

These release notes are describing changes in LIMES 2000 since version 16.0607.864. Topics with regard to measurements of both lighting and automotive lighting devices are covered, the latter mainly based on GO-H goniophotometers.

Installation

LMTAO version 1.2, now with build number 62 or higher is required for LIMES 2000 rev. 17.02 28.883. If the LMTAO library is not installed or shows a wrong version, Limes and LimesControl will not start. LMTAO is available for download on the LMT homepage.

Temperature measurements (Lighting application)

CIE standard S025 describing *Test Methods for LED Lamps, LED Luminaires and LED Modules* places demands regarding the ambient temperature in the vicinity of the device under test.

Furthermore, when measuring LED modules, a surface temperature t_p at a dedicated point of the module or its heatsink may be monitored.

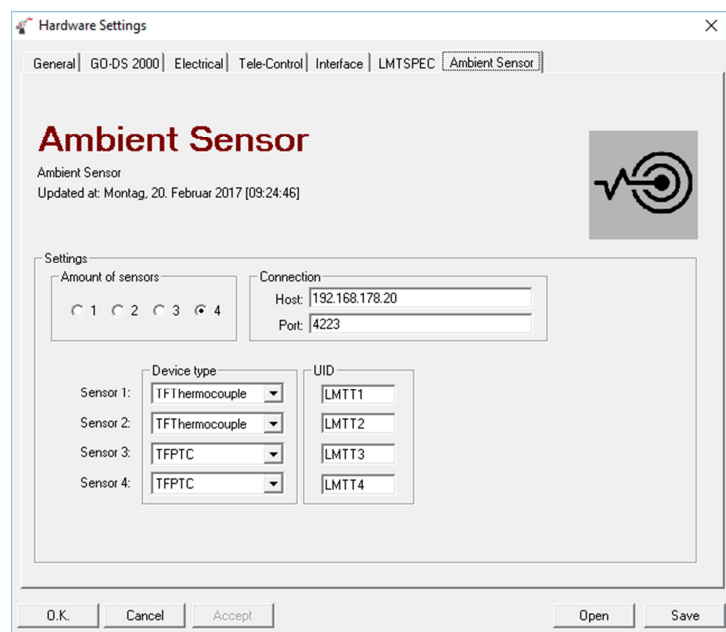
Therefore, LMT has added ambient sensors to its goniophotometric measurements systems which are accessible via LIMES 2000.

Currently, the feature is available for lighting devices measured with GO-DS, GO-V and GO-R goniophotometers.

The standard setup includes up to 4 different ambient sensors which are configured via the *options/ hardware* menu (see picture above). According to the configuration the user can select the individual device type. For the time being, thermocouples or PT 100 elements are listed.

Data from a calibration certificate are entered into the Limes 2000 configuration file in order to reduce the initial measurement uncertainty of the sensors, thus meeting the requirements of CIE S025 with regard to the temperature tolerance interval.

Temperature data can be recorded both for cone measurements and C-plane scans. A table may be printed to document the behaviour of a device specific temperature during the measurement (in addition to the ambient temperature sensor data).



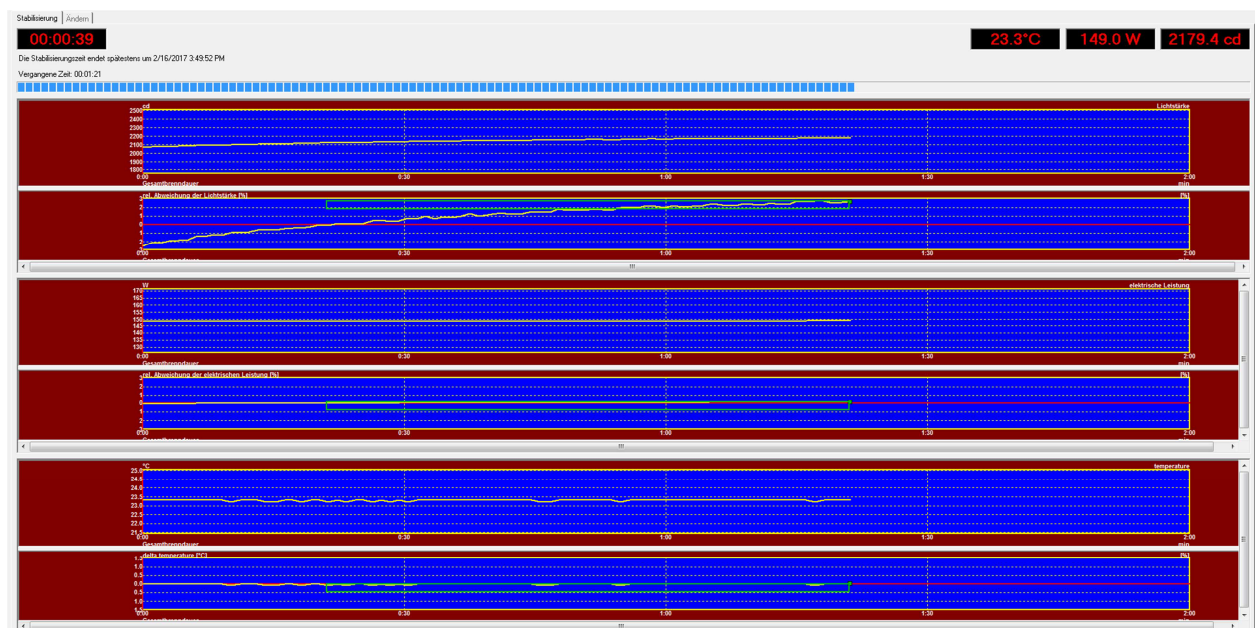
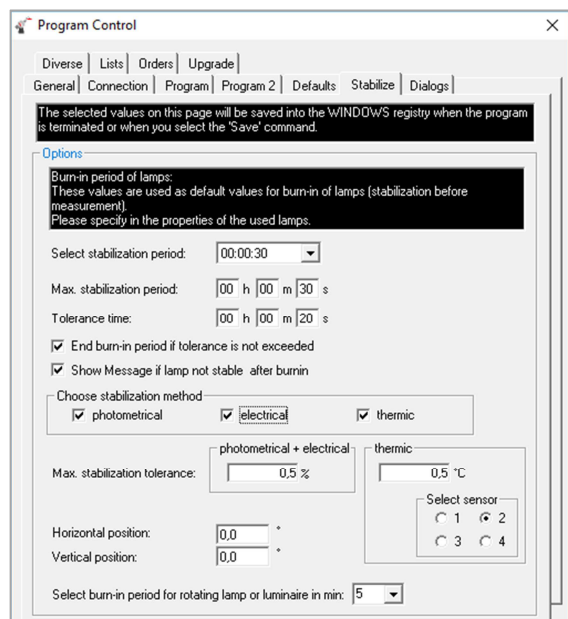
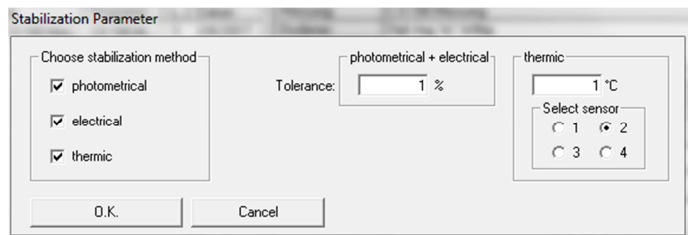
Stabilisation

In this software revision it is now possible to use the temperature readout of an ambient sensor for thermal stabilisation of the DUT. This can be done in addition to photometrical and electrical values.

Therefore, if the system is equipped with ambient sensor device hardware, the *stabilize* dialogue has been extended (see above) and the user can choose from photometric, electrical or thermal values to determine which combination of stabilisation methods shall be utilised.

Default values can be set in the *Stabilize* Tab within the *Options/Program Control* menu (picture to the right). Temperature stabilisation tolerance is given in absolute values while for electrical and photometrical stabilisation the tolerance is given in percent.

The process can also be monitored within the stabilisation diagram (see below). In case the stabilisation data are saved, the values can be displayed in a table and can be added to the report. Export as a csv or txt file is possible as well.



Ambient sensor stability during stabilisation has been improved by inserting the reconnect functionality. Some customers reported that the connection to the ambient sensor is lost during long measurements. If this happens, the system tries to reconnect and in case of success continues data acquisition.

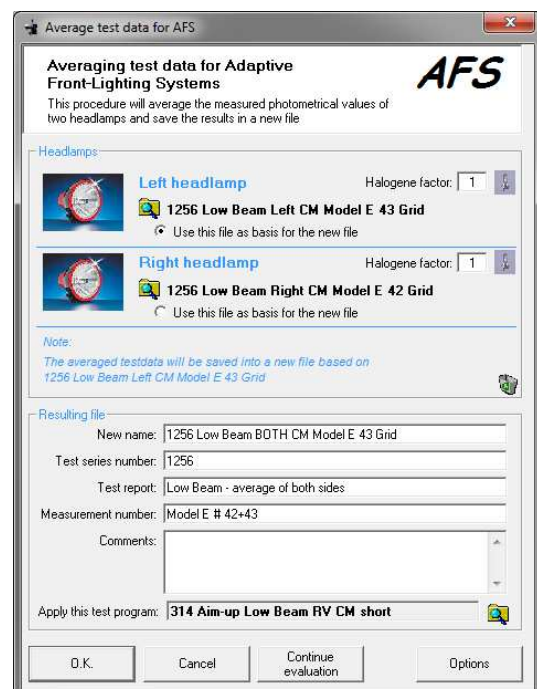
Symmetrisation (Lighting application)

- The function *Symmetry* is called quite often and if the distribution cannot be symmetrised, the *correction failed* message was sometimes displayed many times. The bug was fixed and the correction failure message will be shown only once for each false distribution.
- The correction for Cone measurements is performed in the same way as for C-plane measurements.
- If in the past a report like isoline diagram or cone diagram was created via select protocols, the data were not plotted with the desired symmetry data. The bug was fixed.
- In cone diagrams the angle shown in the textbox of a diagram was displayed wrong, e.g. Gamma was printed instead of C and in addition the angle value was incorrect (for instance 270° instead of 90°). Both items were corrected.

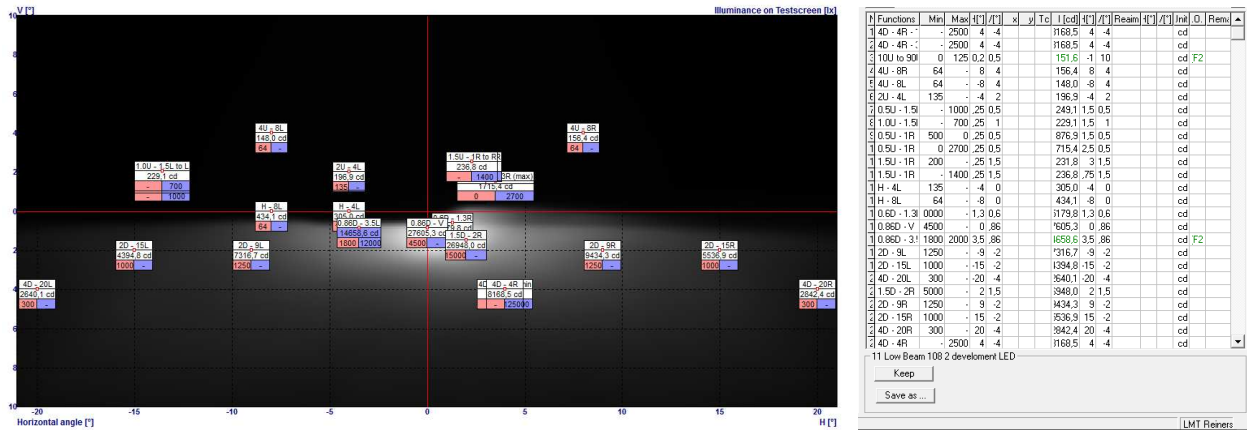
AFS evaluation (Automotive application)

The dialogue for averaging the properties of AFS headlamps based on data from left and right headlamp was very time consuming in the past. It was re-arranged in order to use this feature in a more efficient way. These are the changes:

- The new data which are generated in the process are not anymore saved manually, but can be saved automatically.
If the target filename already exists, the user will be asked if the file shall be overwritten. Otherwise, the data will be stored directly, thus avoiding any additional dialogue.
- Header information of the target file can be already set in the AFS dialogue in advance and will be saved into the new test data.
- A new button named “*continue evaluation*” was created in order to avoid closing the dialogue. This allows switching directly to the next data set for averaging of two headlamps without the need for opening the menu again.
- Program selection for evaluation of the averaged grid data is now accelerated by directly opening the database.



A bug which was introduced with revision 851 was fixed. The evaluation of grid data based on a pre-defined program does not anymore lead to a crash (see below).



Flash measurements

The current revision has been modified in order to accept as well data from the FlashSys successor SoLiT *Flash*.

- In addition to different evaluation algorithms of effective intensity according to Blondel-Rey, Schmidt-Clausen (form-factor) or Allard the user has now the ability to choose as well flash energy in program data. Flash energy is calculated from the integral of luminous intensity for one cycle and needed for evaluation according to SAE standards. The unit is $\text{cd} \cdot \text{s}$.
- A new “intermediate transfer timeout” has been introduced for flash measurements to account for situations in which no response is available from the flash program.

Power supplies

A new DC power source (Keysight/HP 6675A) with SCPI command set was added to the list of available DC power supplies within Limes 2000. During implementation it was observed that for similar instruments from HP (6032A, HP 6674A) the output ON/Off commands were not properly implemented when using the SCPI command set. The bug was fixed.

Miscellaneous

- During measurements using the spectrometer it was not possible to stop the program flow while LimesControl was waiting for the spectrometer response. This was changed.
- In GO-H 800 systems the offset of line scans from left and right side is now placed correctly again.
- The fast C3300 colorimeter has been introduced for integrating sphere measurements. Formerly, only the C1210 could be used.

- Export of geometry data for certain file formats was corrected. Now dimensions are exported in meter instead of millimetre.
- A checkbox in the joystick dialogue was missing. After re-arranging checkboxes the user can again (de-)activate “double click for CCT moving to home position”.