O2k-Manual: DatLab 7.4
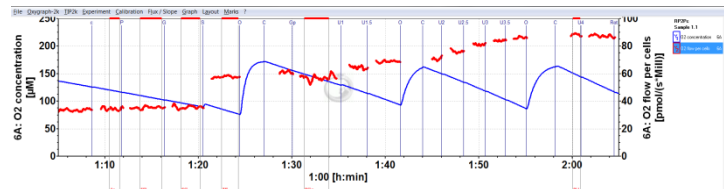
DatLab 7.4 guide

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Contents

1.   General information

This guide introduces features of **DatLab 7.4** which presents an integral component for high-resolution respirometry (HRR). For specific applications of DatLab, see:

» MiPNet22.11 O2k-FluoRespirometer manual
» MiPNet06.03A O2k Quality Control 1: Polarographic oxygen sensors and accuracy of calibration
» MiPNet14.06E O2k Quality Control 2: Instrumental oxygen background correction and accuracy of oxygen flux
» MiPNet24.06 DatLab O_2 flux analysis: real-time
» MiPNet12.10 Titration-Injection microPump, TIP2k
» MiPNet17.05 O2k-Fluo LED2-Module
» MiPNet15.03 O2k-MultiSensor-ISE
» MiPNet15.05 NO-manual

The following sections are a guide through the menu bar displayed in DatLab 7.4 software:
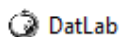
DatLab

File Oroboros O2k TIP2k Protocols Experiment Calibration Flux / Slope Graph Layout Marks ?

2.   File

- **Open Ctrl+O** Left mouse click Open DLD file to open a previously saved **D**at**L**ab **D**ata file. An additional DLD file can only be opened by starting a separate DatLab session.
- **Close Ctrl+F4** Close a DLD file. By doing so the window '*Save changes to file*?' pops up offering the options to close the file after saving the changes, or to close the file without saving any modifications on the currently open file.
- **Save Ctrl+S** Save any changes made by overwriting the currently open file, specifically changes related to set calibrations, experimental protocol, marks, events, and layout. Such changes do not affect the raw data of the experiment.
  Temporary backup files are generated by DatLab 7.4 in the current user's temp directory, indicated by the extension 'tmp.$$$' in the file name. These files are retained only if the PC has failed during data analysis. During data acquisition the data are continuously saved, bypassing the need to create backup files under these conditions.
- **Save and disconnect** Stop data acquisition and disconnect from the O2k (MiPNet22.11).
- **Save as…** Save the file under a different file name and/or under a different directory.
- **File search Ctrl+F** displays a list of all files labelled by the experimental code in a selected directory (see Experiment \ Edit F3). Click on the file name to preview the protocol.
- **Delete** To delete a file containing no useful data (easily when viewing the traces). Option only available when disconnected from the O2k.
- **Import**
  DatLab templates can be imported for O2k-setups, graph layouts, mark names, TIP2k setups and marks statistics configurations.
- **Export**
  A (B): Export DL-Protocol User (*.DLPU): Fixed sequence of events and marks can be changed (Skipped/Added) in a SUIT protocol by the user. Text, instructions, concentrations and titration volumes of injections in a specific DL-Protocol can be edited and saved as **user-specific DL-Protocol.**
  » Export DL-Protocol User (*.DLPU)

  ↩Clip Export (*.DLPU)

  Data to text file (*.csv) exports plots and events to a text file for further use in Excel and other programs compatible with .csv extension.
  Events to text file (*.csv) exports all information in Events to a text file (*.csv). This file may be used as a protocol, including the comments in the Events.
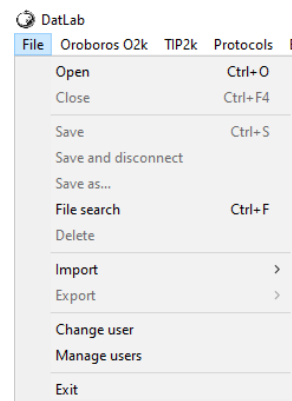
One channel to DatLab 2 analysis exports the O2 raw signal to a DatLab 2 file (*.DLR); e.g. for O2 kinetics in DatLab 2.
- **Ch**ange user: Enter the name to alter the username.
- **M**anage users: Rename or delete users.
- **E**xit: Exit DatLab.

3.   Oroboros O2k

- **O2k configuration:** Select or deselect channels that are not actually used and enter sensor numbers. With the O2k-FluoRespirometer (O2k-Series H), the serial numbers of the Smart Fluo-Sensors are shown automatically under [Amperometric, Amp]
  » MiPNet22.11 O2k-FluoRespirometer manual
- **O2k channel labels:** Change default channel labels.
- **O2k-control** F7 : Control the O2k-operation mode. » MiPNet22.11 O2k-FluoRespirometer manual
- **St**irrer A (B) on/off F11 (F12): Stirrers in chamber A or B are switched on/off.
- **Sti**rrer test F9 : Stirrers are stopped intermittently (default: 30 s) for a stirrer test. » MiPNet06.03 POS-Calibration SOP
- **Il**lumination on/off F10 : The illumination in both chambers is switched on/off. This illumination must be distinguished from light introduced into the chambers by LEDs for the purpose of spectrophotometric and fluorometric measurements. For these, the internal illumination must be switched off.
- **Manage setups:** Setups can be renamed or deleted.
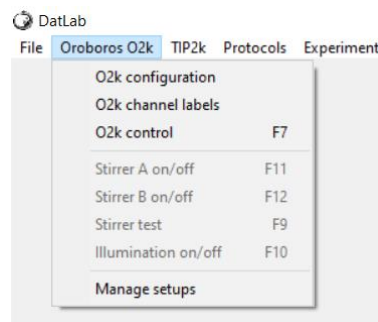
4.   TIP2k

- **TIP2k control** F8 : Control the TIP2k operation mode.
- **Manage setups**: Setups can be renamed or deleted.
  » MiPNet12.10 TIP2k-Manual
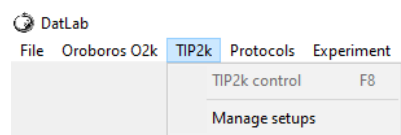
5.   Protocols

- **A (B): Run DL-Protocol / Set O2 limit** opens a window to assign DL-Protocols to O2k-chamber A or B, or both and to set a warning for lower O2 limit. The same window pops up after connecting to the O2k.
- **Sh**ow DL-Protocol can be check-marked (✓) to hide or show the DL-Protocol window.
- **Sy**nchronous DL-Protocol events: This option is only available when the same DL-Protocol is selected (in 'Set DL-Protocol / O2 limit') for chamber A
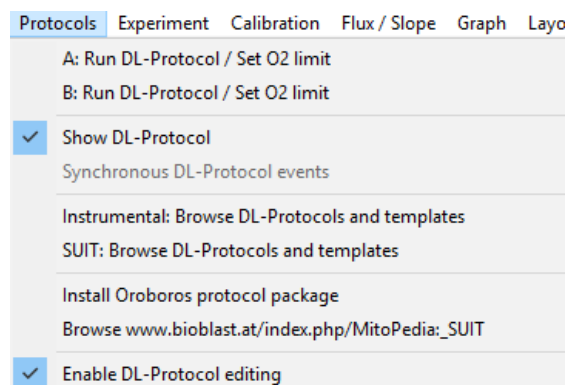
and B. When checked ($\checkmark$), the user only needs to follow one protocol sequence in chamber A or B.

- **Instrumental: Browse DL-Protocols and templates** opens a folder with the library of the Instrumental protocols provided with the DatLab 7.4.
- **SUIT: Browse DL-Protocols and templates** opens a folder with the library of the SUIT protocols provided with the DatLab 7.4.
  » Browse DL-Protocols and templates
- **Browse   www.bioblast.at/index.php./Mito-Pedia_SUIT:** Link to the available library of SUIT protocols and updates.
  » https://suitbrowser.oroboros.at/

  ⮐Clip How to find a (DLP)

- **Enable DL-Protocol editing** can be check-marked ($\checkmark$) to enable changes in DL-Protocol.

6. Experiment

- **Sample F3:** Collection of information regarding the protocol, sample or medium used. Information in this window can be edited at any time during or after the O2k run. Changes made in this window lead to instantaneous re-calculation with the new parameters. Initially, the Sample window displays information from the last file recorded and saved while connected to the O2k.

  Reset to system default: Left click to reset values to system default.

  Cancel: Left click to proceed quickly with the experiment and edit any time later.

  Experimental code: Up to 10 digits. The File search function Ctrl+F lists all files with identical experimental code within a selected directory.

  File recorded by (*read only*) shows the user that recorded the file. While connected to the O2k, the User code can be changed by left click Change user.

  O2k-serial number (*read only*) automatically recorded.

  Power-O2k (*read only*) as defined in Oroboros O2k \ O2k-configuration.

  Chamber The following entries are entered separately for the left (A) and right (B) O2k-chamber.

  Protocol (*read only*) Displays the name of DL-Protocol selected.

  Sample Enter information about sample used in each chamber. No sample is added in O_2 calibration experiments.

  Sample type, Cohort, Sample code, Sample number, Subsample number
  » Sample - DatLab

  Sample concentration and amount

  Unit   ▼ Select a unit to express the concentration or amount of sample in the HRR assay.

  Million cells   - Flow: flow per object (*e.g.,* cell number)

  mg   - Flux: mass-specific flux (*e.g.,* mg of protein, wet weight or dry weight).

Unit   - Flux: units of another marker of sample size (*e.g.,* citrate synthase activity).

» Normalization of rate

Concentration: Enter the sample concentration (*e.g.,* Million cells/mL, mg W_w/mL, mg mt-protein/mL). The corresponding amount of sample is calculated based on the O2k-chamber volume.

Amount: Alternatively, enter the sample amount (*e.g.,* biopsy W_w) if a known amount of sample is added into the chamber. The corresponding sample concentration is calculated based on the chamber volume.

Medium: Name of the incubation medium in the O2k-chamber.

Chamber volume: The default is 2 mL or 0.5 mL. It is important to define the actual effective volume of the O2k-chamber used for further calculations of oxygen flux. Calibration of O2k-chamber volume: »MiPNet22.11 O2k-FluoRespirometer_manual.

Data recording interval [s] (*read only*) is selected in the window O2k control F7.

Comments: For display and printing in the window Experimental log.

- **Experimental log Ctrl+F3:** The experimental log is generated automatically with information on O2k-settings and calibrations, the Edit experiment window, and various events. Time-dependent information can be viewed for chambers A, B, or both. A filter is selected for viewing minimum, intermittent (default), or all information. Left click Preview to view the protocol and Save as PDF file for quality control.

- **Add event F4**

  Events: An event is a defined point in time, labeled by a name (1 to 10 characters). The event is shown by a vertical line in the graph (line style can be modified under Graph\Options) and the label of the event is shown at the top of the graph. The default name is the sequential number of the event. It is recommended to edit event labels with a minimum number of characters, and to explain the abbreviation in the 'Definition' box. The final concentration and titration volume can be entered into the corresponding boxes, if the event relates to the titration of a substance A short comment can be entered to describe the event in detail.

  Set events F4: Real-time: Press F4 to set an event quickly at the current time of the experiment (e.g. to indicate a manual titration into the chamber). Instrumental events are added automatically, e.g. when the stirrer (A or B) or illumination (both chambers) is switched on or off. The Edit event window pops up after setting a new event. Pressing F4 defines the time point of the event. Full attention can then be paid to the experiment. Edit the event later. Ctrl+Left click Insert an event at any chosen moment of the plotted record of the experiment by placing the cursor anywhere in the graph at the selected time point, press Ctrl and click the left mouse button Ctrl+Left click.

  Edit event: Left click on the name of an existing event to open the Event information window to edit or Delete event.

  Name: Enter an event name of 1 to 10 characters. Short names (e.g. O instead of Open) are recommended.

  Definition: Enter an event definition.

  Concentration: Enter the concentration of the chemical added.

  Volume: Enter the volume added.

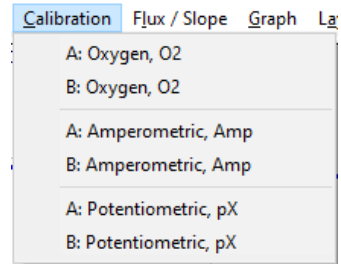**Comment:** Further information can be entered into the text field.
Chamber: Select O2k-chamber A, B, or both. The Event will be shown on plots for both or one selected chamber.

7.   Calibration

- **Oxygen, amperometric and potentiometric channels**
Select chamber and channel to open Calibration window. See details in each link:
» Oxygen calibration - DatLab

» Amp Calibration - DatLab

» pX calibration - DatLab

8.   Flux/Slope

- **Oxygen, amperometric, potentiometric and proton flux channels**

Select chamber and channel to open Slope configuration. See details:

   » Flux/Slope - DatLab

9.   Graph

The active graph is selected by a left click on the graph. The active graph is highlighted and indicated by the Oroboros logo.

- **Add:** A new graph is added below the current plots. Select plots for display in the new graph, Ctrl+F6.
- **Delete bottom graph:** The bottom graph is deleted, which reappears with the same layout by Add.
- **Select plots Ctrl+F6:** Opens a window Graph layout Plots with tabs depending on active channels: Oxygen, O2; Amperometric, Amp; Potentiometric, pX; System channels.

Select graph ▼ Pull down to select one of the displayed graphs.

Tabs: Oxygen O2, Amperometric Amp, Potentiometric pX, System channels: Left click on a channel type to select plots from this channel.

Tabs: Oxygen O2, Amperometric Amp, Potentiometric pX

☑ **Y1, Y2** Select the left (Y_1) or right axis (Y_2) for a plot.

⊙ **Use default label** selects the default axis label.

⊙ **Use custom label:** To define a different axis label, select and enter or edit a custom label.

Channel label: Edit (for Amp and pX channels).

▼ **Color** Defines the color of the plot.

▼ **Width** Defines the line width of the plot.

▼ **Linestyle** Defines the type of line (solid, dash, dot) of the plot.

▼ **Unit** Pull down to select a different unit (for Amp and pX).

☑ **Raw signal** displays the non-calibrated raw signal.

⊙ **Flux per volume**

⊙ **Normalization**

⊙ **Flux control ratio**

☑ **Baseline correction**

☑ **Background correction** » Select plots in DatLab

Load layout: Select layout category (⊙ Standard layouts, ⊙ Lab layouts, ⊙ User: Name), select Layout type ▼: O2k-Core, O2 & Amp, O2 & pX, Other (depending on the channel selection in O2k-configuration), and Layout name▼.

Save layout: A layout can be saved with any layout name under the category ⊙ Lab layouts or ⊙ User: Name.

Tab: System channels

Block temperature: The continuously measured temperature of the copper block housing the two glass chambers [°C].

Barometric pressure: The continuously recorded absolute (local) barometric pressure [kPa].

Peltier power: For regulation of block temperature, continuously recorded [% of maximum power].

Room temp: Temperature from internal temperature sensor recording the environmental (room) temperature [°C].

Electronics humidity: Signal from internal sensor recording the electronics humidity [%].

Electronics temp: Signal from internal temperature sensor recording the electronics temperature. [°C].

- **Scaling F6:** Left click on the *X*-, Y_1- or Y_2-axis opens the Graph layout/ Scaling window. F6 provides flexibility to vary the display of the plots and create Graph layouts. Viewing plots in differently scaled graphs, zooming the signal and time scales, and scrolling along the axes of the graph provide maximum information on the current experiment, but do not influence the format of stored data. Different ranges for the axes change the appearance of data dramatically.

Choose a standard layout for a reference layout of a graph.

Select graph: ▼ Pull down to select any of the defined graphs.

Minimum defines the minimum axis position (suppression) for the display of data at a constant range.

**Maximum** defines the maximum axis position for the display of data at a constant range.

Range defines the range of the Y_1 axis (left), Y_2 axis (right) and X axis (Time). Select a predefined Graph layout type from the options in the pull-down menu. Edit the layout name of the graph by a left click on the name, and then click on Save layout to save the entire graph layout.

Apply to Graph 1: The scaling defined for Graph 2 is applied to Graph 1.

Navigating graph with arrow keys

Use arrow keys to scroll (data on Y-axes), pan (time on X-axis), or zoom (expansion or compression: Ctrl+arrow key), independent of the F6 window.

Select the active plot in a graph by left clicking on the label of the plot in the figure legend on the right. The active plot is highlighted. Scrolling and setting marks apply to the active plot.
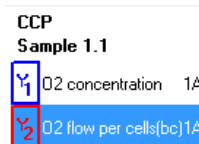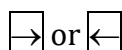
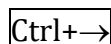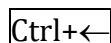|	
↑ or ↓	Scroll up and down the Y axis, with a shift of 50 % of the active plot.
Ctrl+↑	Magnify the signal (half the signal range is displayed).
Ctrl+↓	Cover a larger range on the screen for overview (twice the signal range is displayed).
→ or ←	Panning, shift 50 % of the time axis to the right or left. During data acquisition, switch off automatic panning to pan backwards without changing the time range.
Ctrl+→	Magnify the time resolution on the screen (decreasing the time range). Ctrl+→ expands the data, half the original time range is displayed. The upper limit of the time range is fixed.
Ctrl+←	Cover a larger time range on the screen. Ctrl+← compresses the data, twice the original time range is displayed. The reference time point is fixed on the right during zooming in and out.

- **Info**
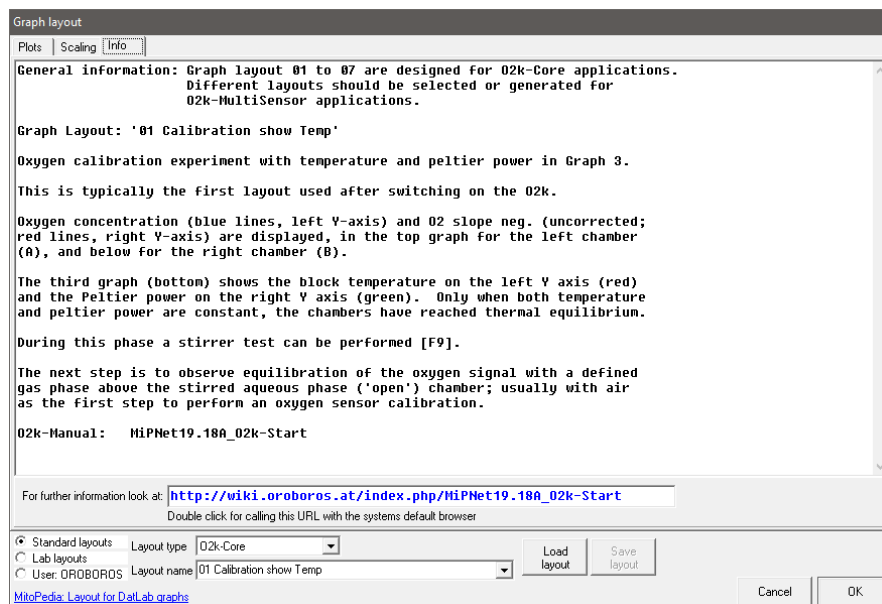
View and edit information, and load or save a graph layout (Section 9).

A quick selection of the tabs Plots Ctrl+F6 and Scaling (F6) is possible.

- **Synchronous time axes ☑:** Sets the time axes of all graphs at an identical range and offset, which is particularly useful while panning.
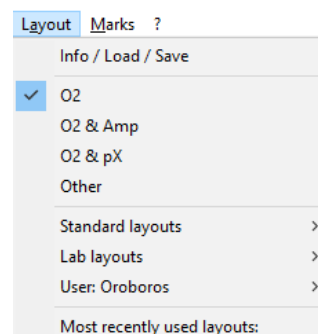- **Autoscale time axis** autoscales the entire experimental time scale.

- **Autoscale Y1 (Y2) axis** autoscales the full data range.
- **Automatic pan** ☑ toggles automatic panning on/off
  » O2k status line
- **Mouse control: Zoom Ctrl+Z**
  Zoom in: Select ☑ Mouse control: Zoom in the menu or press Ctrl+Z. Left click on the graph where you want to zoom in. Place the cursor at the upper left corner of the field for zooming. Hold Shift, press the left mouse button Shift+Left click and slide the cursor to the lower righthand corner to define the field for zooming in. The text for all axes now indicates the respective range (full scale).
  Zoom out: To return to the original scaling (as defined in the Graph layout), hold Shift, press the left mouse button, and slide the cursor anywhere to the left Shift+Left click.
- **Mouse control: Mark Ctrl+M**
  ☑ The Mark mode is active by default, or can be selected in the menu, or by Ctrl+M. Specific sections of the experiment can be marked on each plot. Usually, marks are set on the plot for oxygen concentration for calibration (MiPNet06.03A), whereas marks on the plot for oxygen flux are set for exporting the median or average of flux to a table.
  » Marks-DatLab
- **Full screen ☑:** The selected graph may be shown alone on the full screen ☑, or together with the other defined graphs. Full screen is particularly useful for a single channel overview.
- **Display numerical value:** ☑ The current numerical values are displayed in the graph for the active plots on the Y_1 axis and Y_2 axis (during data acquisition only).
- **Display Power-O2k:** ☑ The Power-O2k number, set in Oroboros O2k \ O2k configuration, is shown in the active graph.
- **Options**
  ☑ **Show legends** shows the quantities plotted on each *Y* axis.
  Show gridlines gives options to show or hide vertical and horizontal gridlines.
  ☑ **Show marks** optionally shows or hides marks in all graphs, without deleting the marks.
  ☑ **Show events** optionally shows or hides events in all graphs, without deleting the events.
  Font: Change font size and style of axes labels and numbers.
  Event line style can be modified.
  ☑ **Show Oroboros icon in clipboard files** *Yes!*
  ☐ **Show seconds on time axis** gives an option to exclude or include the display of seconds on the labels of the time axis.
  ☑ **Show DL-Protocol name on time axis** gives an option to exclude or include the DL-Protocol name on the time axis.

- **Copy to clipboard:** Select the active graph. In the Graph menu, Left click Copy to clipboard, and select the WMF or BMP format; Alt+G B W. Open the target file (DatLab-Excel template, Word, PowerPoint, Paint, *etc.*), and paste the image Ctrl+V.
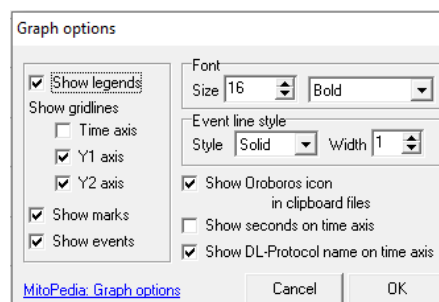
10. Layout

Graph layouts are selected from the Layout menu for standardized display of graphs, plots and scaling of axes.

- **Info / Load / Save:** Open this window (Section 9) to view and edit information, and load or save a graph layout.
- **Types:** Four types of layouts can be selected depending on the O2k-configuration:
  - ▸ O2: Oxygen channel ony.
  - ▸ O2 & Amp: Oxygen and amperometric channel.
  - ▸ O2 & pX: Oxygen and potentiometric channel.
  - ▸ Other
- **Standard layouts:** In many Standard layouts, plots are shown for the chamber A in Graph 1 (top), and for chamber B in Graph 2 (below). During data acquisition, a 30-min time range is frequently used.

  01 Calibration show Temp shows O_2 concentration and the negative slope in Graph 1 and 2, and temperature and Peltier power in Graph 3. This is the default layout used after switching on the O2k for performing oxygen calibration. Graph 1 & 2: O_2 concentration (blue lines, left Y-axis) and O_2 slope negative (uncorrected; red lines, right Y-axis) are displayed in the top graph for the left chamber (A), and below for the right chamber (B). 'O2 slope neg.' is the negative slope of oxygen concentration, multiplied by 1000 to convert to units [pmol/mL], over time [s]. Graph 3 (bottom) shows the block temperature on the left Y axis (red) and the Peltier power on the right Y axis (green). Only when both temperature and Peltier power are constant, have the chambers reached thermal equilibrium.

  » MiPNet06.03A: O2k Quality Control 1: Polarographic oxygen sensors and accuracy of calibration

  02 Calibration - Background is used for recording polarographic oxygen sensor (POS) calibration and instrumental O_2 background test. No correction is applied for instrumental O_2 background flux, $J°_{O2}$. 'O2 slope neg.' is plotted on the right Y-axis with a scaling to display ± 10 pmol·s^{-1}·mL^{-1} and zero in the middle of the Y2 axis. Zero slope (± 1 pmol·s^{-1}·mL^{-1}) in the 'open' chamber at air calibration indicates stability of the oxygen signal.

  » MiPNet14.06: Instrumental O2 background

  03 Background high O2 for recording an instrumental O_2 background test at high oxygen from 150 to 450 μM.

  04a Flux per volume displays background-corrected O_2 flux per volume, which is most relevant to evaluate experimental details, i.e. flux per volume is optimally in the range of 20 to 200-500 pmol·s^{-1}·mL^{-1}. This plot is also chosen when measurements on sample density are available only at a later stage (MiPNet24.06). Total O_2 flux is corrected for instrumental O_2 background, $J°_{O2,V}$, to obtain sample oxygen flux per chamber volume, $J_{O2,V}$(sample):

$$J_{O2,V}(sample) = J_{O2,V}(total) - J°_{O2,V}$$

  04b Flux per volume overlay is similar to the layout '04a Flux per volume'. Graph 1 shows the background-corrected O_2 flux per volume [pmol·s^{-1}·mL^{-1}] superimposed from both chambers. Graph 2 shows O_2 concentration [μM].

05a Specific flux for plotting background-corrected O_2 flux per unit sample. The unit as a marker for the amount of sample is defined in the F3 window. Example: Select Unit mg ▼ for the amount (mass) of sample added to the chamber. The mass-concentration is automatically calculated (division by chamber volume, typically 2 mL or 0.5 mL). Then mass-specific flux [$pmol \cdot s^{-1} \cdot mg^{-1}$] is displayed as volume-specific flux [$pmol \cdot s^{-1} \cdot mL^{-1}$] divided by mass-concentration [mg/mL]:

$$J_{O2,mass} = J_{O2,V} / \text{mass-concentration}$$

05b Specific flux overlay is similar to '05a Specific flux'. Graph 1 shows the background-corrected O_2 flux per unit of sample superimposed from both chambers. Graph 2 shows O_2 concentration [μM].

06a Specific flux high O2 is same as '05a Specific flux' with the scaling adapted to the high O_2 concentration used for permeabilized muscle fibers (150 to 450 μM; range 300 μM).

06b Specific flux high 02 overlay as '06a Specific flux high O2', but O_2 flux (graph 1) and O_2 concentration (graph 2) superimposed from both chambers.

07a Flux control ratios shows the flux control ratio (*FCR*) and the O_2 concentration for the left chamber in graph 1 and for the right chamber in graph 2. First, the reference and baseline metabolic states are marked and the marks are named (Marks \ Specifications). Then the marks are selected in the menu Flux/Slope \ O2 slope in the Slope configuration window.

07b Flux control ratios overlay as '07a Flux control ratios', but *FCR* (graph 1) and O_2 concentration (graph 2) superimposed from both chambers.

Layouts for O2k-MultiSensor applications are explained in the specific O2k-Manuals.

- **Lab layouts:** A Standard layout or any other layout can be modified and saved under Lab layouts, which is recommended for a team using project-specific layouts.
- **User: Name:** A Standard layout or any other layout can be modified and saved under a specific user name, which is recommended to distinguish individual layouts from standard layouts used by a team.

11. Marks

Set Marks to obtain the median, average, standard deviation, outlier index and range of the data within the mark, for calibration of the oxygen signal (MiPNet06.03A), flux analysis (MiPNet24.06), or to delete marked data points. Marks define a section (period of time) in a selected plot (column) and contain the data of the selected plot within the defined section of time. Marks are shown by a horizontal bar in the active plot. Several marks can be set on any plot, but marks cannot overlap within a plot and are separated by one or more data points which are not marked.

» Marks-DatLab

Mark In the Graph menu select ☑ Mouse control: Mark, or press Ctrl+M.

Left click Select the active plot in a graph by a left click on the label of the plot in the figure legend on the right. The active plot is highlighted.

Shift+Left click Set the cursor on the starting position of the mark, hold Shift and press the left mouse button, while moving the cursor along the *X*-axis.
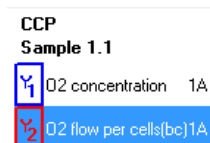
Shift+Right click The period of a mark may be reduced or the entire mark deleted by holding Shift and pressing the right mouse button, while moving the cursor along the *X*-axis over the marked section.

Default mark names: Marks are labelled with consecutive letters by default, starting from 'a', independent of the sequence of position of the marks. When deleting a mark Shift+Right click, then this mark letter is missing on the mark list. Marks after 'z' receive an 'a' in front ('aa', 'ab'…).

Mark information: Left click into the top or bottom bar of the mark:

Name: Edit the mark name.

State: An explanation of the mark name, frequently giving the units of concentration.

Final conc. (mM): (*optional*) The value is used as the concentration or pX value in the Amp or pX calibration windows.

Titration vol. (µL): (*optional*) In SUIT protocols, the value is pre-filled as the volume of a titration, for calculating the dilution of sample in DatLab-Excel templates. The titration volume must be entered manually if no SUIT protocol is used.

Outlier index threshold: Set to a lab-specific or session-specific value different from the system default value.

» Outlier index - DatLab
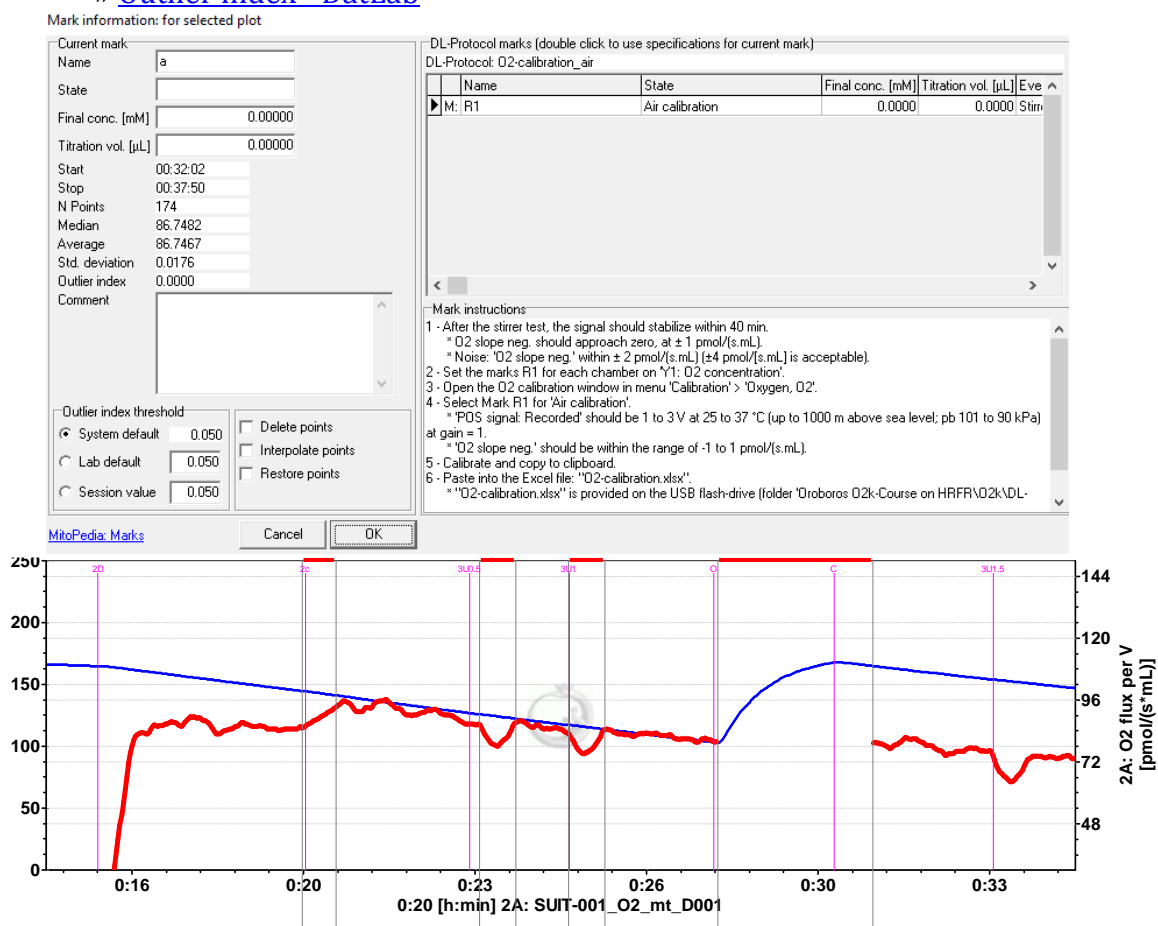
Delete \ Interpolate points: Set marks for deleting disturbed flux during reoxygenations (Mark d), or interpolating flux disturbed due to titrations (Mark a; compare to Marks b and c without deletion or interpolation of points).

Restore points \ Recalc. fux: All data points can be restored (signal) or recalculated (flux).

- **All marks in plot** used when a non-standard protocol and non-standard Mark names have been used for data acquisition.
  - o **Flux / flow + all info** contains the information saved in the Mark information window and the values of flux or flow, according to the layout selected, corrected for Instrumental background O_2 flux. In addition, exported data include information contained in the Sample window, in the O_2 calibration window and on parameters used for Instrumental background O_2 flux correction.
  - o **Flux / flow** contains the information saved in the Mark information window and the values of flux or flow, according to the layout selected, corrected for Instrumental background O_2 flux.
  - o **Slope uncorrected + all info** F2 contains the information saved in the Mark information window and the values of flux or flow, according to the layout selected, but without instrumental O_2 background correction. The correction will be applied in the DatLab - Excel template. In addition, exported data include information contained in the Sample window, in the O_2 calibration window and on parameters used for Instrumental background O_2 flux correction.
- **DL-Protocol marks** used if data were recorded using a DL-protocol.
  - o **Flux / flow + all info**
  - o **Flux / flow**
  - o **Slope uncorrected + all info** F2

1.   ☑ Select channels for which plots should be displayed. <u>System channels</u>: Select or deselect system channels (barometric pressure, block temperature etc.) to be shown in Statistics.
2.   ⦿ Select the O2k-chamber for which plots should be displayed in the marks statistics table.

3. L🖰 click on the source plot on which the marks are set.
4. Select **All marks in plot** when a non-standard protocol and non-standard Mark names have been used for data acquisition. If data were recorded using a DL-protocol, **DL-protocol marks** can be selected along with the desired format for data display. For either selection, the previous chosen data display format can be changed again.
5. ⊙ Select the statistical value calculated over the sections defined by marks. Default: ⊙ Median.
6. ⊙ Select the sequence of marks, sorted as a ⊙ Time sequence or ⊙ Mark name in alphanumerical order.
7. Values are displayed for selected plots. The source plot for marks is indicated by an "X".

Left click to select a single data cell in the table, copy, Ctrl+C, and paste into a Windows™ file, Ctrl+V.
Copy to clipboard: Left click `Copy to clipboard´ to copy the mark statistics table into the 'O$_2$ analysis template DL7.4' or other programs. It is important to carefully evaluate which set of data rows is relevant.
More details on data analysis » MiPNet24.06 Oxygen flux analysis DatLab 7.4.

- **M**anage **mark statistics templates** shows the saved System channels settings and allows for renaming or deleting of the configuration.
- **S**pecifications is largely replaced by SUIT DL-Protocols and Instrumental DL-Protocols in DatLab 7.4. Mark specifications allow the user to rename Marks in the active plot and save/recall the settings.
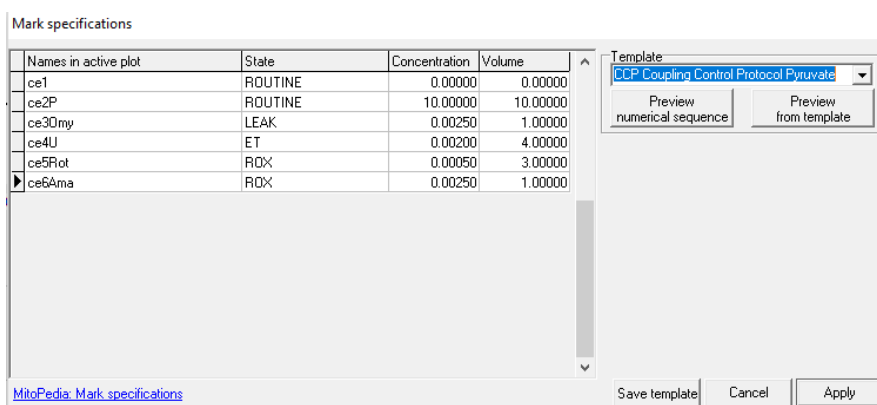
Mark specifications (name, state, concentration and volume) are shown from the active plot. Define the Template Name ▼ and Save template.
Select a Template Name ▼, Left click on Preview from template, and Apply all marks of the plot, including the state, concentration and volume.

- **Ma**n**age mark specifications templates:** Rename or delete mark name templates in this window.
- **C**opy marks from a selected plot to the active plot.

12. Some features of Windows™

Print	The entire screen is 'printed' to clipboard.
Alt+Print	The active window is 'printed' to clipboard.
Ctrl+C	Copy to clipboard.
Ctrl+V	The contents of the clipboard is pasted into the page of a Windows™ program (Word; Excel; PowerPoint).

Related MiPNets
» MiPNet22.11 O2k-FluoRespirometer manual
» MiPNet06.03A O2k-calibration

13. Author contributions

Erich Gnaiger contributed to the concept of all DatLab versions, wrote the chapter, edited the final version. Cristiane Cecatto contributed to and edited this chapter. Lukas Gradl is the programmer of all DatLab versions.

14. Acknowledgements