



ReadMe for Freedom EVOLution V2.0.35

This document contains information about Freedom EVOLution V2.0.35 including updates and bug fixes compared to the previous version. It also describes the prerequisites needed for installing Freedom EVOLution V2.0.35.

Information in this ReadMe supersedes corresponding information in the following manuals:

- Operating Manual Freedom EVOLyzer, document 393035
- Application Software Manual Freedom EVOLution, document 394802
- Instrument Software Manual, document 392888

Please also refer to relevant Customer Support Information documents (CSIs) concerning Freedom EVOLution and Freedom EVOLyzer.

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1 Freedom EVOLution V2.0.35 software package content

- ReadMe for Freedom EVOLution V2.0.35.pdf
- Installation Guide for Freedom EVOLution V2.0.35.pdf
- EVOLution ASTM Interface V1.4.pdf
- Magellan Pro Tracker V7.5 (30219844)
 - 30219840_Magellan Pro_V7_5_Release_Notes.pdf
 - 30219843_Magellan_Revision_History_V2_20.pdf
 - Magellan 7.5 Pro_Setup.exe
- Instrument Software 8.1 (30227167)
 - ReadMe.html
 - Instrument Software 8.1 Setup
- Freedom EVOLution V2.0.35 (30030862)
 - EVOLution For Freedom EVOLyzer 2.0 Setup.exe
- HydroControl V4.3.1
 - HydroControl.4.3.1.Setup.exe
 - 30055547_IFU_HydroControl_V1_3_English.pdf
 - 30064372_IFU_HydroWasher_Driver_V1_4_English.pdf
- Drivers for USB-Serial Converters
- Freedom EVOLution Language Setups
 - ReadMe EVOLution LP_V1.0.pdf
 - Setups for German, Italian, Spanish, Swedish, French, Portuguese, Russian, Chinese, Norwegian
- Firmware:
 - HydroFlex FW package: 4.11, 4.20, 4.22, 4.23
 - Sunrise_V3.51_2014_02_17.upd, V4.51, V4.60, V4.70

All current manuals not included in the software package can be accessed via the Tecan Knowledge-Portal: <https://www.tecan.com/knowledge-portal/evolyzer-manuals>

2 System Requirements for Freedom EVOLution V2.0.35

2.1 Operating system

Freedom EVOLution V2.0.35 is compatible with the following operating system:

- Microsoft Windows 10 64-bit Enterprise LTSC 2021 H2
- Microsoft Windows 11 IOT Enterprise LTSC 2024

Freedom EVOLution V2.0.35 is tested and released for English Windows OS and it is therefore strongly recommended to install it on a computer with an English Windows OS.

2.2 PC Hardware

Computer component	Specification
CPU	<ul style="list-style-type: none"> • Intel Core i5 5th generation 3 GHz or better
RAM	<ul style="list-style-type: none"> • 16 GB or more
Storage space	<ul style="list-style-type: none"> • 1 GB of needed for the software installation • 100 GB for data created during the life span of the instrument
Graphics card	<ul style="list-style-type: none"> • Open GL compatible graphics card with at least 2 GB of dedicated VRAM
Display	<ul style="list-style-type: none"> • 1920x1080 or higher resolution 32-bit color display
Ports	<ul style="list-style-type: none"> • USB 3 ports for the instrument connection and peripherals • RS232 COM-port for ASTM LIMS communication • Ethernet port for internet connection
Peripherals	<ul style="list-style-type: none"> • Keyboard and mouse
Printer	<ul style="list-style-type: none"> • Physical or pdf-printer if Magellan print-outs will be used for viewing results

2.3 Firmware

Please ensure that the firmware on all instrument devices correspond to the versions listed below before using Freedom EVOlution. Any firmware differing from the specified versions must be updated using:

- Instrument Software (EVO components and devices)
- XFlex Service Software (HydroFlex)
- SunSet Software (Sunrise)

Component	Firmware
TECU	<ul style="list-style-type: none"> • V1.40-12/2007 Note: Older Freedom EVOlyzer instruments might need to connect via a serial connection to update the Te-CU firmware.
LIHACU	<ul style="list-style-type: none"> • V1.80
ROMACU	<ul style="list-style-type: none"> • V2.21-09/2007
POSID3	<ul style="list-style-type: none"> • V1.21-08/2007
DS1100	<ul style="list-style-type: none"> • V1.040 (PosID scanner head)
Grid Control	<ul style="list-style-type: none"> • V1.00-02/2004
SAFY	<ul style="list-style-type: none"> • V1.30-04/2008
SPO/MPO	<ul style="list-style-type: none"> • V3.20-04/2007
Supervisor	<ul style="list-style-type: none"> • V1.00-2/2004
XP2000	<ul style="list-style-type: none"> • V1.10-03/2006
DC Servo-2	<ul style="list-style-type: none"> • V1.21-04/2007
MIO-2	<ul style="list-style-type: none"> • V2.10-04/2015
Sunrise	<ul style="list-style-type: none"> • V3.51 and V4.51, V4.60, V4.70
HydroFlex	<ul style="list-style-type: none"> • V4.11, V4.20 and V4.22, V4.23 • Note: V2.23 and below are only compatible with Windows 7 and USB 2 connection. Old HydroFlex PCBA mainboard are only compatible with firmwares up to V4.11. New HydroFlex PCBA mainboard are compatible with firmwares from V4.20 and above.
Common Components	<ul style="list-style-type: none"> • UMS: 1.1.14.0 • Communication Server: 2.3.0-12 • PosID-3 Driver: 2.3.1-01 • Logging System: 2.3.3-01

3 Installation instructions

All required software and drivers for are included with the Freedom EVOLution V2.0.35 software package.

Always refer to and follow the installation procedure described in the document: “**Installation Guide for Freedom EVOLution V2.0.35**” delivered with the software package when installing Freedom EVOLution.

4 Updates in Freedom EVOLution V2.0.35

TFS #	Description
128152	Support new Sunrise FW V4.70
128874	Support Windows 11 LTSC

5 Important notes for working with Freedom EVOLution

5.1 EVOLution Process reports

EVOLution Process Report (viewed with Plate Manager) must always be cross-checked to fully evaluate results. Process Reports contain relevant warnings and errors detected by the EVOLution process control which are not shown in Magellan result files.

5.2 EVOLyzer RoMa vectors

- Utmost care must be taken when teaching RoMa vectors using Instrument Software during the Freedom EVOLyzer Operational Qualification. There is no way to adapt RoMa vectors with any of the editors of Freedom EVOLution.
- Refer to the Instrument Software Manual section 9.6 (document 392888) for detailed instructions on RoMa vector teaching.
 - Shelf: The two RoMa teach positions must have the same Y, R, G and Z value. Only the X value may differ. The R value must always be 1800 to avoid crashes between the RoMa and the Shelf.
 - Incubators: The two RoMa teach positions must have the same X, Y, R and G value. Only the Z value may differ. (The R value must always be 0 or 1800)
 - HydroFlex: The R value of the teach position must always be 2700.
 - Sunrise: The R value of the teach position must always be 1800.

5.3 Pipetting carrier placement on the worktable

Pipetting carriers for micro plates must be placed on right side of the LiHa wash station to avoid the following issues:

- RoMa crashes into the LiHa wash station when attempting to place or retrieve plates on the carrier
- Conflicts between the LiHa park area and the RoMa move area

5.4 The consumable “Serum”

The pre-defined consumable “Serum” should not be edited (although this action is not prohibited by the editors). If edited the following errors can occur:

- unable to process parallel pipetting
- the 'SeriesDefinitionEditor' in the PDE cannot find any valid assays

5.5 Labware for predilution tubes

For predilution in tubes, dedicated labware are available in the labware archive. To ensure that the correct number of tubes is loaded, predilution tubes must be configured with the following CDE settings:

- Barcode: No barcode
- Scan before usage: unchecked

5.6 25 ml reagent troughs

25 ml troughs have to be placed in the adapter: “Trough 25ml Coned Bottom Adapter”. The barcode for the labware has to be attached to the adapter i.e. not onto the 25 ml trough itself.

5.7 Automatic Magellan printouts

- The native Windows pdf printer does not work with Freedom EVOLution. If automatic pdf printouts are activated for Magellan methods used by EVOLution, a third party commercial pdf printer must be used and selected in Magellan since the Windows pdf printer will stop the EVOLution process when printing the first pdf.
- If automatic printing is selected in the Magellan method, printer names may not contain more than 32 characters.
- Using network printers can cause troubles for the print preview if there are network issues at the time of printing.

5.8 Plate washing with partially empty columns

Empty wells: When processing microplates containing partially empty columns (wells with no samples) the wash procedure can potentially lead to minimal cross-contamination. Freedom EVOLution therefore has an option which automatically fills unused wells to be used when the number of samples is smaller than the capacity of the plate and depending on the type of washer manifold (8- or 16-channel).

If the option for filling empty wells is not used, plate washing for use with partially empty columns must be validated. This validation step can be omitted if it can be ensured that only filled columns of micro plates are being washed with the HydroFlex.

5.9 Setting plate parameters with HydroControl

- To ensure proper wash performance it is mandatory to verify and adjust the washer to the type of the microplate or strip-plate used. This also applies to all pre-defined plate files which only contain average plate parameters.

- Refer to the HydroControl IFU section 3.15 (document 30064355) for details on how to adjust plate parameters using HydroControl.
- Refer to the HydroFlex IFU section 6.1.1 (document 30028795) for details on how to adjust plate parameters using the HydroFlex washer. Only plate definitions stored on the HydroFlex can be adjusted with this procedure.
- The plate definitions are saved as pdfx-files under: "C:\Users\Public\Public Documents\Tecan\Pdfx".
- The Start-of-Day maintenance wash programs: "M_CheckWashPlate-Aspirate.hcp" and "M_CheckWashPlate-Dispense.hcp" must always be available in all configuration folders under: "C:\ProgramData\Tecan\EVolution...\Configurations...\WashPrograms".
- The short names for washer programs cannot exceed eight characters.

5.10 Decontamination

- Option *After each step*: cannot be used for merged assays.
 - Workaround: Use decontamination after each tip use.

5.11 EVolution Studio

- *Instrument Wizard*: After changes have been done in the instrument definition (e.g. changing COM port) a dummy change has to be made in the Worktable Wizard to get the opportunity to save the worktable.
- *Labware wizard*: Usability remark to LiHa parameter x-offset and slanted labware:
 - If the labware is placed in a carrier, where the labware (e.g. tube) has a tilted position to the right side, the x-offset value is typically a negative value (LiHa position left from the center)
 - If the labware is placed in a carrier, where the labware (e.g. tube) has a tilted position to the left side, the x-offset value is typically a positive value (LiHa position right from the center)

5.12 Assay combinations

- It is not possible to combine more assays than available strips on one plate in one strip combination (e.g. 12 assays for single strips and 6 assays for double-row-strips).

5.13 Customized Start-up and Shut-Down steps

The use of Customized Start-up steps has to be enabled in the configuration. Please proceed as follows:

- Start Configure Customize Steps Editor and Create new Start-up / Shut-down steps
- Save the files in the directory *Configuration\GUI*
- Add the files to the configuration

For Start-up steps:

- Copy SynchronStartupStep files from InstallationData\GUI to *Configuration\GUI*
- Open files and remove the comments (`<!-- -->`) and text “Activate in case of startup steps” from this section:

```
<SynchronStep>
  <DisplayStep/>
  <Groups>
    <SequentialGroup>
      <Steps>
        <ProcessStep>
          <Name>DisplayCustomizedStartUpSteps</Name>
        </ProcessStep>
      </Steps>
      <HasPendingStep>>false</HasPendingStep>
    </SequentialGroup>
  </Groups>
</SynchronStep>
```

For Shut-down steps:

- Copy SynchronShutdownStep files from InstallationData\GUI to *Configuration\GUI*
- Open files and remove the comments (`<!-- -->`) and text “Activate in case of shut down steps” from this section:

```
<SynchronStep>
  <DisplayStep />
  <Groups>
    <SequentialGroup>
      <Steps>
        <ProcessStep>
          <Name>DisplayCustomizedShutDownSteps</Name>
        </ProcessStep>
      </Steps>
      <HasPendingStep>>false</HasPendingStep>
    </SequentialGroup>
  </Groups>
</SynchronStep>
```

6 Known issues and workarounds

6.1 Re-Use Plate

In rare cases, the plate layout can be mixed up when the feature “Reuse Plate” is used (e.g. for predilution plates). This happens only under a certain constellation of settings and user actions. The mix up can happen if the following points accrue:

- a) User action:
 1. A plate barcode could not be read; the operator decided to abort this plate and continues with other plates instead, which are already loaded on the instrument.

- b) Application settings:
 1. “Reuse Plate” is enabled (default: disabled)
 1. “Shopping list mode” is disabled (default: enabled)
 2. “Automatic switch to GetFromOperator” is enabled for cases when too few plates are available on the worktable is (default: enabled)
 3. The process is configured to use “Parallel Reagent Pipetting” (default: disabled)

6.2 Magellan

- QC Pac SW must not be installed on the same PC as Freedom EVOLution SW and Magellan SW.
- Magellan Constants: To activate Magellan Constants select “required” for them in Magellan, then they will be shown in EVOLution Run Time Controller and can be adapted.
- Magellan Constants: The handling of Magellan constants in its associated xml file may be corrupted if EVOLution Run Control or the Schedule Simulator is exited using the Task Manager. In this case the Magellan constants GUI panel is no longer displayed. If this happens, the ConstantsManagementData.xml and ConsistencyCheck.data should be deleted in the Session Data directory.

6.3 Profiling (selectable in Application Settings Control)

- Flexible Profiling for scheduling: Uses the number of pipetted wells instead of the number of processed samples. The matching of processes is based on:
 - the sequence of jobs
 - the sequence of commands within a certain job
- Standard Profiling Data and Flexible Profiling: Standard Profiling Data cannot be used for Flexible Profiling. After selecting Flexible Profiling the old database will be moved to the folder Profiling Backup at the beginning of the first run.
- Profiling Data in a human readable format can be found in the Output folder (Profiling Results.html). This file is updated after each run and is a summary of all entries in the database.

7 Known issues list

TFS #	Summary	Component	Workaround/ Comment
129188	Two Processes run on one plate (assay combinations). If one plate fails due to failed validation criteria in the Magellan results, both processes have overall status "fail". Both results cannot be transmitted to LIS.	Run Control	None
128576	Samples are erroneously assigned to assays when the assignment by the LIMS is modified The system is running three assays (DHT, LDL and ADG). The samples are assigned to assays via the LIS. When the operator is adjusting the LDL assignment afterwards, DHT assays takes over the LDL sample assignments. ADG is not affected.	LIS	After manually adjusting the LDL assignments, check the DHT assignments and correct them if necessary.
121579	Samples cannot be loaded on plates designed with the EVOLution Studio Labware Wizard	EVOLution Studio	Samples can only be loaded into well A1 of a newly created plate in the EVOLution Studio - Labware Wizard. The plate cannot be used as a sample source plate.
121575	Default recovery option wrongly stated as "Retry Fetch DiTi (at same position)" in RunControl whereas "Search for DiTi" is actually performed	Run Control	None
120722	LIS connection timeout after 15s, although 500s are defined in LISChannelConfig file	LIS	None
116681	There is in an issue where Collect&Zip cannot access some files and shows an error message that files are inaccessible.	Collect&Zip	Move the affected files to a different folder.
116520	Only one "final read" step can be defined in a process – if multiple "final reads" are added to one process, the html report will show the results of the first measurement and the parameters of the last measurement.	Process Editor	Define only one final read in a process.
112434	When a clot error handling requests a retry and there are no DiTis left on the worktable, it might cause a run abort due to unexpected DiTi reload.	EVOLution Studio	Load more DiTis than required by planning for unexpected errors.
112433	If plates are not all assigned to all available MTP carriers on the worktable, it might happen that a LiHa job and plate load are planned in parallel on the same MTP carrier, which might cause a run abort.	EVOLution Studio	All plates shall be allowed on all MTP carriers

TFS #	Summary	Component	Workaround/ Comment
110335	After changing a plate type in the Consumable Data Editor, a dummy change in E. Studio must be performed, so that the changes apply correctly and the new plate type is used.	Consumable Data Editor	Dummy change in Evolution Studio required
108057	Wrong maintenance status on Process Report. Maintenance status for weekly maintenance is not showing overdue on day 14 of pending weekly maintenance because of a software bug. It displays overdue on days 7 to 13 but should also on day 14.	Run Control	None
106529	In case one tip has been permanently disabled by the system due to a "subdevice error", in the following reagent pipetting steps single rows or individual wells might not be pipetted. In the report the error 'Pipetting Omitted due to Time critical optimization after LiHaError' is stated for the affected wells.	Run Control	None
106313	If "Predicted Sample Count" is active, in some scenarios RunControl still asks to reload strip plates	Planning	None
105360	When using detection mode "detect with first tip, move other to same position" and a clot was detected on tip 1 and corrected by the user, it might happen that in the report it states wrongly "clot error recovery" for the other tips as well.	Run Control	None
104458	During loading the software might ask to load more liquid than the capacity volume of the consumables due to a software bug in planning.	Planning	None
102674	Labware wizard created plate without barcode cannot be used in the reader	Run Control	Define a barcode (Labware Wizard check box)
101398	Failed Multiplate Transfer after sample reload	Planning	None
96842	If enable edit barcode option is set, it is not possible to continue with predilution in tubes, the run control gets into an unhandled error/ undefined state. It happens only if all three settings are there (not get from operator, not predilution plate, no enable edit barcode option).	Run Control	None
91897	UMS Version displayed incorrectly in Control Panel "Apps and feature".	none	None
78216	CleanInsideFixed Tips (EoD Maintenance) is performed different when some tips are inactivated	Planning	None
77892	RoMa crashes into LiHa if MTP carriers are on the left-hand side of the wash station	Planning	MTP Carriers shall only be placed on the right-hand side of the wash station
70930	copy pasted cavities in Labware wizard cannot be shifted (they only shift if copy template is shifted)	EVolution Studio	None

TFS #	Summary	Component	Workaround/ Comment
68942	Sample section blocked after NullReference Exception during continuous loading (release sample section not executed)	Run Control	None
68429	Application Settings in the log files lists only the default settings, not the LIS.channel.config ones	Logging	None
65718	Time settings in Windows makes the GUI main menu distorted	Run Control	None
65496	Parallel sample pipetting: Only first plate has an error but first and second plate fail	Run Control	None
64158	Persistence data leads to incorrect abort of a process	Run Control	None
63953	Worktable editor: save worktable as does not save the worktable with a new filename	Worktable Editor	None
63543	Test for sample not selected from valid worklist	Planning	None
62650	Run Control hangs if run is aborted upon system liquid errors during init	Run Control	None
62648	Liquids are not displayed in 25ml troughs in EStudio and WTSim	EVOLution Studio	None
60583	Error handling is wrong for used plate with get from operator in process	Run Control	None
60184	Carrier with 25ml troughs and their adapters has to be loaded, despite having deselected them during Initial load	Run Control	None
60181	Reload Ditis window is not shown	Run Control	None
60179	in Evolution Studio the Ditis can be put into the false Diti box	EVOLution Studio	None
58389	PDE failed to open reader method	PDE	None
58386	No Calibration Volume calculated/pipetted for embedded decontamination	Planning	None
58383	EVOLution Studio: decontamination liquid for volume pre-check with decontamination not mentioned	EVOLution Studio	None
57728	Worklist problems on Xmatch test: old donors requested again	Worklist	None
57411	Selection change for work orders changes the order of samples (if samples are in plates)	Run Control	None
56554	Cannot rescan samples in a plate	Run Control	None
55459	LiHA user Errorhandling "Abort Process" does not clean and/or decontaminate fixed tips	LiHa handling	None
52511	Plate is used beyond defined wells	Planning layout	None
52432	PosID3 common device error 5 without error message and abort later	Run Control	None
52428	Volume table is not created in Win7	EVOLution Studio	None
47420	Error message in plate report not correct	Reporting	None

TFS #	Summary	Component	Workaround/ Comment
32386	Deactivate Liha channel does not solve error "Expected Tip Config and reported Tip Config do not match"	Run Control	None
32385	Predilution rack scan error handling	Run Control	None