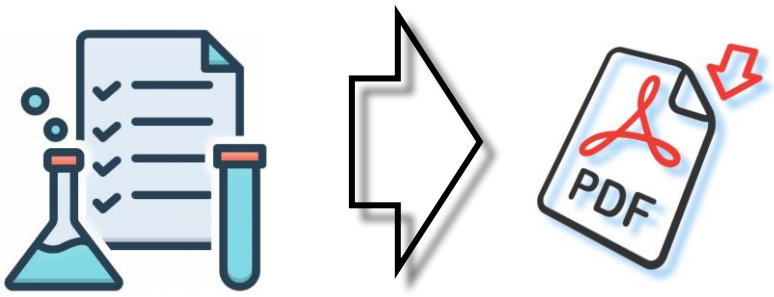
avisaro
industrial information technology

Avisaro 4.0 Product Series

User Application Note "Collect lab data and create reports"

Version / Date: 2021/06/28



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2 THIS DOCUMENT

2.1 HISTORY OF CHANGES

The document version equals the document date in the format yyyy.mm.dd.

Version	Description
2021/06/28	Added Illustration of dataflow
2021/06/14	Multiple additions and first public release
2021/05/02	Initial version extracted from existing documents

2.2 AUDIENCE

Intended reader of this document is the Laboratory Staff running the measurements.

For administration, refer to “other documents”.

2.3 LOCATION

Check for the latest document version the following link:

German site: https://www.avisaro.de/de/forschungslabor-protokolle.html

English site: https://www.avisaro.com/en/home-applications.html

2.4 LANGUAGE VERSIONS

This document is available in

- English (this document)
- German (please check link above)

2.5 OTHER DOCUMENTS

Helpful documentations are besides others:

- “Lab-Collect-AppNoteAdmin.pdf” – Similar to this document, but with all the information needed for system administrators. Please check locations above.
- „Avi-Dashboard-Software.pdf“ – Describes the PC software for receiving and processing the data in detail. Please check the website above (paragraph 2.1)
- “Technical User Manual 4.0” contains all technical details on the products.
  Find the full set of all technical documentation at the following link:
  - German site: https://www.avisaro.de/de/40_Dokumentation.html
  - English site: https://www.avisaro.com/en/40-ENG-Documentation.html

2.6 Active Links

This PDF contains active links. By 'clicking', e.g. in the table of contents, you can get to the appropriate paragraph or by 'clicking' on the "Go to:" in the header you can get back.

2.7 Document creation

This document was created using the “Avisaro Document Builder”. Single text blocks are merged into targeted documents. Thus, text blocks can be reused in several places, yet no need to update them manually when changes occur.

We point this out because:
Advantage is that compact and targeted documents are available. Disadvantage is that in rare occasions, a paragraph might have comments which do not fit to 100% in the place it is used.

2.8 Imprint and contact

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3 USE CASE: COLLECT LAB DATA

3.1 INTRODUCTION AND GOAL

In research labs, such as medical or pharmaceutical ones, a large number of measurements are done. The result of each single measurement is important:

- for regulatory reasons
- to derive knowledge
- reuse values in research

3.2 'HOW IT WORKS' – STEP BY STEP

The steps of this use case are:

1) The lab equipment (a scale, a pH-meter, ...) is connected once to the Avisaro Data Logger. The Avisaro also connected to the local network (LAN) and supplied with power.
   The logger is typically connected as a replacement for a paper based printer.
   The installation is done by the system admin.

2) The laboratory staff performs a measurement just as always.

3) Some lab equipment requires the user to push a 'print' button, while others print automatically. Please check the chapter "Lab equipment specific instructions" later in this document.

4) The measurement data are transferred automatically to a software in the network. This software creates a readable report of this measurement including date and time. The report is stored for reference in the network.

5) If configured by the admin, the report is printed automatically at a printer nearby. This is typically to sign the report with name and signature to be filed in a paper folder.

6) That's it. Easy to use.

Figure 1: Example Report of a disinfector

3.3 ‚FAIR' DATA CONCEPT

Collecting lab data is part of the "FAIR" concept:

- 'F': Find
- 'A': make available
- 'I': integrate
- 'R': reuse

Please contact Avisaro AG if you further questions to this concept.

4 DETAILED INSTRUCTIONS

4.1 PREREQUISITS

This paragraph assumes that the Avisaro Logger was installed and configured ready to use. Please check with your IT service department if you are unsure if this is the case.

4.2 CHECK BEFORE YOU START …

Before you start with your measurements, check that the following things are given:

1) Data logger is powered up: The LED should light up in any color.

2) A USB memory stick must be plugged in: The LED lights up in green, or flashes in green.

3) If the LED lights up in red or flashes in red, something is wrong. Do not continue as no reports are generated.

4.3 'HOW IT WORKS' – DETAILS

An overview of how the process works, was already laid out in the beginning of this document. Here are the details:

4.3.1 Setup and connections

The lab equipment – like a scale or pH-meter, is connected to the Avisaro Data Logger. This is done by the System Administrator. Details on how to do this setup are described in a separate document "Lab-Collect-AppNoteAdmin.pdf".

The Avisaro Data Logger is also connected to the local network (LAN) and to supply power. The connection to the network is done via "RJ45" cable. Supply power is realized using a wall plug supply.

As a laboratory staff you do not need to worry about it but knowing how things work helps.

4.3.2 Perform a measurement

The actual measurement is performed as before. Of course, this is very dependent on which laboratory instrument you have in front of you. The details of this are not part of this documentation.

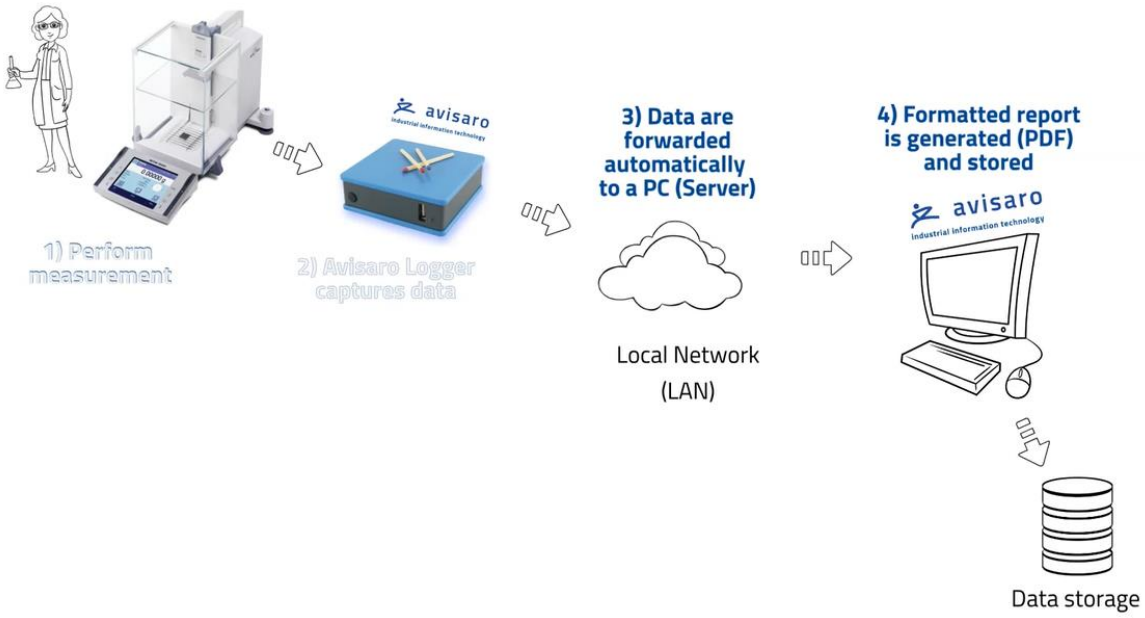
To receive a report after the measurement has been completed, a "Print" button must be pressed on some laboratory devices, on others this happens automatically. This is described in more detail in the chapter "Instructions per laboratory device" a little further on in this document.

See the animated illustration of data flow here:
https://www.avisaro.de/de/forschungslabor-protokolle.html#video

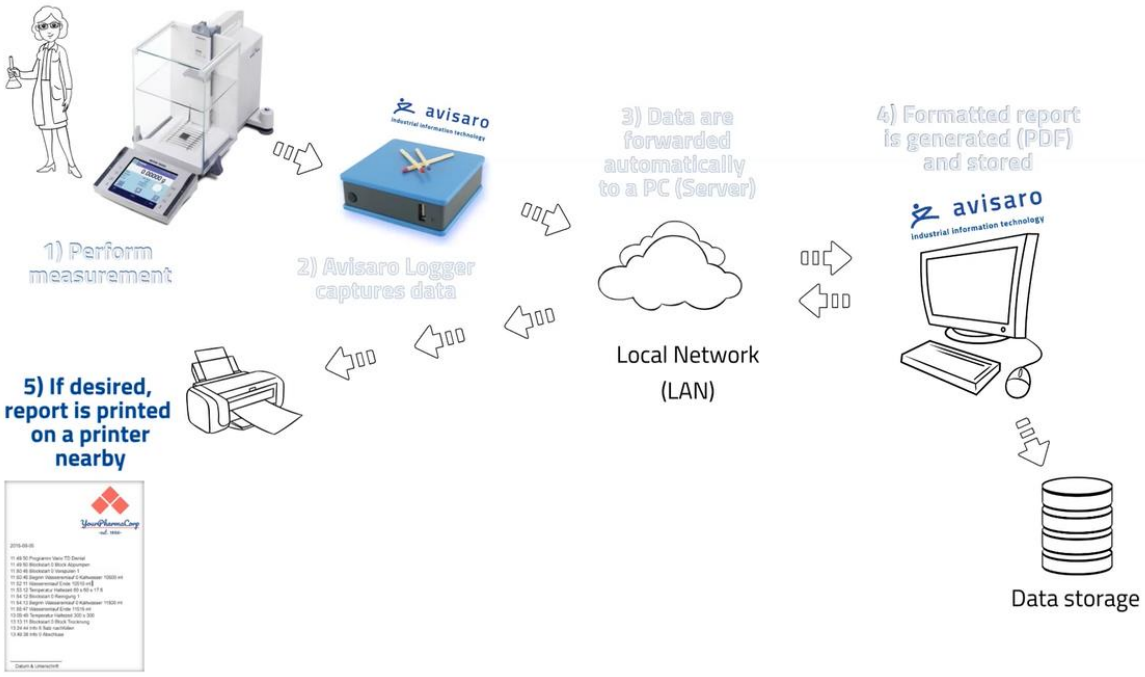
The Avisaro Datalogger captures all the data coming from the lab equipment and stores them locally to make sure all data are gathered.

4.3.3 Report generation

The data of the measurement are transferred to the Avisaro software in the network automatically or after pressing the "Print" button. This software generates a readable report with date and time stamp and the company logo. The report is also stored in the network.



If configured by the administrator, the report will also be printed on a printer near your workstation. Typically, the report must then be signed, named, and filed in a paper folder. This is recorded in the company-specific work instructions.



That is all - the report is now finished and filed.

4.4 Example Report

The example report to the right shows the structure:

The company logo on the top right - customized for your company.

The date is always displayed.

The measurement data - here from an autocalve - contains information and a timestamp.

Finally, a report for the signature and name.

4.5 An Error occurs if ...

Possible error conditions are indicated via color coded LED or result from a report which is not printed. Stop using the lab equipment in case the report generation system is not properly working.

Error condition	Possible reasons	Severity
LED is off, no color at all	• No power supply	critical
LED is flashing red	• No USB memory stick inserted	critical
LED does not flash green to confirm a measurement	• 'Print' button was not pushed even though it is required for this lab equipment.	critical

	• Connection cable between data logger and lab equipment is off	
No Report is printed if though it was configured to do so	• Network failure • Printer failure	

5 LAB EQUIPMENT SPECIFIC INSTRUCTIONS

Each laboratory instrument serves a different purpose. The operation of the instrument by performing the measurement is not described here, but the instructions on how to generate a report are included here.

5.1 LISTING OF LABORATORY EQUIPMENT

The listing of devices here is constantly being expanded, so it is worth checking to see if a new version of this document has been published.

You will also find devices in this listing that are not present in your laboratory. This arises because different companies have Avisaro loggers in use.

5.2 MIELE™ – THERMODESINFECTOR PG8581, PG8591

The retrieval of the data is fully automatic.

The report contains the main rinsing operations and if/when the operation could not be completed successfully.

5.3 METTLER TOLEDO™ - EXCELLENCE PLUS XP ANALYTICAL SCALE

Instructions follow.

5.4 HACH™ – TURBIDIMETER 2100 SERIES2

Instructions follow.

5.5 SIEMENS™ - "RAPID POINT 500"

Instructions follow.

5.6 METTLER TOLEDO™ - SEVENEXCELLENCE MULTIPARAMETER

Instructions follow.

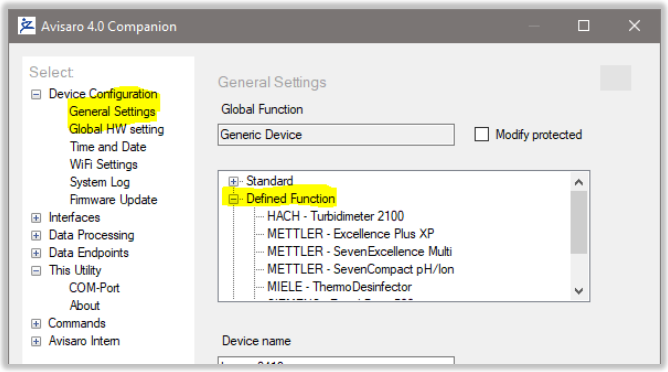
5.7 METTLER TOLEDO™ - SEVENCOMPACT PH/ION METER

Instructions follow.

5.8 ADD A NEW LAB DEVICE

New lab devices can be added by the system administrator. There are two ways to do this:

1) Individual configuration: The Avisaro data loggers can be configured in great detail. The software "Avisaro PC Companion" is available for this purpose. The system administrator can make the appropriate settings manually.
2) Selection via the selection list: If a laboratory device is known, Avisaro can create this as a predefined configuration. The predefined laboratory device can be selected via the "Device Configuration ⇨ General Settings ⇨ Global Function" menu.
   See paragraph "PC Companion Software" for details.



6 ENCLOSURE AND USER CONTROLS

6.1 START AND STOP OPERATION

The Avisaro 4.0 starts with operation right after power on if an USB stick is inserted. Also, after re-inserting a USB stick, the operation starts automatically.

6.2 LED BLINK-CODES

There is one multicolor LED to signal states of the Avisaro device.

Code	What is means	Action
Green & blue fading	All is fine Idle state, no data arriving	None
Green flashing	Data are coming in (RS232, CAN interface)[1)]	None
Yello constant	All is fine, USB stick is checked after mounting	None
Red flashing	No USB stick or button was pushed	Insert USB stick Or press button again
Red (about 2sec) than blue (about 2sec)	Logger restarts. This should not happen during normal operation	Check power supply

[1)] On analog loggers (e.g. 4…20mA) and similar interfaces, data are read continuously, thus no green flashing is shown

6.3 REAL-TIME CLOCK

A battery buffered internal real time clock is available for time stamping data, start and stop network upload and others controls. The battery is a rechargeable “memo-buf” cell - specifically designed for RTC operations. During regular operation, the battery is recharged over a 48h period. During non-operating times (= supply power off) , the date and time settings are maintained.

If the Avisaro device is networked, a network time server (SNTP) can be used to set time and date automatically.

If a Avisaro GPS receiver is connected, the RTC can be set using satelite time.

It is possible to define time zones settings.

6.4 ENCLOSURE "4.0 SKY" WITH ETHERNET AND WAGO CONNECTOR

Front with slot for USB stick. Matches are shown just for size reference:

Reverse side shows Ethernet (RJ45) and WAGO connector for data and power. The micro USB port is for configuration only:

Optional, a DIN rail fitting is available:

There is an optional adapter piece to connect the WAGO connector to a standard D-Sub:

7 USB STORAGE STICK

7.1 FILESYSTEM AND STORAGE SIZE

Commercially available USB 2.0 / 3.0 memory sticks can be used. It is recommended to exclude branded products - no "promotional items" with your own logo imprint.

There are no speed requirements. Memory sticks that are advertised as particularly fast offer no (!) advantage in the Avisaro data logger. Typically these optimizations are designed for cameras etc..

Memory sizes from 4 to 256 GByte are supported. As file system FAT or FAT32 (preferred) is used. NTSF or others are not supported.

Memory sticks are typically not in the scope of delivery - each application typically has different requirements.

7.2 CHOOSING THE RIGHT MEMORY STICK

For **industrial** use, special parameters may have to be observed.

The **temperature** range should be considered. There are "industrial grade" memory sticks available - often designed as "SLC" version - which are also suitable for harsh environments.

The **mechanical dimension** should also be considered. It is disadvantageous if the stick protrudes openly from the housing and could be knocked off. In this case short sticks are recommended. If the logger is installed protected, then a longer stick is easier to use.

The appropriate **memory size** also depends on the intended use. Due to the technology, memory sticks with an extremely high capacity are typically less robust than smaller memory sizes. The loggers have a "ring memory" that can be optionally activated. If the memory stick becomes full (approx. less than 100MB free memory) the oldest files are deleted - this is a useful setting for some applications.

8 CONTACT AND SUPPORT

Please contact Avisaro if there are any questions:

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End of this documentation