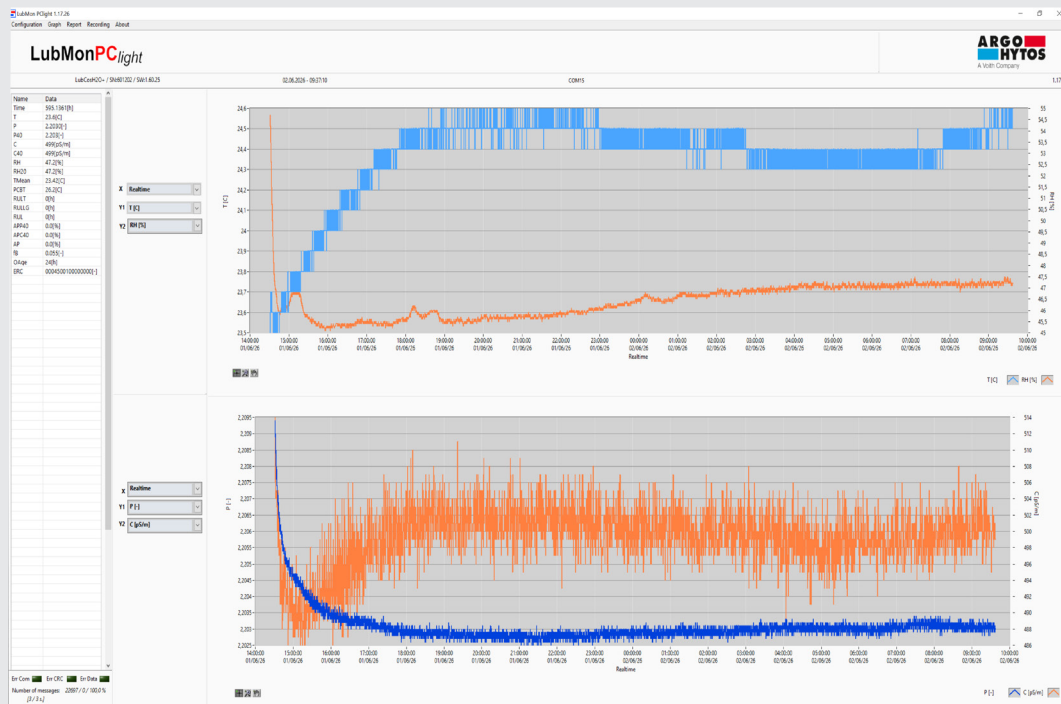


Operating Manual

LubMonPC^{light}

SCSO 800-1000



PC visualization software for condition sensors

Contents

	Contents	2
1.	Introduction	3
2.	System requirements.....	4
3.	Quick start.....	5
4.	User interface.....	6
5.	Log files	12
6.	Troubleshooting.....	13
7.	Accessories	14
8.	Generating reports	15
9.	Contact address	18

LubMonPC_{light} is a National Instruments (NI) LabVIEW-based program for reading, displaying and storing the data of the following condition sensors:

- › LubCos H₂O
- › LubCos H₂O+ II
- › LubCos Level
- › LubCos Guard
- › LubCos Vis+
- › OPCom Particle Monitor
- › OPCom FerroS

Range of functions:

- › Simple and intuitive operation through a graphical user interface
- › Graphical data visualization based on two charts, each with two Y-axes and one X-axis
- › Flexible axis assignment with linear/logarithmic scaling and zoom functionality
- › Tabular display of current measurement data and units
- › Support for RS232 and Ethernet TCP/IP interfaces
- › Logging and saving data as text files in .txt format, with headers for measurement series and unit labels
- › Start, pause, and stop function for data recording
- › Recording of the current timestamp and freely adjustable recording interval
- › Generation of PDF reports that include charts and sensor data
- › Separate creation of raw data files in .txt format
- › Creation of a full report that combines a PDF report (with charts) and the associated raw data files

2. System requirements

- › Windows 10 (64-bit) or later
- › Processor: dual-core 2.0 GHz minimum; quad-core 2.5 GHz or higher recommended
- › Memory: 4 GB RAM minimum; 8 GB RAM or more recommended
- › Display resolution: 1600 × 900 pixels minimum; Full HD (1920 × 1080) or higher recommended

Furthermore, the system requirements of the NI Runtime Engine must also be taken into account.

3. Quick start

The following section describes the steps which must be taken for the initial commissioning of LubMonPC_{light} with an ARGO-HYTOS condition sensor. For this purpose, the following components are required:

- › PC/laptop with an RS232 connection or, alternatively, a USB port, serving as the measurement computer
- › Oil condition sensor LubCos or OPCom II
- › Sensor cable (order number: SCSO 100-5030)
- › Power supply including a cold-device plug (order number: SCSO 100-5080)
- › LubMonPC_{light} software (www.argo-hytos.com)
- › In addition, when connected via USB: USB-RS232 converter with associated driver software (order number: 100-5040 SCSO)

The components must be prepared as follows:

A) Software installation LubMonPC_{light}

1. Unpack the LubMonPClight.zip file on your computer.
2. Before starting LubMonPClight.exe, the LabVIEW Runtime Engine 2025 must be installed. This is included in the "fullsetup"-file which can be downloaded from the download section of ARGO-HYTOS (www.argo-hytos.com). If the LabVIEW Runtime Engine has already been installed, only the "executable" file is needed.

B) Software installation of the driver for the USB-RS232 converter for data acquisition via USB (If you do not use a converter, please continue with point D)

3. Connect the USB-RS232 converter to your PC/laptop.
4. If the USB-RS232 converter is not known to the PC, the corresponding driver must be installed. Then follow the installation instructions of the operating system or the supplied driver CD.

C) Sensor connection for data acquisition via USB

5. Connect the sensor cable with the M12 connector to the sensor.
6. Connect the 9-pin D-Sub connector of the cable to the appropriate serial interface of the USB-RS232 converter.
7. Connect the USB connector of the USB-RS232 converter to an appropriate interface of your PC / laptop.
8. Connect the power supply and the sensor cable.
9. Now properly connect your power supply with the cold-device plug to the mains voltage. Your sensor is now ready for operation.

D) Sensor connection for data acquisition via RS232

10. Connect the sensor cable with the M12 connector to the sensor.
11. Connect the 9-pin D-Sub connector of the cable to the appropriate serial interface of your PC / laptop.
12. Connect the power supply and the sensor cable.
13. Now properly connect your power supply with the cold-device plug to the mains voltage. Your sensor is now ready for operation.

E) Start the software

14. LubMonPC_{light} can be started by double-clicking on the file LubMonPClight.exe.
15. Select the serial interface (COM) to which the sensor is connected. If you do not use a USB-RS232 converter, this usually is COM1.
16. When using a USB-RS232 converter, a new virtual COM port is created. Select this one. Optionally, you can check the assignment of the virtual COM port in the Windows Device Manager.
17. The incoming data and the identification of the sensor appear on the left side of the window. On the right side of the window, the data can be visualized in a diagram.

RS232 - Connection Configuration: The COM tab shows settings for RS232 connections

- › COM Port: Serial port settings.
- › Baud rate: Communication speed (default for LubCos sensors is 9600).
- › Switch CAN to RS232: Quickly switches sensor communication mode from CAN to RS232.

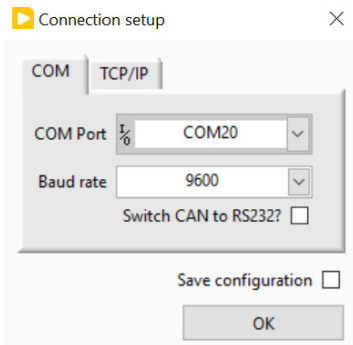


Figure 4: RS232 connection configuration

TCP/IP Connection Configuration

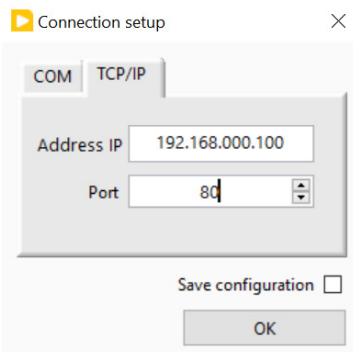


Figure 5: TCP/IP connection configuration

In addition to direct serial connections, sensors can also be integrated via an Ethernet Gateway into a LAN. LubMonPCLight connects to sensors using the Gateway IP address and associated port.

Example:

Ethernet Gateway IP: 154.1.70.9, Port 4001 (first COM port), Port 4002 (second COM port), etc. These details must be entered in LubMonPCLight. Baud rate and other COM parameters must be configured according to the Gateway's user manual.

- › IP Address: IP address of the gateway device.
- › Port: Port number assigned to the sensor on the gateway.

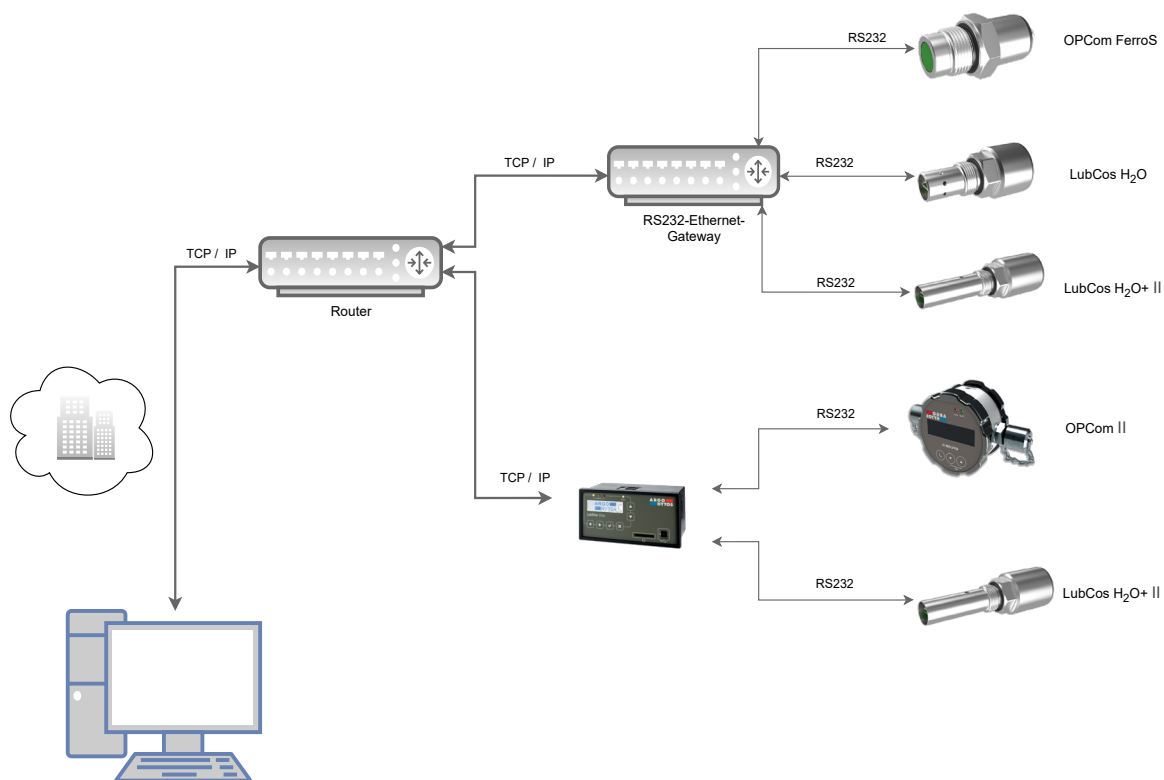


Figure 6: Network layout – TCP/IP

B) Session Restore Status (Connecting, Chart Axis) – Enables/disables automatic restoration of previous connection settings and chart customizations.

C) Clear Error – Clears connection errors.

4.1.2 Graph Settings

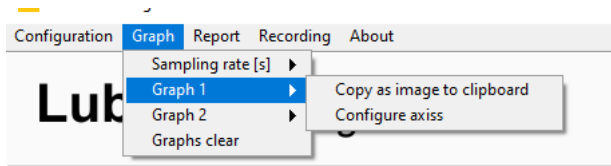


Figure 7: Graph configuration

A) Sampling rate [seconds/minutes/hours]: Sets sensor data query interval, graph update, and data storage interval (3 seconds–2 hours, default: 3 seconds).

B) Graph 1 (Upper graph)

Copy as image to clipboard: Copies graph 1 as an image.

Configure axes: Adjust axis scaling:

- › linear: Linear scaling.
- › auto: Automatic scaling based on measurement values.
- › log: Logarithmic scaling.
- › manual: Direct entry of axis limits by clicking.

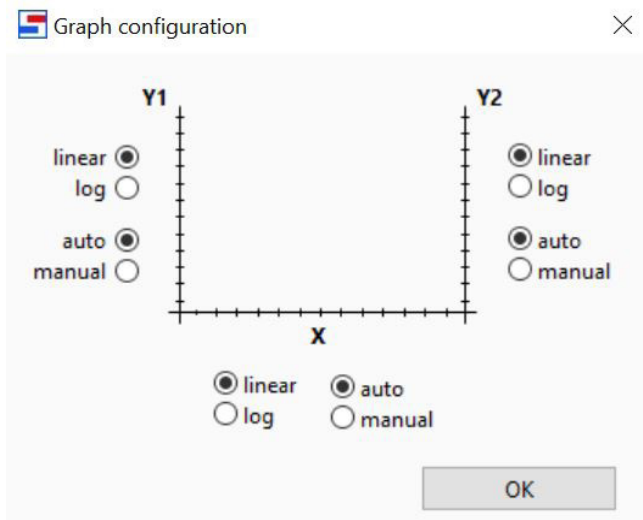


Figure 8: Graph scaling configuration window

C) Graph 2 (Lower graph)

Copy as image to clipboard: Copies graph 2 as an image.

Configure Axes: Configures axes for graph 2.

D) Clear Graphs: Clears both graphs; does not affect ongoing data recording.

4.1.3 Report Generation

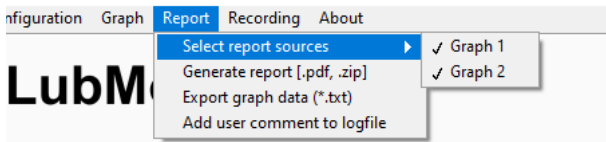


Figure 9: Report generation configuration

A) Select Report Sources: Select graphs to include in the report:

- › Graph 1: Include graph 1.
- › Graph 2: Include graph 2.

B) Generate report [.pdf, .zip]: Creates a complete report (.zip or folder) or a shortened report (.pdf).

C) Export graph data (*.txt): Exports chart data to a text file.

D) Add User Comment to Logfile: Adds a user comment to the generated report.

4.1.4 Recording (Measurement Data):

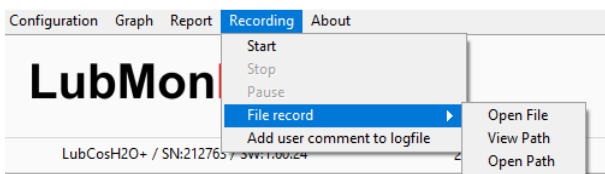


Figure 10: Recording configuration

A) Start: Starts recording; prompts for log file path and name.

B) Pause: Temporarily pauses recording; clicking again resumes.

C) Stop: Stops recording.

D) Add User Comment to Logfile: Adds comments to measurement data log.

4.1.5 About (Application Information)

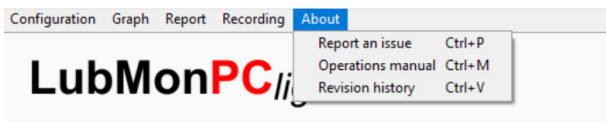


Figure 11: Application information

A) Report an Issue: Provides support contact and improvement suggestions.

B) Operations manual: Opens the program manual.

C) Revision History: Displays application update history.

4.2 Current Measurement Values List

Shows all connected sensor parameters with units. Detailed information is available in the sensor's manual.

4.3 Graphical Representation

Two chart windows are available (see Figure 1:3). Parameters are selected on two Y-axes (Y1, Y2) and a shared X-axis.

Parameter combinations are fully customizable (see Figure 12)

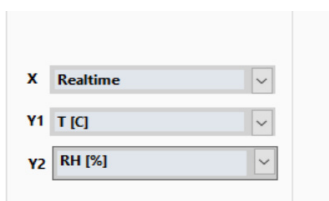


Figure 12: Axis selection for graphical representation

4.3.1 Diagram Display

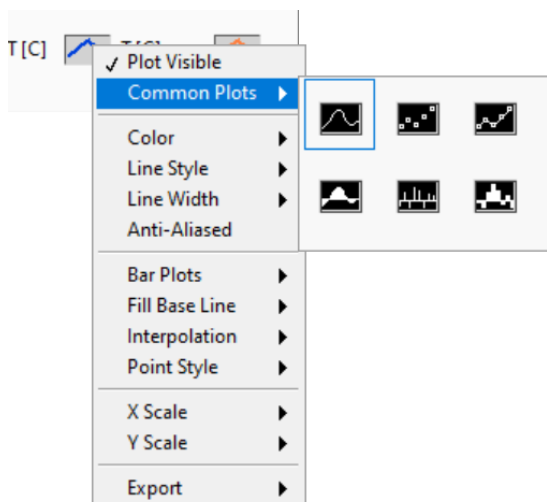


Figure 13: Diagram display menu

4.3.2 Zoom functions

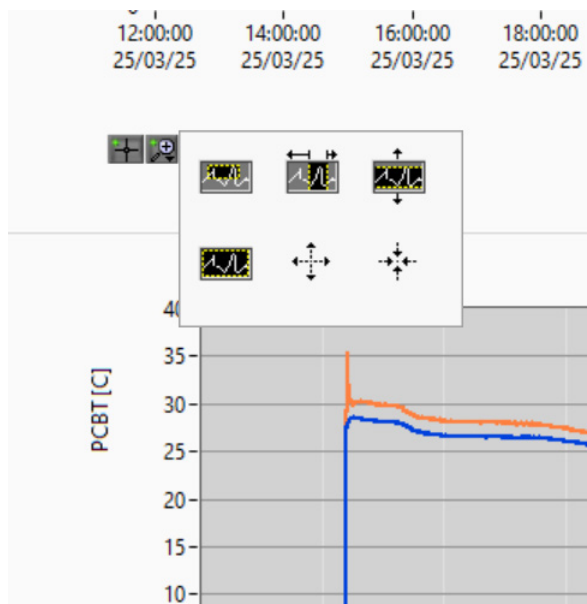


Figure 14: Zoom functions

Available zoom options include horizontal, vertical, and selective zoom.

4.4 Error Control

Displays three status indicators and an error counter:

- › Err Com: Communication error status.
- › Err CRC: Checksum error status
- › Err Data: Data validity error status.
- › Valid data / invalid data / percentage of valid data

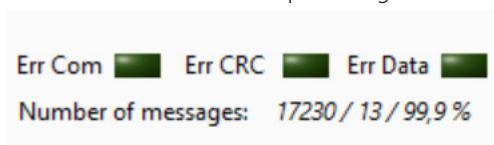


Figure 15: Error indicators

5. Log files

After starting the measurement data recording via the red circle button (also see Chapter 4.1), a prompt appears. In this, the user is prompted to select a path for the log files folder. By default, the path of the project directory and the name "logfile<date>-<time>.txt" are indicated.

Readdate	Realtime	Time[h]	T[C]	P[-]	P40[-]	C[p5/m]	C40[p5/m]	RH[%]	RH20[%]	Tmean[C]	PCBT[C]	RUL[t/h]	RULL[g/h]	RUL[h]	APP40[%]	APC40[%]	AP[%]	FB[-]	OAge[h]	ERC[-]
18.06.2026	12:38:53	807,9936	58,2	2,1613	2,183	2086	967	7,6	7,6	29,09	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:38:56	807,9944	58,2	2,1613	2,183	2079	965	7,5	7,6	29,09	53,9	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:38:59	807,9955	58,2	2,1613	2,183	2076	964	7,5	7,6	29,09	53,9	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:39:02	807,9964	58,1	2,1613	2,183	2077	963	7,5	7,6	29,09	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:39:05	807,9972	58,1	2,1613	2,183	2081	963	7,6	7,6	29,09	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:39:08	807,9980	58,2	2,1613	2,183	2086	963	7,6	7,6	29,09	53,9	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:39:11	807,9989	58,1	2,1613	2,183	2091	963	7,6	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:14	807,9997	58,1	2,1613	2,183	2096	964	7,6	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:17	808,0005	58,2	2,1613	2,183	2096	965	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:20	808,0014	58,2	2,1614	2,183	2089	965	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:24	808,0022	58,2	2,1614	2,183	2083	964	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:27	808,0031	58,2	2,1614	2,183	2082	963	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:30	808,0039	58,2	2,1614	2,183	2086	963	7,6	7,6	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:33	808,0047	58,1	2,1614	2,183	2093	963	7,5	7,6	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:36	808,0056	58,2	2,1613	2,183	2100	964	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:39	808,0064	58,2	2,1613	2,183	2104	965	7,5	7,6	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:42	808,0072	58,2	2,1614	2,183	2107	967	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:45	808,0084	58,2	2,1614	2,183	2109	968	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:48	808,0092	58,2	2,1614	2,183	2111	969	7,5	7,6	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:51	808,0100	58,1	2,1614	2,183	2108	970	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:54	808,0108	58,1	2,1614	2,183	2102	970	7,5	7,5	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:39:58	808,0117	58,1	2,1614	2,183	2086	969	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:01	808,0125	58,1	2,1614	2,183	2075	967	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:04	808,0133	58,1	2,1615	2,183	2068	965	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:07	808,0142	58,1	2,1615	2,183	2067	963	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:10	808,0153	58,1	2,1616	2,183	2070	962	7,5	7,5	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:13	808,0161	58,1	2,1615	2,183	2076	962	7,5	7,5	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:16	808,0170	58,2	2,1614	2,183	2082	962	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:19	808,0178	58,1	2,1614	2,183	2088	962	7,5	7,5	29,10	53,8	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:22	808,0186	58,1	2,1614	2,183	2093	964	7,5	7,5	29,10	53,9	0	0	0	30,4	123,7	123,7	0,080	237	0004500020000100
18.06.2026	12:40:25	808,0195	58,1	2,1614	2,183	2097	965	7,5	7,5	29,10	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:40:28	808,0203	58,1	2,1614	2,183	2098	966	7,6	7,5	29,10	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:40:31	808,0211	58,1	2,1614	2,183	2092	967	7,5	7,5	29,10	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100
18.06.2026	12:40:34	808,0220	58,1	2,1614	2,183	2088	967	7,5	7,5	29,10	53,8	0	0	0	30,4	123,6	123,6	0,080	237	0004500020000100

Figure 16: Display of measurement data in the log file

The text files can be opened with any text editor (see Figure 16). For graphical representation, the content can be exported to a standard spreadsheet program (e.g. Microsoft Excel).

The procedure to open a file in Excel is illustrated below using a .txt file. To do this, start Microsoft Excel 365 and open the previously saved file.

Arkuszel

Error: No communication with sensor LubMonPC_{light}

Possible cause	Recommended measures
› Cable is not properly connected	▶ First please check the correct electrical connection of the sensor or of the data and power cable. Please observe the specified pin assignment
› Cable wrong or defective	▶ Only use a data cable recommended by ARGO-HYTOS.
› Incorrect COM port has been selected	▶ Check and correct the selection of the COM port (for example, COM1).
› RS232 interface of the sensor is not activated	▶ Activate the RS232 interface temporarily or permanently with the help of "LubMon Config" or a terminal program (e.g. HTerm). For more detailed information please refer to the documentation of the respective sensor.

Accessory information, including compatible cables, adapters, power supplies, and order numbers, is available in a separate file on the manufacturer's website.

8. Generating reports

LubMonPClight offers a convenient way to generate reports containing measurement data and graphical charts. Reports can be produced in different formats and at varying levels of detail, allowing you to archive and share machine data efficiently.

8.1 Overview of report types

- › **Short report** – A concise PDF document containing one or two charts (depending on your selection) and key sensor data.
- › **Full report** – A more comprehensive package that can include:
 - A PDF document (with one or two charts, depending on your selection).
 - Chart graphics showing measurement trends.
 - Automatically saved raw data from the sensor(s) in *.txt format

8.2 Selecting Charts for the Report:

Before generating a report, you can decide whether you want:

- › **Chart 1 only**
- › **Chart 2 only**
- › **Both charts** (Chart 1 and Chart 2).

This flexibility helps tailor the report to your specific requirements — ranging from a quick, single-chart summary to a more detailed comparison using both charts.

8.3 Steps to Generate a Report

1. Click on **Report** in the top menu bar.
2. Choose the source(s) you wish to include (Graph 1, Graph 2, or both).
3. Select **Generate report [.pdf]** and follow the prompts:
 - › Choose a **short** (PDF only) or full (PDF plus chart graphics and raw data) report.
 - › Select the location where you wish to save the report.
 - › If you selected a full report, the program bundles the PDF, chart graphics, and raw data and then prompts you to **compress everything into a single .zip archive** or to **create a new folder and place the files inside it**. (This prompt does not appear for short reports.)

8.4 Archiving and Data Management

By automatically saving raw data along with PDF reports and chart graphics, LubMonPClight simplifies archiving and sharing. You can easily store these files for maintenance records, troubleshooting, or long-term trend analysis.

8.5 Additional Notes

- › When generating a **full report**, ensure you have enough disk space to accommodate the PDF, the raw data files, and the chart graphics.
- › You may add comments to your log or report via the **Add User Comment** to Log file button in the upper menu bar. These remarks will appear in the final PDF report and text log files. They provide context or additional documentation.

Below is an example report:

The report is divided into three parts:

1. Sensor metadata

- › **Sensor name** – identifies the specific device model (e.g., "ARGO HYTOS OPCom Portable Oil Lab").
- › **Serial number** – the unique hardware ID that links the data set to a single sensor (e.g., "004957").
- › **Firmware version** – shows which internal software release was running during the measurement (e.g., "05.81.25").

2. Sensor summary

- › **Start time / End time** – mark the first and last valid data points in the session, defining the time window covered by the report.
- › **Number of samples** – total data rows captured in that period (e.g., 114 samples indicate roughly one reading every 3 s over six minutes).
- › **Connection errors** – counts and percentages of failed queries; a low figure (e.g., “2 errors – 1.72%”) confirms communication stability.
- › **User comment** – any operator note added during acquisition; the field remains empty (“—”) if no comment was entered.

3. Chart statistics (repeated for every chart that you include)

For each chart the report lists:

› Field	› Meaning
› Axis X	› Always Real-Time – indicates that timestamps are shown on the horizontal axis.
› Axis Y1	› Primary parameter with its physical unit. The report gives the minimum, maximum, and median values recorded. In the example: T [°C] ranged from 28.50 °C to 30.10 °C with a median of 29.50 °C .
› Axis Y2	› Secondary parameter on the right hand axis, displayed the same way. In the example: NAS [–] ranged from 9.000000 to 12.000000 with a median of 10.000000 .

If a second chart is selected, the same table appears again with its own Y-axis assignments and statistics. For example, Chart 2 might include RH [%] on Y1 (Min 24.10, Max 25.60, Median 24.70) and P [–] on Y2 (Min 2.242000, Max 2.260000, Median 2.243000). These sections together give a compact yet complete snapshot of the measurement session, making it easy to trace sensor configuration, data quality, and key trends without digging into the raw *.txt files.

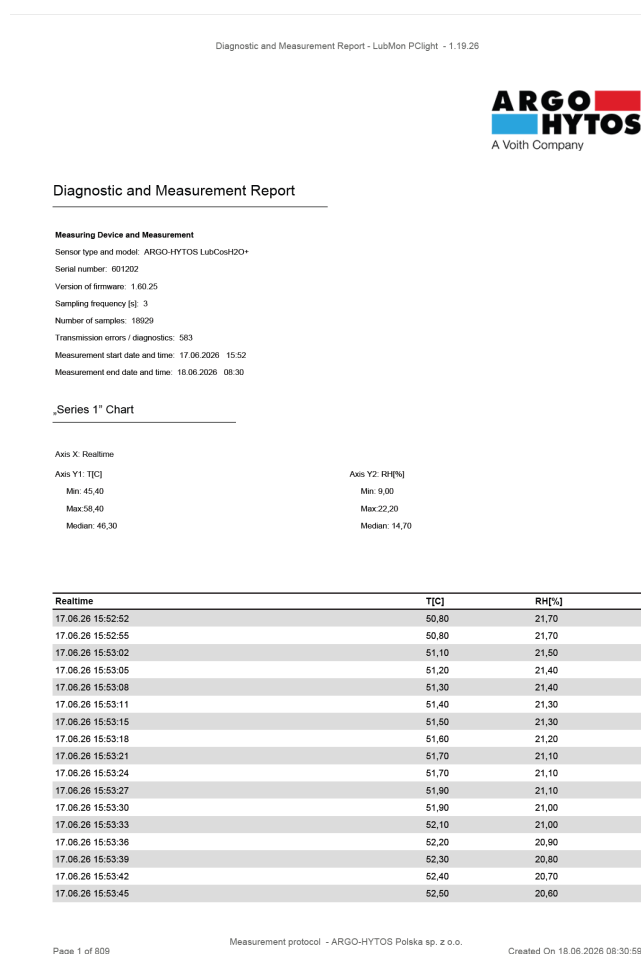


Figure 18: First page of an example diagnostic and measurement report

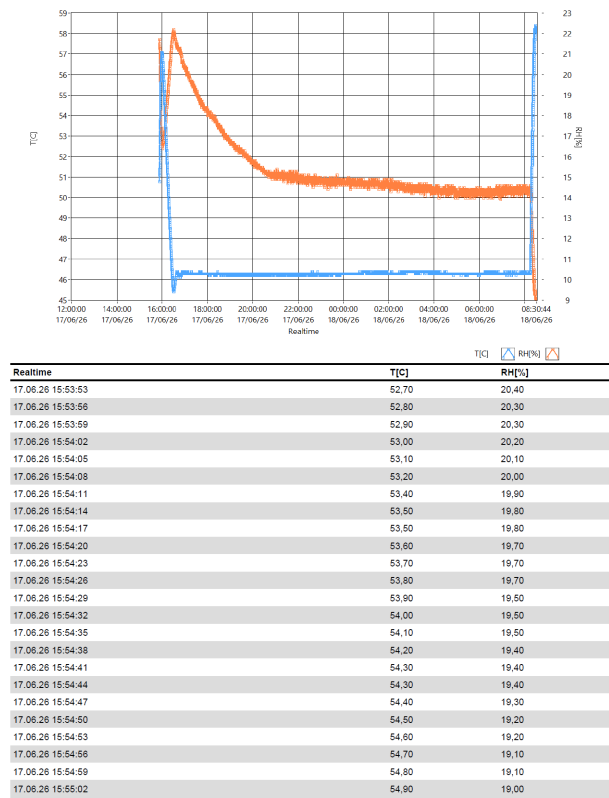


Figure 19: Chart page of an example diagnostic and measurement report

9. Contact address

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32-640 Zator
Poland

Phone +48 33 873 16 52

Email: info.pl@argo-hytos.com

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