



Avisaro 4.0 Product Series

Quick Guide

RS485 Data Logger '4.0 Shell'

'M42077' - 'C42077' - 'G42077'

RS232 Data Logger

Version / Date: 2021-05-06



1. THIS DOCUMENT

1.1. PARAGRAPH NUMBERING

This document is an extraction of the “all-in-one” document “Technical User Manual 4.0”. The paragraph numbering is linked to that document - thus it is not consistent in this “quick guide”.

1.2. LOCATION

Check for the latest document version the following link:

http://www.avisaro.de/de/40_Dokumentation.html (German site)

Active links:

This document has active links. Click within the PDF on internal and external references to navigate quickly to the target.

1.3. OTHER DOCUMENTS

“Technical User Manual 4.0” contains all of this and more information.

1.4. LANGUAGE VERSIONS

This document is available in English version only

4. ENCLOSURE AND USER CONTROLS

4.1. ENCLOSURE “4.0 SHELL”

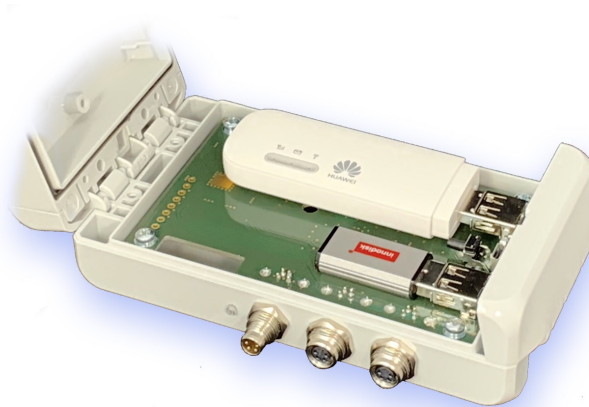
“4.0 Shell” enclosure with PG screw type connection:



Enclosure with optional “M8” connectors:



Inside, shown with optional LTE mobile data stick and optional industrial grade USB stick:



4.2. 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.

4.3. 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⁾	
Red flashing	No USB stick or button was pushed	Insert USB stick Or press button again

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

4.4. 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.

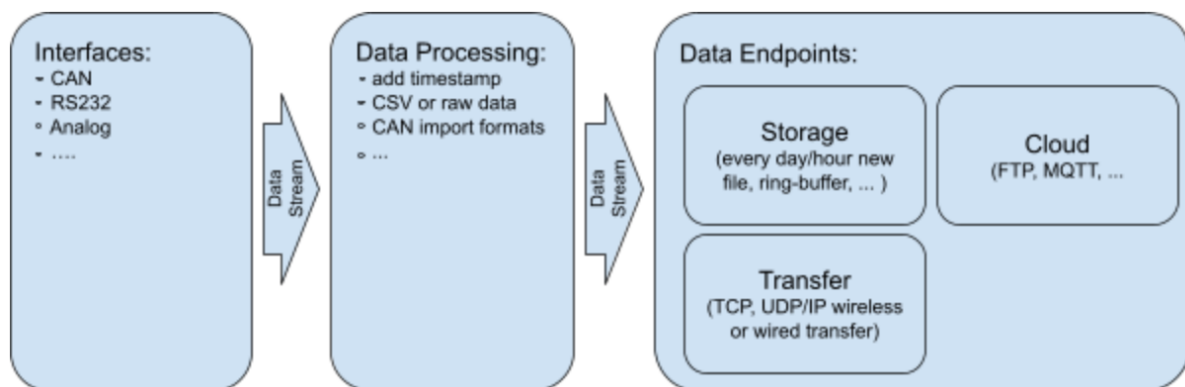
If the Avisaro device is networked, a network time server (SNTP) can be used to set time and date automatically.

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

It is possible to define time zones settings.

4.5. CONCEPT OF OPERATION

The Avisaro 4.0 is divided into sections:



Data is received through an “Interface” and then forwarded to the “Data Processing” section. All formatting happens here and then data is forwarded to the “Data Endpoint”.

5. USB STORAGE STICK

5.1. FORMAT AND SIZE

Typically, the USB stick is not included in the scope of delivery. Thi

Regular USB memory sticks can be used:

Size: From 4 to 256 GByte

File system: Formatted as FAT or FAT32 (preferred)



5.2. CHOOSING THE RIGHT TYPE

Make sure to verify whether or not your application needs industrial grade USB storage - this is typically a matter of temperature.

5.3. CHOOSING THE RIGHT SIZE

Larger USB memory sticks tend to become more sensitive to hardware faults. Thus, estimate the amount of data per day, multiply by the number of days between USB stick reads and add some slack.

If using the “ring buffer” setting, old data is deleted when the stick becomes full. “Full” means, if free space drops below 100MB. Please note, that in this configuration, the last two days are not deleted. Therefore, choose an USB stick which holds at least 2 days of data.

12. INTERFACE DESCRIPTION AND PIN LAYOUT

12.1. POWER

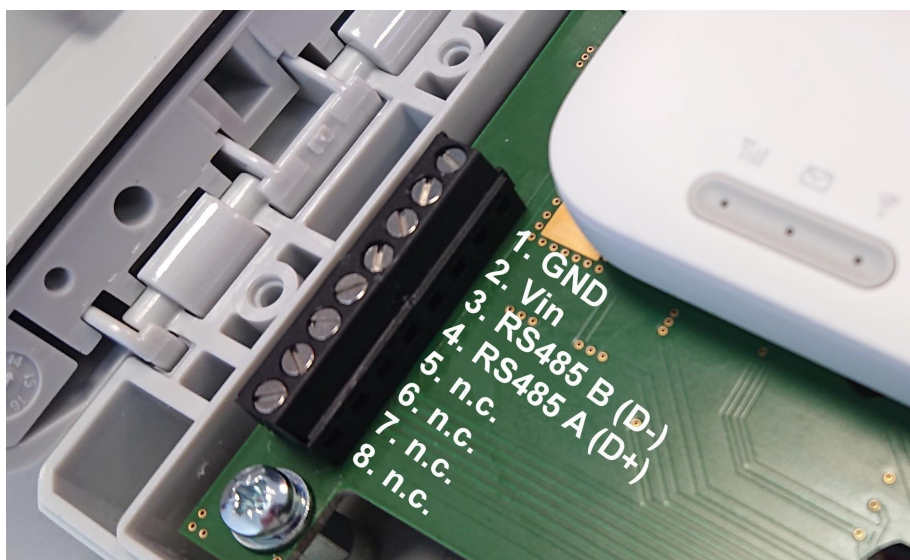
12.1.2. Power Supply "Avisaro 4.0 Shell"

Power supply parameter:

DC voltage, 12V to 32V

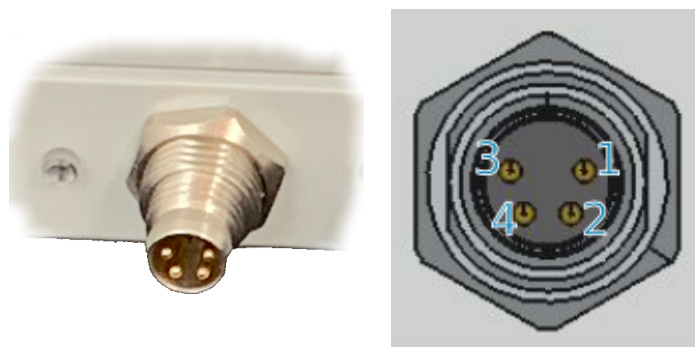
Recommended power: 3W

For the "4.0 Shell" version with cable glands, the power connection is done inside. This picture shows the RS485 version - please refer to the interface drawing of the interface for your product:



Connector	Interface	Pin	Signal	Direction
8 pol	Power and Interface	1	GND	
		2	Vin (12V to 32V)	
		3-8	see below	

12.1.2. M8 Connector



Standard M8 connector (male)

Connector	Interface	Pin	Signal	Direction
M8, 4 pol, male	Power	1	n.c.	
		2	GND	
		3	n.c	
		4	Supply Voltage	I

12.3. RS485 INTERFACE

This is an industry standard RS232 connection.

12.3.1. Default RS485 settings

Baudrate: 9.600

No of bits: 8

Parity bits: none

Stop bits: 1

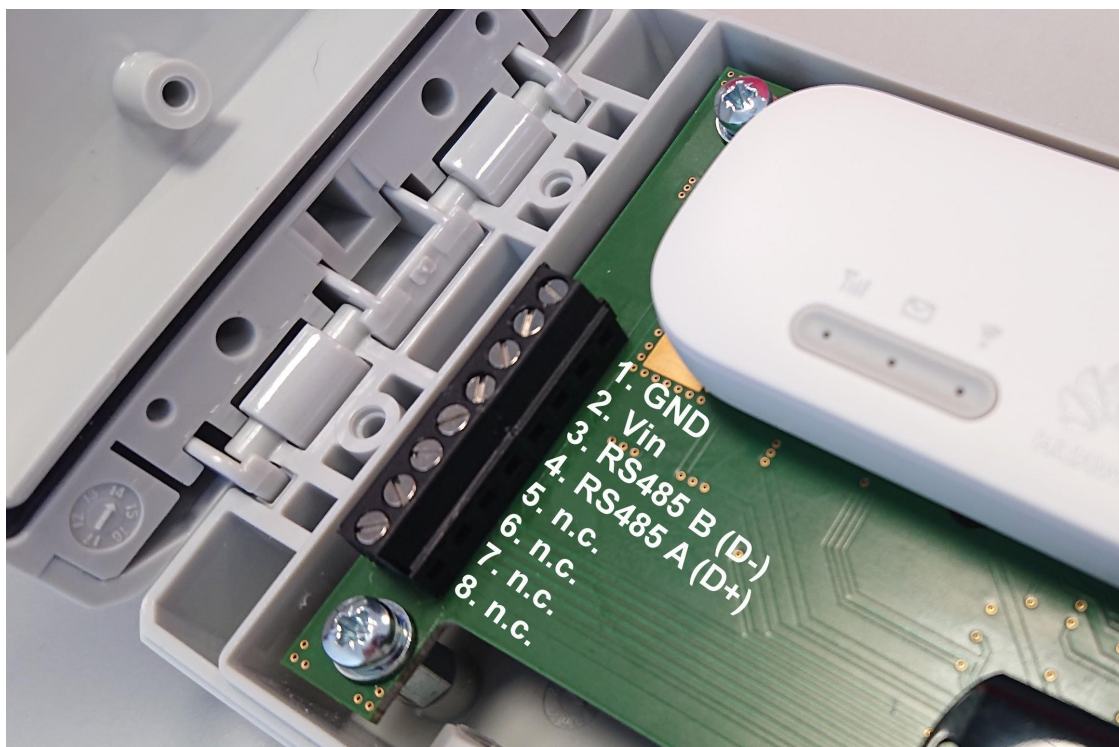
Flow control: none

12.3.2. Signal levels

Max Input voltage range on signal pins: 0 to 5 V

Output level provided: 0V to 5V

12.3.3. 1x RS485 "Shell" ("C42x77", "G42x77")



Connector	Interface	Pin	Signal	Direction
Screw Type	1 st RS485	1	GND	Power & Signal
		2	VCC (11..32V)	Power
		3	RS485 B / D-	Bus
		4	RS485 A / D+	Bus
		5	n.c.	
		6	n.c.	
		7	n.c.	
		8	n.c.	

11. CONFIGURATION: 'PC COMPANION SOFTWARE'

The "PC Companion Software" is used to configure the Avisaro 4.0 Devices.

The software is available for download from the Avisaro homepage:

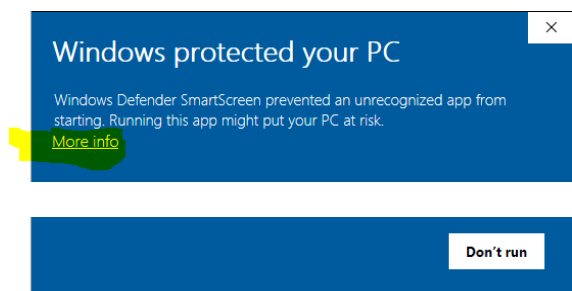
<http://www.avisaro.de/de/40-PC-Software.html> (German)

<http://www.avisaro.com/en/40-ENG-PC-Software.html> (English site)

There are two versions to download: "Install" and "Direct start" – the first runs an installer which requires administrative rights on the PC, the second one can be started without an install process. If unsure, check with your IT department which version to download.

11.1. SOFTWARE INSTALLATION ("SECURITY WARNING")

Windows warns the user before installing or using software downloaded from the Internet. So if you click on "Avisaro_40_Companion_v2.31_Setup.exe", the warning will occur:



After a click on "More Info", the box shows:



Select "Run anyway" to continue.

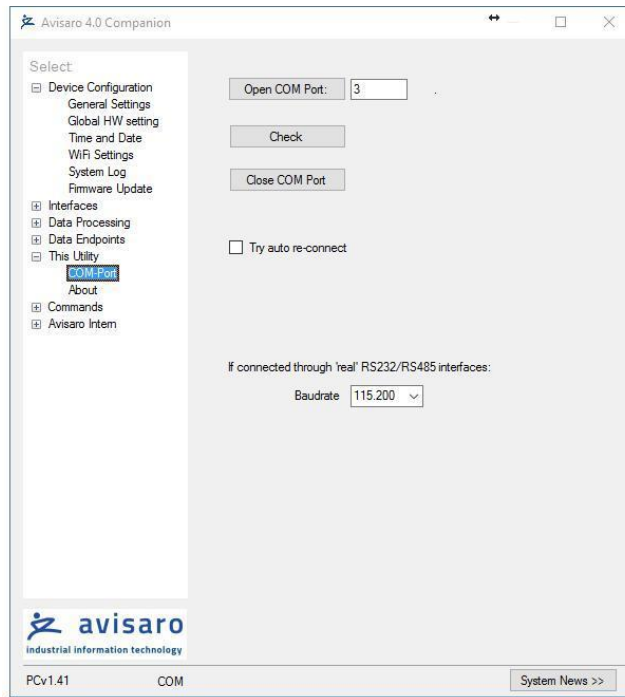
11.2. DRIVER INSTALLATION

If you connect the Avisaro Device to the PC using a Micro USB cable, a virtual COM port driver is installed. If this driver does not install automatically, you can download and install this manually:

<http://www.avisaro.de/de/40-PC-Treiber.html> (German site)

<http://www.avisaro.com/en/40-ENG-PC-Driver.html> (English site)

11.3. INITIAL SET-UP



After starting the companion software, the virtual COM port number needs to be entered. You can find this number in the Windows “Device Manager”.

This setting is stored for future use.

Click on ‘open COM port’ – which will turn green if successful. You can use the “check” button to verify that the connection is alive.

You can use the “Check” button to verify the connection to the Avisaro Device. It should light up green when clicked.

The baudrate setting for “if connected through real RS22.. “ can be ignored. This setting is used only in special projects and not scope of this document.



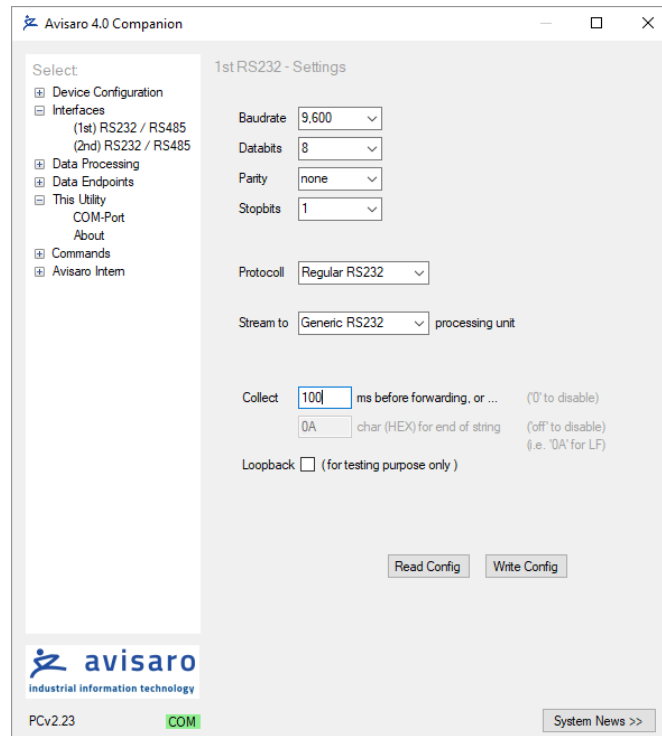
All settings are deactivated if there is no Avisaro Device attached.

11.4. USING THE PC COMPANION TOOL

Click on “Write Config” to transmit changes in the PC tool to the Avisaro device. Click on “Read Config” to display the currently stored values (if you navigate between options, the latest settings are read of course automatically).

Most settings become active after reboot. This can be done in Commands ⇨ Device Control: Reboot Device

11.8. INTERFACES ⇨ (1ST) RS232/RS485 AND (2ND) RS232/RS485



The 1st and 2nd RS232/RS485 settings are identical.

The **Baudrate** settings follow typical industry settings and need to match the target application.

The **Protocol** settings are as follows:

“Regular RS232”: data are passed on with no further interpretation.

“Char Terminated”: data are grouped as one block until the ‘end of line’ identifier is reached.

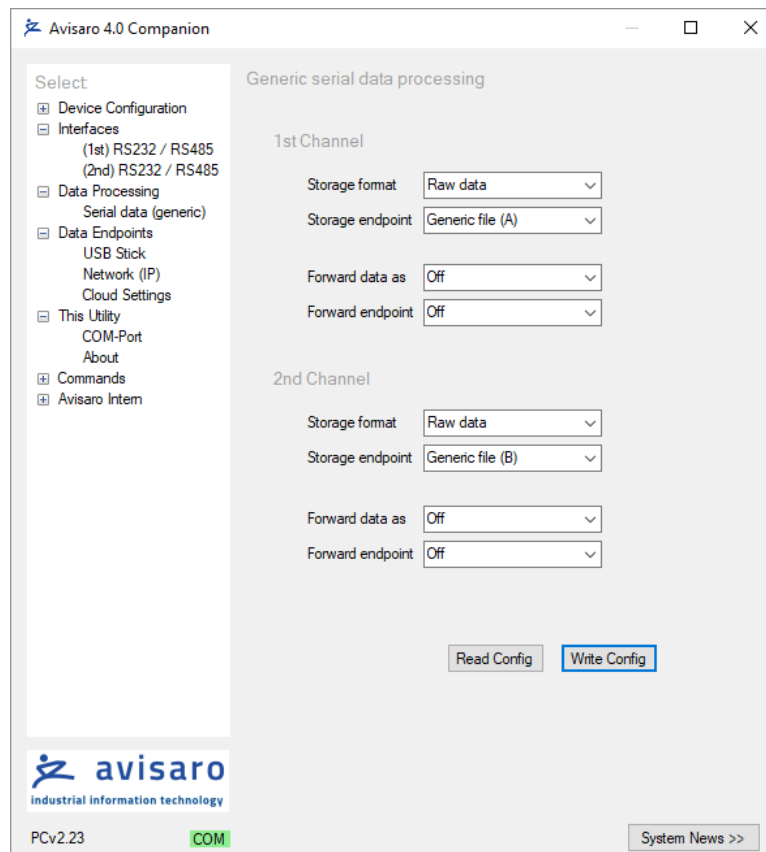
“GPS(uBlox)”: the NMEA strings are treated as one block of data.

The **Collect Time** defines a time period in ms for how long data are collected into one block. A ‘0’ lets the logger process each received character one at a time. A good value is 100ms - thus the logger collects for 100ms data before starting to process them.

The **End of Line** identifier defines the character which ends one block of data. This is only active with the “Char Terminated” protocol.

11.10. DATA PROCESSING ⇨ SERIAL DATA (GENERIC)

This configuration defines how RS232/RS485 data are processed. Choose the type of formatting and the target.



Storage format defines how RS232 data are stored:

“Off”: data are not stored

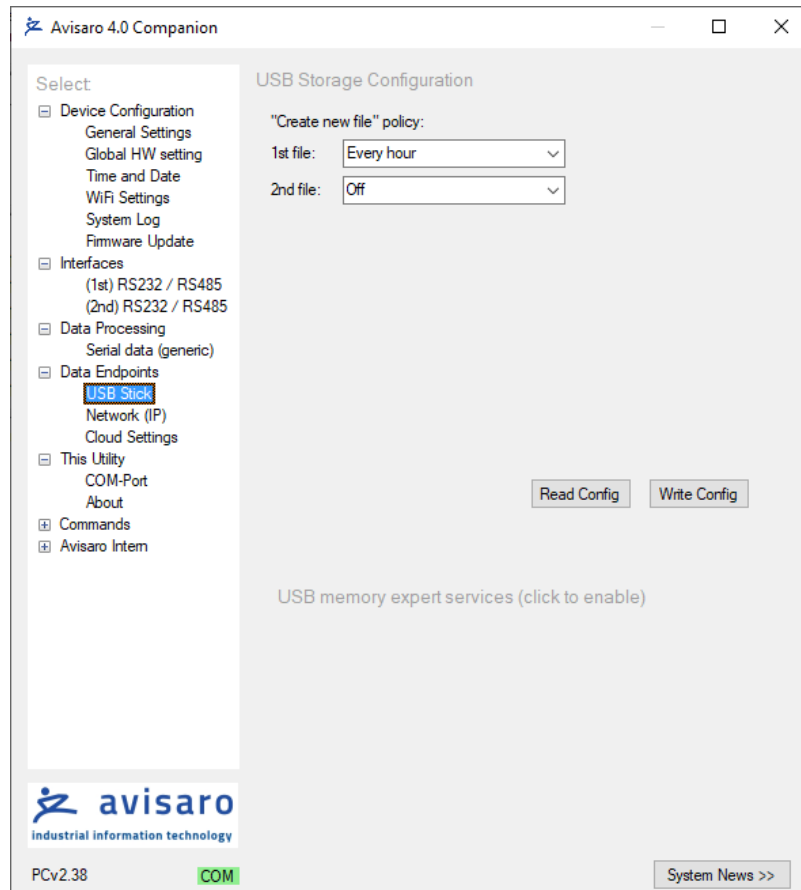
“Raw data”: data are stored without any formatting as they come from the interface

“Timestamp+ASCII”: data are stored with a leading timestamp followed by the data. This works well for ASCII/Text data, but not good for binary data.

“Timestamp+HEX”: data are stored with a leading timestamp followed by the data as HEX format. This works well for binary data.

11.12. DATA ENDPOINTS ⇨ USB STICK

This setting controls the file handling on the USB memory stick.



“Create new file policy”: “1st file”

Off	No data storage, all data are discarded
One file	All data are stored in one big file.
Every new start	
Every hour	A new file is created every hour. The files are named “yyymmddhh.txt”
Every hour with ringbuffer	A new file is created every hour. If storage space is consumed, the oldest file is deleted. Note: <ul style="list-style-type: none"> • There is a hysteresis: if free storage drops below 100 MB, old files are deleted until 500 MB are free again • The last two days from today backward are not deleted. This is for malfunction security: This assumes that the stick could hold at least 2 days of data - if not, this is a configuration error.
Every day	A new file is created day at midnight. The files are named “yyyymmdd.txt”

14. FIRMWARE UPDATE



We strongly recommend to do a firmware update only if needed. There is a potential risk of a failed update process to cause a dead device which can only be recovered by sending it to Avisaro service. Good reason for an update is a known bug repair or an additional feature.

There are three ways to update the firmware of the Avisaro 4.0 family:

- 1) Via USB Stick
If the Avisaro 4.0 product has a USB Host port, a new firmware can be uploaded using a USB stick. See details below.
- 2) Via PC Companion software
If the Avisaro 4.0 product is connected to a PC via USB cable, the firmware can be updated using the PC companion software. See details below.
- 3) Via Remote Update
For selected products, a remote firmware update via FTP server / Internet is provided. See paragraph "[Remote Firmware Update](#)" for details.

The latest firmware version can be found online: <http://www.avisaro.de/de/40-Firmware.html>

14.1. FIRMWARE UPDATE VIA USB STICK

Instructions:

- Download the latest version of the firmware from the link posted above
- Unpack the *.zip file to retrieve the "avi40up.bin" file
- Copy the file onto a USB stick in the root directory
- Power up the Avisaro data logger
- Insert the USB stick
 - After a few seconds, the LED flashes red (the firmware is loaded)
 - After about 30 seconds, the LED flashes white (critical update phase, to not interrupt)
 - The logger reboots and starts again to show a green LED
- The firmware update file is deleted from the USB stick when finished - this is to avoid accidentally a restart of the process.
- Done !

Warning:

- Ensure stable and sufficient power supply during this process. There is a risk that the device becomes unusable if there is a power failure during the process. Those broken devices need to be sent in to Avisaro for repair.

Background:

- The configuration remains - if not stated otherwise - the same. Thus, all settings stay the same after a firmware update

14.2. FIRMWARE UPDATE VIA PC SOFTWARE

See paragraph "[PC Companion Software](#)" for details.

14.3. FIRMWARE UPDATE VIA FTP SERVER / INTERNET

See paragraph "[Remote Firmware Update](#)" for details.