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Metrohm IC Driver 2.2 for Empower™

Release Notes

1 Purpose

This document describes the differences between the new software version **Metrohm IC Driver 2.2 for Empower™** and its predecessor **Metrohm IC Driver 2.1 for Empower™**.

This release of **Metrohm IC Driver 2.2 for Empower™** replaces all previous releases.

2 New features

New instruments

- Integration of instrument **947 Professional UV/VIS Detector Vario** (2.947.0010, 2.947.0020)
- Integration of instrument **919 IC Autosampler plus** (2.919.0020)
- Integration of instrument **940 Professional IC Vario ONE/HPG** (2.940.1140)
- Integration of instrument **940 Professional IC Vario ONE/SeS/PP/Prep 1** (2.940.1510)

Instrument connection

- At start-up, the Metrohm IC Driver for Empower™ checks which instruments are connected and which modules they contain. The Metrohm IC Driver for Empower™ compares the present modules with the modules that should be present according to the article number of the instrument.
  A message appears in the **Message Center** if the connected instruments do not match the selected configuration.
- During initialization phase the instrument status in the status panel is moving back and forth to indicate that the Metrohm IC Driver for Empower™ is establishing a connection.

3 Improvements

Installation

- The driver for the 889 IC Sample Center is installed automatically during the installation of the Metrohm IC Driver 2.2 for Empower™.
- The update of the Metrohm IC Driver for Empower™ from a previous version to the latest version has been facilitated.

- Silent installation of the Metrohm IC Driver for Empower™ is possible.

Gradient

- In a gradient, a warning appears if the total gradient ratio does not equal 100%.
- In a gradient, the steps are sorted in chronological order automatically.
- In a time program, only one high-pressure gradient is possible. It is possible to run a high-pressure gradient and a Dose-in gradient in the same time program.
  If you have created a method with 2 high-pressure gradient commands in a previous version of the Metrohm IC Driver for Empower™, it is not possible to run the method in the Metrohm IC Driver 2.2 for Empower™.
- The gradient flow can be shown in the status panel. Therefore, select **Grad Flow (ml/min)** in the **Customize** window.

Various

- The temperature of the conductivity detector is displayed in the status panel.
- If an USB communication error occurred in previous versions of the Metrohm IC Driver for Empower™, data acquisition was stopped without notification. Now, a message appears in the message center. If a fatal USB communication error occurs, the run is aborted. If a non-fatal USB communication error occurs, the run is continued. The message in the message center contains information whether the error is fatal or non-fatal.

4 Fixed bugs

Gradient

- High-pressure pump 1 had to be part of a high-pressure gradient. Otherwise, a high-pressure gradient did not work.
- In an instrument method with a high-pressure gradient, the target flow was not always reached within the defined start-up time.
- The time program did not carry out gradients according to the pump assignement in the instrument parameters. Regardless of the pump assignement, pump A was always pump 1. Pump B was always pump 2.
- Occasionally, the status panel displayed a wrong flowrate (either 0.0 ml/min or impossibly high) of high-pressure gradient pumps. Sometimes, the affected pumps were not controllable anymore.
- Occasionally, the status panel displayed an extremely low pressure for high-pressure gradient pumps. The system had to be rebooted.
- In a high-pressure gradient with a start-up time of ≥ 4 minutes and different proportions in the mixing ratio for each eluent, the flow of the individual pumps was occasionally slightly wrong.
- In a gradient where the pumps were used one after the other at 100%, each pump was considered a separate gradient instead of 1 gradient with several pumps. Each gradient was started separately.
- A Dose-in gradient with linear dosing from 0% was not executed correctly. It dosed more than 0%.
- The combination of Dose-in gradient and dosino regeneration with MSM led to random aborts.

- During performance validation of the high-pressure gradient, the Metrohm IC Driver for Empower™ could not execute the gradient steps. The sequence got stuck.

858 Professional IC Sample Processor

- After initializing the 858 Professional Sample Processor, the following commands led to an instrument failure:
  - Lift move (manual control)
  - Arm move (manual control)
  - Lift command (time program)
  - Swing command (time program)
- The 858 Professional Sample Processor 2.858.0010 was recognized as 2.858.0020. Therefore, a peristaltic pump that did not exist in the instrument could be operated in the manual control and in the method.
- Sometimes, the instrument status was idle although the Metrohm IC Driver for Empower™ did not recognize the 858 Professional Sample Processor.

889 IC Sample Center

- If the 889 IC Sample Center was disconnected, the status panel still showed the instrument status **Idle**.
  Now, the Metrohm IC Driver for Empower™ tries to reconnect after a disconnect. The instrument status is not **Idle** and there is a message in the **Message Center**.
- If you reset the 889 IC Sample Center after an instrument failure due to an emtpy rack position, the instrument stayed in **ERROR** status. The rack was not visible in manual control.

Pressure recording

- In a system with a 940 Professional IC Vario and 2 high-pressure pumps, the time program command **Measure pressure** did not always record the pressure of both pumps. The problem was related to the presence of detectors. If a detector was connected to socket 1 on the backside of the IC, the pressure was only recorded for pump 1. If a detector was connected to socket 2, the pressure was only recorded for pump 2. If detectors were connected to both sockets, the pressure was recorded for both pumps.
- In a system with several high-pressure pumps and with Feature Release 5 of Empower™, only the pressure of pump 1 was recorded.

Various

- Datapoints are transferred with 32-bit time stamps. If the instrument was running uninterrupted, a counter overflow occurred approximately every 5 days. If the counter overflow occurred during data acquisition, it caused an instrument failure. The sequence was stopped.
- In a post run report, the instrument types started with 0 instead of 2 (e.g. 0940.2500 instead of 2.940.2500)
- The installer did not always delete all files when uninstalling the Metrohm IC Driver for Empower™.

5 Known bugs

Errors and instrument failures

- A script error occurs irregularly in the **Run Samples** section of dual IC systems.
- When using a shutdown method at the end of a sequence in a dual system, an instrument failure occurs.
- If you switch on an instrument with conductivity detector and start Empower™, sometimes an instrument failure occurs and the following message appears in the **Message Center**: "An error occurred in conductivity detector of the IC." If you restart the instrument and Empower™, the system works correctly.

Various

- In an offline method, the number of detectors is configured automatically. It is not possible to adjust this configuration.
- In the manual control of the 941 Eluent Production Module, it is not possible to produce more than one eluent at the same time.
- If you increase the debug level and start the Metrohm IC Driver for Empower™ afterwards, the instrument might not become **IDLE**. Therefore, only increase the debug level, after the instrument is **IDLE**.
- If you monitor the flow of a high-pressure gradient pump with a start flow > 0, the flow in the status panel slightly differs from the flow in the method. Once the run starts, the pump flow rate is correct.

6 Compatibility

6.1 Compatibility with Empower™

The Metrohm IC Driver 2.2 for Empower™ is compatible with the following Empower™ versions:

- Empower™ 3 FR4
- Empower™ 3 FR5
- Empower™ 3.6.0
- Empower™ 3.6.1
- Empower™ 3.7.0
- Empower™ 3.8.0.1
- Empower™ 3.8.1
- Empower™ 3.9.0
- Empower™ 3.10.0

6.2 Compatibility with Windows

The Metrohm IC Driver 2.2 for Empower™ is compatible with the following Windows versions:

- with Empower™ 3 FR4
  - 64-bit version of Windows 7
  - 64-bit version of Windows 10
  - Windows Server 2012 R2
- with Empower™ 3 FR5
  - 64-bit version of Windows 10
  - Windows Server 2016
- with Empower™ 3.6.0
  - 64-bit version of Windows 10
  - Windows Server 2016
- with Empower™ 3.6.1
  - 64-bit version of Windows 10
  - Windows Server 2016
- with Empower™ 3.7.0
  - 64-bit version of Windows 10
  - 64-bit version of Windows 11
  - Windows Server 2019
- with Empower™ 3.8.0.1
  - 64-bit version of Windows 10
  - 64-bit version of Windows 11
  - Windows Server 2019
- with Empower™ 3.8.1
  - 64-bit version of Windows 10
  - 64-bit version of Windows 11
  - Windows Server 2019
- with Empower™ 3.9.0
  - Windows 10 Professional or Enterprise, 64-bit version 22H2
  - Windows 11 Professional or Enterprise, version 24H2
  - Windows Server 2019
  - Windows Server 2022
- with Empower™ 3.10.0
  - Windows 10 Professional or Enterprise, 64-bit version 22H2
  - Windows 11 Professional or Enterprise, version 24H2
  - Windows Server 2019
  - Windows Server 2022

NOTE

Refer to Empower™ CDS software release notes for the operating system compatibility.