

1 Purpose

This document describes the differences between the new software version **tiamo 2.3** and its predecessor **tiamo 2.2**.

2 New features

General

tiamo now also supports the device activation with 64-bit operating systems and is thus completely 64-bit-capable.

New instruments

- 089 Photometer

New instrument firmware

- 5.089.0010
- 5.814.0024
- 5.815.0025
- 5.846.0021
- 5.855.0013
- 5.856.0021
- 5.857.0021
- 5.867.0021
- 5.874.0011
- 5.888.0021
- 5.890.0021
- 5.901.0021
- 5.902.0021
- 5.904.0021
- 5.905.0021
- 5.906.0021
- 5.907.0021

New or updated commands

- **MET Cond**: Command for monotonic equivalence point titrations with conductometric measurement.
- **MEAS TMF**: Command for the determination of the transmission factor of a measurement configuration.

- **MEAS Opt:** Command for extinction measurements (new for the 089 Photometer).
- **MEAS Opt Conc:** Command for concentration measurements (direct measurement) with spectrometer or photometer.
- **CAL LOOP Opt:** Loop command for the calibration of colorimetric sensors, used together with the command **CAL MEAS Opt**.
- **CAL MEAS Opt:** Command for measuring standard solutions for the calibration of colorimetric sensors, used together with the command **CAL LOOP Opt**.
- **ELT LOOP:** Loop command for the electrode test (test of pH electrodes), used together with the command **ELT MEAS**.
- **ELT MEAS:** Command for measuring calibration buffers for the electrode test (test of pH electrodes), used together with the command **ELT LOOP**.

New features in the program part Database

- The determination comment is available as an additional column in the determination overview; it is also possible to search for it and to generate a filter for this purpose.

New features in the program part Method

- There are method templates available for **MET Ipol**, **MET Cond**, **STDADD auto**, **CAL Cond** and **ELT LOOP**.
- Drift-controlled measurements are now possible with the Avantes spectrometer.
- In the case of commands with conditioning, it is possible to control the sample addition time manually ("infinite" sample addition time).
- The command **MEAS Opt** has a tab **Additional measured values**.

New features in the program part Configuration

- New subwindow **Colorimetric sensors**. They are used in the commands **CAL MEAS Opt** and **MEAS Opt Conc**.
- In the configuration of the sample changers, a position can be defined on the tab **Initializing position** which is automatically moved to when initializing the sample changer.
- One can define electrode type templates for the electrode test, of which three are supplied in the default settings (**Gel**, **Non-aqueous**, **Standard**).

3 Improvements

General

For the Avantes spectrometer, the measuring range of **200 ... 1100 nm** has been expanded to **100 ... 2000 nm**. This affects the commands **MEAS Spec**, **MEAS Opt**, **CAL Spec** and the manual control.

Program part Database

- In the subwindow **Results**, the variables used more than once in calculations will be identified only once.

Program part Method

- In the command **CAL LOOP pH**, the selection for the parameter **Number of buffers** has been raised from **5** to **9**.
- For an unambiguous and unmistakable recognition of the Merck buffers, the name of the previously used buffer has been changed from **Merck** to **Merck CertiPUR 20°C/Titrisol** in the command **CAL LOOP pH**.
- The determination ID is available as the system variable **SV.DID**.
- The term "Electrode test" for commands with Ipol/Upol has been replaced by **Electrode check**. The electrode test determines the quality of the electrodes with the commands **ELT LOOP** and **ELT MEAS**, whereas the electrode check looks only for the presence of the electrode.
- With the command **MEAS Cond**, the option **Measurement without drift control** is the new default setting on the tab **Measuring parameters**.

Program part Configuration

- The number of calibration buffers of its own has been raised in the configuration from **5** to **9**. In order to ensure robust recognition, however, the clearance between the individual buffers must be at least one pH unit.
- A new feature is that the **Settings according to 21 CFR Part 11** can now be set by means of a single check box; an audit trail entry is also generated when the check box is activated and deactivated. The elements affected by this setting become inactive.
- The determination ID can be copied in the program part **Configuration**. It can be found at the following locations:
 - in the dialog window **Properties – Avantes Spectrometer** on the tabs **Calibration**, **Dark spectrum** and **Reference spectrum**.
 - in the dialog window **Sample solution (TC conductivity) - %1** on the tab **TC data**.
 - in the dialog window **Colorimetric sensor - %1** on the tab **Calibration data**.

Program part Manual control

A new feature is that the parameters **Shift rate**, **Lift rate** and **Swing rate** are now to be found on the tab **Move** for the manual operation of the sample changer (previously: tab **General**).

4 Fixed bugs and problems

Program part Workplace

- If the monitoring of the titer validity, the common variable, the global variable or the calibration data had expired, then it was not possible to redetermine the titer, the common variable or the global variable via the **CALC** command ("Save result as...") or to carry out a calibration (the error was rectified previously in tiamo 2.2 Patch 1).
- The program crashed when running MET determinations with Titrimos (the error was rectified previously in tiamo 2.2 Patch 1).

- If the beaker test was enabled and the action **Cancel determination and series** was selected in the **MOVE** command for the beaker test, then the error track was not being run through when a beaker was missing (the error was rectified previously in tiamo 2.2 Patch 1).
- Communications problems sometimes occurred with the 855 Robotic Titro-sampler during the run of a determination with the command **STDADD auto**. The problem has been solved with a new device firmware.
- If the action **Cancel determination and series** was activated in the command **MOVE** under **Beaker test** and if a beaker or a vial was missing on the rack during the sequence, then the message **016-002 Beaker missing** would correctly appear. The series was however interrupted without the error track being run through.
- If work was performed with the start volume in connection with the command **TET**, then this start volume would be ignored in the evaluation.
- A chip (IDU/IEU) with invalid data sometimes led to a crash (e.g. in connection with the titer assignment).
- If a determination series was started and a new workplace was created during the determination, the currently running determination was repeated once again.
- If a determination was started in which a result was to be saved both as a common variable and as a global variable (whereby only the common variable and not the global variable had been defined in the configuration), then the message **019-108 Global variable not found** would appear. The common variable would however remain reserved in the configuration and would no longer be enabled.
- Determinations could still be started, even if the ACTUAL statistic counter in the subwindow **Run** was greater than the NOMINAL statistic counter.
- During a KFC determination in which a stop time was defined for the conditioning, tiamo would "freeze up" after the expiration of the stop time.
- If one wished to edit a line in the sample data table (e.g., in order to change a sample size) in situations where the method group was different from the one in the last line, then the method was replaced automatically by the first method in the last method group.
- If a waiting time was specified in a KFC method as a start condition (**Pause**) and if a determination series was started with the method, then the time was depicted correctly in the live display only in the first run-through. This had however no effect on the sequence.
- In the command **START**, **Number** or **Date/Time** was selected on the tab **Method variables** for **IDx** as the type, while at the same time the check box **Check at start** was also active. If the **IDx** fields were still empty at the start of the determination, then the message **014-152 Field empty** would appear after the start of the conditioning.
- Determinations with the command **STAT pH** with monitoring (action: **Wait for [Continue]**) did not function correctly.
- The Round() function supplied incorrect results under certain conditions.

Formula	Result	
Round(1000 * 10 / 50)/1000	0.00	wrong
(Round(1000 * 10 / 50)/1000)	0.20	right

- If the iConnect was disconnected during a measurement, then the message **Unhandled error** would appear.
- If a method was comprised of several tracks with **WAIT** commands in which one track called up the next with a command **CALL**, then this sometimes led to deadlocks.

Program part Database

- The table was not displayed in the dialog window **Reprocessing** on the tab **Statistics** (the error was rectified previously in tiamo 2.2 Patch 1).
- Problems sometimes arose in connection with titrations with conditioning in cases where more than one database was entered in the command **DATA-BASE**.
- If a track (e.g. which contained a command **STAT pH**) was run through more than once, then all of the curves were displayed in the database, even if the function **Delete old data** was activated.
- The break points found were not output in the database in the subwindow **Results** on the tab **Raw data** with the command **MEAS Opt**.
- The x smoothing was not applied on the y1 axis in the database with the properties of the curve in the dialog window **Curve evaluation**.
- If the sample size was changed and a determination was recalculated, then even though the modification was applied everywhere in the determination, this was still not the case in the statistical overview of the report.
- Method variables were always checked during recalculation, even if the setting **Check at start** was not activated (command **START**, tab **Method variables**).
- Crashes sometimes occurred during recalculation due to multithreading problems.
- With the command **MEAS Cond**, certain variables with only 2 decimal points were identified in the database in the subwindow **Results** on the tab **Raw data**, whereas the measured values with 4 decimal places were displayed in the measuring point list.
- The backup did not function when recovery was switched off. As a new feature, this will be checked and reactivated each time a database is opened in the event that it was switched off.
- The modification of a method variable, for example, led to the message **015-149 Missing data** and to a stop when a pH calibration was being recalculated.
- It was not possible to restore databases from tiamo 1.x.
- With the command **MEAS Upol** the command variable **EME** was output with only one decimal point in the raw data.
- Inconsistent data sometimes arose in isolated incidents. Possible symptoms of this were a database which began to slow down and a massive memory consumption.

Program part Method

- The non-existent variable **ERC** was removed from the **MET** commands (it was always **invalid**) and replaced by **DME** (measured value differential).

- It sometimes happened with thermometric titration that the first derivative ran through a steep rise at the beginning, which meant that the stop criterion **Stop slope** was already fulfilled. In order to avoid this, the field **Stop slope active after** was introduced on the tab **Stop conditions** in connection with the command **TET**.
- The field **Flow rate** was absent with the method parameter report for the command **FLOW**.
- If the device assignment was modified in connection with the command **LQH**, after the port had been redefined on the tab **Parameters**, then the port changed back to the default value.
- The selection of the thermoprobes was listed twice under **Sensor** in connection with the command **TET**.

Program part Configuration

- It sometimes happened that firmware updates could not be successfully completed (the update process came to a halt).
- If the axial distance was redefined and tiemo shut down and restarted with sample changers, then the axial distance was reset to the previous value.
- If **Password monitoring by Windows** was set in the security settings and if the check box **Maximum number of login attempts** was activated, then the number of incorrect login attempts was not updated at the time of Windows login.
- The measuring input was not implemented correctly in the configuration with non-intelligent sensors.
- A crash could be caused when creating common and global variables if one had selected **Text** or **Date/Time** as the type and then pressed on the tab **Limits**.
- Intelligent units (dosing units, exchange units and sensors) which were still connected could be overwritten during importing.
- If the password was modified directly from the login dialog, then "zero" was entered as the full name in the audit trail.
- In the device configuration of the Avantes spectrometer, the field **Sensitivity** on the tab **Settings** could be edited, even though the device was not connected.
- If one wished to delete the entries after the archiving of a large audit trail (e.g. with more than 100,000 entries), this would take a very long time.

5 Compliance

The current software version does not contain any modifications that affect conformity of **tiamo** regarding 21 CFR Part 11 and GAMP.

Herisau, 24 June, 2011



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