and time.
5. Default the videos available button to on

#### **20140719-Refractometer PC Interface V 4 0 4 0**

1. Export location error message changed to "Data export location not available, measurement cannot be started".
2. In "Load & Go" and "Trend Analysis screen", "Menu" and "Methods" buttons moved to top row.
3. Text file report will be generated when the user clicks "Export to Excel" button in Menu > Calibration > Performance
4. Following method names are changed
  - a. Refract Index 20 Full Disp as Refract Index 20 Smart Disp
  - b. Brix 20 Full Disp as Brix 20 Smart Disp
  - c. Refract Index 25 Full Disp as Refract Index 25 Smart Disp
  - d. Refract Index 20 Standard Full Disp as Refract Index 20 Standard Disp
  - e. Brix 20 Standard Full Disp as Brix 20 Standard Disp
  - f. Refract Index 25 Standard Full Disp as Refract Index 25 Standard Disp
5. Duplicate "None" option removed from Method display param dropdown box in Menu > Add/Edit Methods > Test Methods > Edit > Display Configuration.
6. Colon (:) separator is added next to "Serial Number" in Pdf,Text File reports in J457.
7. Measurement data file (Pdf) size reduced.
8. Number of measurements exceeds in Measurement data menu issue fixed.
9. Unhandled exception error flashed when the system is restarted during Disk Protection ON/OFF

#### **20140716-Refractometer PC Interface V 4 0 3 0**

1. Unhandled exception error comes when closing the application using ALT+F4

#### **20140715-Refractometer PC Interface V 4 0 2 0**

1. ID into file name - contents of the User Field, not the label of the user field to be used as part of the file name
2. Trend Analysis defaults are not identical with J357
3. Audit trail entry for measurements
4. When starting measurement if export location is not found, An error message will be shown with the text "Export location not found".

#### **20140612-Refractometer PC Interface V 4 0 1 0**

1. User field ID into file name implemented
2. Reset MQC implemented

#### **20140428-Refractometer PC Interface V 2 9 0 0**

1. Biuret is calculated other methods in AB issue fixed
2. Temperature decimal selection included in method menu
3. 40 Column printing implemented
4. NDR mode: Sample id prompt is displayed even if it is not selected in print settings
5. Standard display feature implemented

#### **20140422-Refractometer PC Interface V 2 8 0 0**

1. Factory Defaults temporarily with a required ISS password
2. New factory methods added
  - a. Factory QC 20 60 DP
  - b. Factory QC 60 20 DP
3. Save & Exit button enabled in all screens.
4. Move the Time input window below the Date.
5. Make the up and down arrow for the Time input box larger for manual operation.
6. Data - Search By / Export Format changes
7. The print button on the data base needs to move to the left. It is on the left in the polarimeter and the refractometer needs to be the same.
8. print button added in PDF viewer screen
9. Exception log added

#### **20140317-Refractometer PC Interface V 2 7 0 0**

1. Tab separated to a file should be replaced by Tab separated to a file (individual) and Tab separated to a file (append). Individual works as now, at the end of every measurement a new file is created. In append mode the new information is added to the same file.
2. Prestone mode problem

### **20140225-Refractometer PC Interface V 2 6 9 0**

1. Switching NDR mode from OFF to ON make an empty method button on main screen
2. When the user is prompted for input into the User Field header fields, the Skip button in the window should be an arrow like is shown when the user is prompted for the Sample ID and Lot ID. Currently the button is a red X.
3. Sample ID's are being saved to the NDR sample ID list when the instrument is not in NDR mode. The only time Sample ID's should be added to the Sample ID list stored in the database is when NDR is active.
4. Arrow keys do not activate the save and exit
5. File Export Option screen Change Replace radio buttons with a drop down box. The possible values of the box are:
  - a. None
  - b. Excel to file
  - c. Pdf to file
  - d. Tab separated to file
  - e. Tab separated to RS232 port
  - f. Tab separated to both file and RS232 port
6. Logo change - Replace this button with a browse button. The user can press this and browse to a file at any location. The only files that are shown are ones that are of a format compatible with the logo. Selecting a file will copy that into the directory c:/refractometer/logo and close the browse window.
7. This logo should be included as part of the back up
8. A popup window added to view available Logos and also delete option included in the list.
9. Add Cancel button to the NDR Sample ID input screen

### **20140131-Refractometer PC Interface V 2 6 8 0**

1. Method Display Switch - "Display method name" and a check box added for method name displayed in main screen,
2. Extra identifiers feature implemented
3. Ampersand & key problem fixed
4. "?" added for showing help video in all screen
5. Validation now standard
6. "Global Settings" menu added
7. Load And Go - Method name added at top right corner
8. Correct order of m&b variables
9. Custom scale range limits implemented
10. Load and go - if measurement is not stable, the main display changed to half size at last digit.
11. On the human urine SG scale the lower limit should be changed to 0.9000 and the upper limit changed to 1.0500
12. Autoflex R837 / J457 communication - Toggle button added to bring Autoflex R837 to front.
13. Butyro scale added
14. Lot id input max length changed to 11 characters.
15. User defined Identifier Names



16. Leave the Fluid 2 ID, values under Adjustment methods Blank (Remove Water, 1.33299) by default.
17. When the user first logs in to the Menu --> Calibration --> Adjustment --> Continue without adding the ID values and Fluid Value, prompt a window saying "Fluid 2 Value needs to be input under Add/Edit Methods --> Adjustment Methods. Please input the Fluid values from the calibration fluid provided.
18. File Export Options
  - a. Include the existing file export option here. Remove the Tab Separated Button
  - b. Export to RS 232.
  - c. Include the existing options here. "Export to RS 232 (TAB Separated)"
19. The comment field enlarged to 250 characters.
20. Restore calibration sets M to 1 and B to 0

#### **20131216-Refractometer PC Interface V 2 6 7 0**

1. Movies Available
  - a. Video frame size reduced to 640 X 480.
  - b. Browse option added in Instrument specific Settings > Movies Available
  - c. Factory user can browse any video format file and also a list of available movies will be displayed
  - d. User can delete files from the list.

#### **20131213-Refractometer PC Interface V 2 6 6 0**

1. Scale name changed from Finish 50 to Finish 90,
2. Scale coefficient values changed for "Finish 55" and "Proc 90"
3. VLC player included in installation setup

#### **20131210-Refractometer PC Interface V 2 6 5 0**

1. Temperature display moved to bottom left corner, Scale name display added at bottom right corner.
2. ADM methods created

#### **20131207-Refractometer PC Interface V 2 6 4 0**

1. Load and Go
  - a. Remove the blue band for temperature
  - b. Make the buttons more defined
  - c. Grey border width is the same as the main display box and also around the buttons
2. Restore calibration. Under the service menu create a new option "Restore calibration". This has two options: Note : We have moved "Whole Instrument Calibration" under "Restore calibration".



- a. Whole instrument calibration - This is the same as the option that was in the service menu. By placing it down here we have just kept the number of menu options the same.
  - b. Restore m & b - When this menu is entered display the m and b numbers from the firmware. Below the numbers there is a button that says "zero" Pressing the zero button sets m and b to zero.
3. Restore factory defaults – Add serial number check before restoring.
  4. Slash in lot id causing a problem in the print out
  5. Tab separated text file created for each reading. Export measurement data to configured RS232 port.

### **20131126-Refractometer PC Interface V 2 6 3 0**

1. Load and Go Screen change
  - a. The temperature display should be moved into the bottom right hand corner of the main display
  - b. Under instrument specific settings make an new option "Configure Load and Go Screen"
  - c. Under this screen the first option will be "Number of buttons". This variable can have the values 1 or 2 or 3 or 4.
  - d. Below the "number of buttons" there are large buttons that display the button number and what its assigned to.
  - e. If the button cannot be used then it says disabled.
  - f. Assign buttons :All buttons have two properties:
    - i. Password This denotes if the password is required after pushing the button. The password is the menu password
    - ii. Assignment This is what the button is assigned to do. Possible options are:
      1. Menu
      2. A method (eg Brix 20 or something)
      3. Method button (a drop down box that brings up a list of methods)
      4. Validation
      5. Zero
  - g. Button 1 is assigned to "menu" and password on. This CANNOT be changed.
  - h. Load and go reading now fully displayed.
2. User scales to secondary display
  - a. User scale option added in Secondary display parameter selection list in Method screen.
  - b. Choosing User scale option will bring up a window with the available user scale list.
  - c. Selected user scale will be shown in main screen secondary display.
3. Custom scale creation
  - a. Decimal places: The decimal places of the scale made should correspond to the data given
  - b. Range: If the result is not in range - "Undefined" will be shown on main reading window.

### **20131121-Refractometer PC Interface V 2 6 2 0**



1. CTAC - Smart measure commands implemented

#### **20131107-Refractometer PC Interface V 2 6 1 0**

1. Change the relative button sizes of the test / retest buttons. Test should be small, retest should be large
2. Rename the button "test" to "Known"
3. Rename the button "retest" to "Measure"
4. Change the text in the message box as follows:
  - a. This sample has not been tested previously. Do you want to add to "Known List" or cancel?
5. Change the "Test" button to "Add"

#### **20130910-Refractometer PC Interface V 2 6 0 8**

1. NDR
  - a. The display in the NDR method go to 6 decimal places
  - b. Allow the warning limit to be set to 0.000001 (1 in the 6th decimal place)
2. Movies Available

#### **20130810-Refractometer PC Interface V 2 6 0 7**

1. Default methods name changed as follows:
  - a. Refract Index 20 Full Disp
  - b. Brix 20 Full Disp
  - c. Refract Index 25 Full Disp
2. "Abbe Mode" to "Load & Go"
3. If the 21CFR11 screen lock occurs while in the middle of a measurement review, save the results in the file, set the Accept/Reject to Un reviewed, and close the review screens.

#### **20130905-Refractometer PC Interface V 2 6 0 6**

1. Delay in UI launching after restart. Shell Launcher displaying

#### **20130808-Refractometer PC Interface V 2 6 0 5**

1. Autopol 880 Serial communication Implemented

#### **20130726-Refractometer PC Interface V 2 6 0 4**

1. Additional password for "Zero" C
2. hanged the color of the "Abbe" mode measurement numbers accordingly for stability
3. Checkbox added for Smart Measure same sample present criteria not satisfied message

4. For every method change the default response time from 5 seconds to 2 seconds.

#### **20130705-Refractometer PC Interface V 2 6 0 3**

1. Release notes text changed

#### **20130426-Refractometer PC Interface V 2 6 0 2**

1. Turn Validation "ON" as default, validation should be "ON" for all the users unless it is turned "OFF" through Instrument Specific Settings for any reason.
2. Calibration Screen - Change button label "Perform Validation" to "Validation". Change label "Validation History" to "Performance".
3. The user should be able to do validation and check the performance also from the home screen. Add the same two buttons (Validation & Performance) with the icons, having the same functions as in the calibration screen to the Home Methods Screen on the RHS in the space between "Readings" and "Data" buttons. as shown below. Size the buttons the same as other buttons namely Readings, Data.
4. Lot Id append at the end of the file name with "\_" separator.
5. Two point calibration names not lined up

#### **20130410-Refractometer PC Interface V 2 6 0 1**

1. Today" button option added in Validation History to go current day.
2. Validation History breadcrumbs updated
3. Excluded records are ignored in Excel report

#### **20130409-Refractometer PC Interface V 2 6 0 0**

1. Sample detected check box does not appear to work
2. NDR option implemented
3. Temp Boost feature updated
4. External Keyboard "Enter" Key function.

#### **20130306-Refractometer PC Interface V 2 5 1 6**

1. Print format should be setup similar to Autopol - PDF,EXCEL,PRINT,21CFR11

#### **20130306-Refractometer PC Interface V 2 5 1 5**

1. DDM to Refract Communication protocol update
2. Additional commands implemented
3. A Dropdown list is added for selecting Baud Rate in J457 Automation Screen (Instrument Spec. Settings > Accessories > Automation) and also added in Automation Simulator.
4. Add" Density Meter" to Instrument Specific settings similar to "Automation" (with On/Off, Serial Port settings same as in Automation)

5. Adjust Home Screen Menus as attached to accommodate Density Meter and Automation
6. Move “Zero” under “Start” button followed by “Menu” and “Data”
7. Add a button “Automation / Density Meter” with submenu “Automation” and “Density Meter” to select either.
8. For PC command use live reading.
9. If the current loaded method has Temperature Correction (TC) "OFF", we should send back regular Refractive Index (RI) (Non Temperature Corrected RI) and regular Brix (BR) (Non Temperature corrected Brix)
10. If the current loaded method has Temperature Correction (TC) "ON" , then we return TCRI (Temperature corrected RI) and TCBR (Temperature Corrected Brix).

#### **20130220-Refractometer PC Interface V 2 5 1 4**

1. Flash player included with the setup for Validation History graph feature

#### **20130210-Refractometer PC Interface V 2 5 1 3**

1. Validation History feature implemented

#### **20130220-Refractometer PC Interface V 2 5 1 2**

1. J257 – version
  - a. Enable 21CFR11 for J257
  - b. Remove "Instrument Settings" from group edit list
  - c. Change display to .---- from 0.0000 when measurement/live reading to display
  - d. Remove setup password after group permission p/w. When Setup Menu Access is checked for a User Group , additional setup login with \*\*\* pw is not required.
  - e. Add to Print setup the following
    - i. Reviewer Name
    - ii. Reviewer Signature
    - iii. Logo Path
  - f. Same page format for Print & PDF documents.
  - g. Password Setting - Add Screen Lock Settings similar to 21CFR11 in Autopol.
  - h. Change Window Header from black to white.
  - i. Add Home Button on top right corner to all menus to close and go to Home Screen.
  - j. Error message as attached during launch of application
  - k. Grey out "Instrument Settings" button menu
  - l. "Laboratory Compliance" under 21CFR11 to be same as in Autopol.
  - m. 64-bit compatibility.

#### **20130214-Refractometer PC Interface V 2 5 1 1**

1. Japanese version.

#### **20130213-Refractometer PC Interface V 2 5 1 0**

J257

1. Fixed hang up when measurement stopped.
2. Option to export in Excel format is greyed out when 21CFR11 enabled.
3. Data Storage depends on as per Laboratory Compliance.

**20130207-Refractometer PC Interface V 2 5 0 9**

1. Multilanguage - Chinese second iteration

**20130131-Refractometer PC Interface V 2 5 0 8**

1. Multilanguage – Chinese
2. When any language is selected from the drop down box under Service Settings Language or Factory Settings - ISS - Language and saved, restart the machine to open in the selected language.
3. Correct issue with the proper language being selected.

**20130129-Refractometer PC Interface V 2 5 0 7**

J257 with 21CFR11

1. Add User group setup menu as in Autopol
2. Merge Account setup menus and user group setup menus as in Autopol
3. Add Laboratory Compliance
4. Change Audit Trail setup.

**20130102-Refractometer PC Interface V 2 5 0 6**

1. Following Factory Methods Added
  - i. Name “Factory QC 20 30 40” - This method is a copy of the Refractive Index 20 Method except for the following
  - ii. Measurement Control - Time out 600 seconds
  - iii. Number of Measurements – 3
  - iv. Check ramp temperature - 40.00C
- b. Name “Factory QC 15 95” - As per Factory QC 20 30 40 except
  - i. Temperature - Temperature control - Custom 15.00
  - ii. Measurement Control - Time out 1200 seconds
  - iii. Number of measurements – 2
  - iv. Check ramp temperature 95.00C
- c. Name “Factory QC 95 15” - As per Factory QC 15 95
  - i. Temperature - Temperature control - Custom 95.00
  - ii. Measurement Control - Time out 2400 seconds
  - iii. Check ramp temperature 15.00C
  - iv. Change the time out maximum from 999 to 9999

### **20121031-Refractometer\_PC\_Interface\_V\_2\_5\_0\_5**

1. Multilanguage - Japanese

### **20121025-Refractometer PC Interface V 2 5 0 4**

1. Multilanguage - Spanish

### **20121008-Refractometer PC Interface V 2 5 0 3**

1. Go to 880 button disabled if Refractometer UI has communication error
2. Library Method Database added

### **20121005-Refractometer PC Interface V 2 5 0 2**

1. Released for 880 changes
2. Enabled "Back to 880" button even if the communication not established.

### **20120926-Refractometer PC Interface V 2 5 0 1**

1. Backup / Restore - Default- Setup automatic back up @ 3Am to external USB drive. Message to show if USB drive is not found / full or if the automatic back up is not performed.
2. Optics Adjustment - Delete Pixel Limit.
3. Comments Window - Focus on the message input when opened.
4. Setup factory backdoor password \*\*\*\*\* for Menu & Service Settings like Autopol.
5. Setup Keystroke Trap as in Autopol - Under Factory Settings
6. Change Validation to 1 Fluid value validation.
7. Validation History Chart to show the following fields 1. Method 2. Fluid ID 3. Fluid Value 4. Result 5. Detail
8. Validation Methods - Not editable. Allow to only copy and change the name.
9. Graph - By Method - Line Graph. Show Min /Max
10. Make a Validation on / off switch in inst specific settings
  - a. When set to off Validation disappears from calibration menu
11. Validation methods from methods menu
12. Validation - Variation decimal places to be the same

### **20120919-Refractometer PC Interface V 2 5 0 0**

1. Hardware Rev - To be include in system information
2. Remove " Go to 880" Tab - to be shown permanently only if the Autopol 880 version is selected.
3. Manual 880 On/Off Switch to be added to Version Settings. Window to show "This version of software is running on" 1. Display Base Module 2. PC 3. Autopol 880
4. PC Version - Gray out Control Panel Window.

5. Add Sample ID column to the Main Screen display by default and adjust the sizing accordingly to fill the empty space.
6. Under Print leave double space between header and readings
7. Remove password for validation and remove the message.
8. Default allowable variation to be 0.0001.
9. Validation fluid value not Calibration fluid value.
10. +/- sign to be included for Allowable variation and removed from variation in the Validations results window.
11. Validation history include a chart history Include date , pass/fail, Details button when Details button is pressed show the validation results.
12. For 21CFR11 - Validation History to be included in Audit Trail
13. Print Settings - Add a comments check box, for both non 21CFR11 & 21CFR11 settings
14. 21CFR11 Data - Remove delete data option.
15. dn/dc - To show up on the custom scale --- Add window
16. External PC error after PC Hibernation error Message "Index was outside the bound of the array" on the system side PC side - The application captures the COM port even when closed, shows up in the open processes.

#### **20120904-Refractometer PC Interface V 2 4 2 7**

1. "Go To 880" button added on the top of the main screen (Removed from right side menu)
2. Remove comments column in measurement data area, reduce sizing of columns: Measurement, Scale
3. Air zero should not be a part of the validation
4. Validation does not display the difference between the readings, just reads 0.00000
5. "0.00000" is not Variation, it is allowed variation which is input by the user in method > Calibration Fluid Values. In this version we have added additional columns "Allowed Variation" and "Variation". If the Calculated Variation(Actual - Expected) is fall in to allowable variation, the result will be "Pass" otherwise it will be failed.
6. When the Validation history button is clicked an unhandled exception error comes up "Need to register mschrt20.ocx"
7. Remote comport remove out of factory settings
8. Add "method" as an option in the header section of print settings
9. Create a comment prompt then generate a pdf. 50 characters allowed, under the reviewer signature

#### **20120830-Refractometer PC Interface V 2 4 2 6**

1. File Size Warning - When a user selects a file for a logo the system checks the file size and if its over 150Kb a warning is flashed saying "file size unusually large, data storage capacity will be limited if this logo size is chosen
2. Space for wavelength - Make a variable called wavelength Under instrument specific settings a user can key in a wavelength default is 589 Wavelength shows under home screen list.
3. J457 External – re-establish communications when PC wakes from sleep mode.
4. Multilanguage Spanish



5. Color coding of pages - Currently all the screen backgrounds are light blue. The instrument has multi access levels controlled by passwords. I would like the screen backgrounds colored by access level.
  - a. Menu - blue as now
  - b. Service Settings - orange
  - c. Factory Settings – red
  - d. Instrument Specific Settings - reversed black and white
6. Printing:
  - a. Make the print out ONLY portrait mode
  - b. Limit the number of measurements in 21 CFR 11 mode to 10 (or perhaps even 8, see below) and this limit should ONLY be when 21 CFR 11 is active
  - c. Make each reading take two lines with a half line underneath. The second line is the comments
  - d. Also use shading to tie the measurements together, in other words the half line should be a different color from the measurement
  - e. Lay out the page so that at maximum number of measurements an A4 page is full (A4 is shorter than US Letter
  - f. Only allow Sample ID to enter 11 characters since print only has room for 11 characters.
  - g. Fix comments to only allow number of characters that can print.
  - h. Comment deletion – eliminate ability to delete a comment.
  - i. Fix issue with comments not appearing in the PDF.
  - j. Fix issue with operator missing from 21CFR11 printout.
  - k. Show the method on the report.
7. A button added on the main screen for back to 880
8. Calculation for dn/dc in custom scales

#### **20120726-Refractometer PC Interface V 2 4 2 5**

1. Combine the external and internal software.

#### **20120713-Refractometer Embedded V 2 4 2 3**

1. Change J457 External "Set Communication Conditions" Password from "Service Settings" to Instrument Specific Settings
2. When Communication failed, the application allows to enter menus without password.

#### **20120712-Refractometer Embedded V 2 4 2 1**

1. J457 – Add ability to turn on and off external control and ability of user interface to communicate with the Rudolph PC software running on a PC.
2. Backup & Restore - feature to back up the database file namely \*.mdb
3. Under Service Settings – Add “Optics Adjustments” Button – Bring both “Led Intensity “and “Pixel Limit” currently under service settings as sub menu



**20120706-RefractometerXP Embedded V 2 4 2 0**

1. Automation should not hold COM3 by default.

**20120703-RefractometerXP Embedded V 2 4 1 9**

1. Rudolph Refractometer Pc version

**20120615-RefractometerXP Embedded V 2 4 1 8**

1. Set temp boost reactivate timer at 95C, allowing users to cancel out any time to avoid a 60 min wait each time. If temperature exceeded 95C,user should wait 60 min.
2. Max for set temp for non temp boost should be 100C
3. "Temp Boost" status (Enabled or Disabled) is added in "Method" - Print,Export.
4. When entering in to the "Whole Instrument Calibration" while on "Temp Boost" , popup a message box with the message "You cannot perform Calibration while on Temp Boost"

**20120614-RefractometerXP Embedded V 2 4 1 7**

1. Temp Boost feature Implemented

**20120608-RefractometerXP Embedded V 2 4 1 6(880 - version)**

1. 880+ purity mode using refractometer live reading, not the set reading from the main display

**20120607-RefractometerXP Embedded V 2 4 1 5**

1. The Temperature value and the unit (C or F) are not separated by a space. It should be like for example 20.00C or 30.00F
2. Response for Sample Temperature from 880(rt)

**20120606-RefractometerXP Embedded V 2 4 1 4**

1. Implemented Remote Pc commands
2. Automation Simulators
3. Changed delimiter Space to Tab in remote command result response.

**20120605-RefractometerXP Embedded V 2 4 1 3**

1. 880 implementation

**20120519-RefractometerXP Embedded V 2 4 1 2**

1. If the User Scale items count exceeds - dropdown box bottom items not shown in the list.