S2.WIFI-STICK-D2

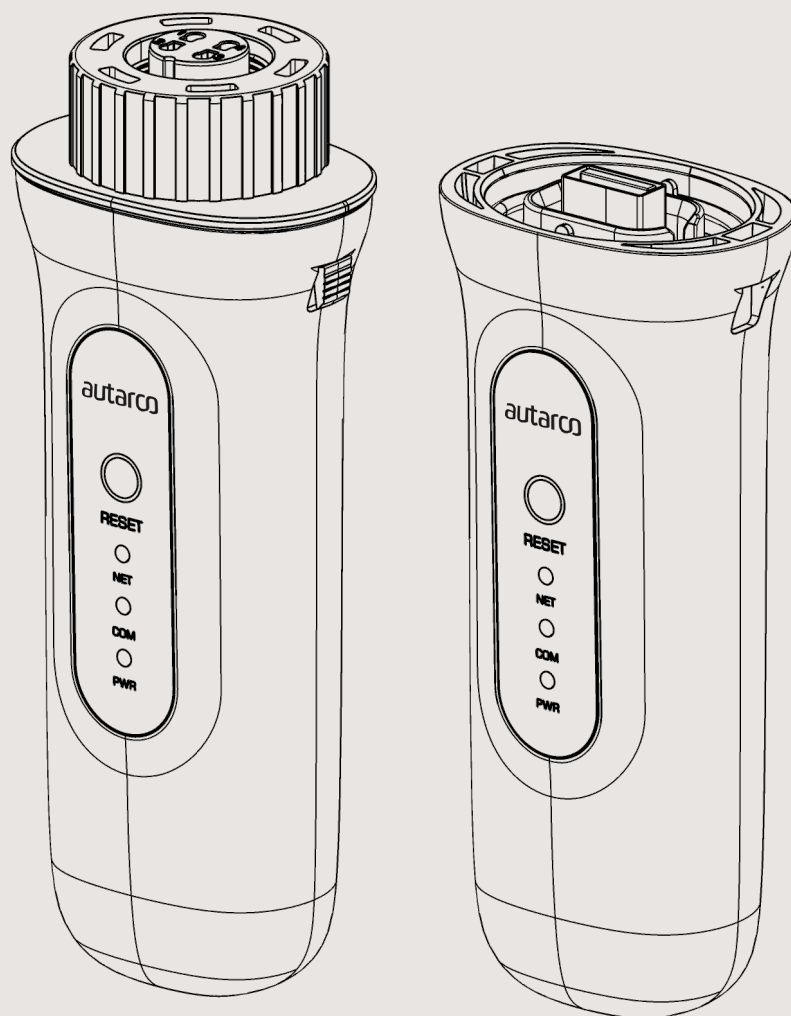## for Autarco Inverters

Information

This manual is an integral part of the unit. Please read the manual carefully before installation, operation or maintenance. Keep this manual for future reference.

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The Netherlands

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1   Installation

1.1   Read this first

The main purpose of this user manual is to provide instructions and detailed procedures for installing, operating, maintaining, and troubleshooting the Autarco WiFi stick D2
(the 2nd generation of the Autarco digital sticks)
which are used with Autarco inverters. Please keep this user manual available at all times.

This manual is for the following communication sticks:

— S2.WIFI-STICK-D2.1 -For inverters with a 4-pin connection
— S2.WIFI-STICK-D2.U1 -For inverters with a USB connection

Note: When designing with Helios, your Autarco system will be delivered with the right communication stick compatible for your inverter..

1.2   Important symbols

⚠️ **WARNING!** Indicates safety instruction, which if not correctly followed, can result in injury or property damages.

2.1 Topology overview

1. Inverter(s) with S2.WIFI-STICK-D2
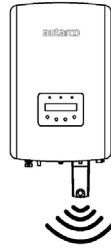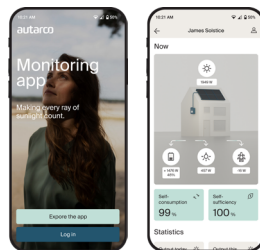

Inverter(s) communicate via WiFi-stick D2 with local router

2. Local router

WiFi-stick D2 communicates via local router with the Autarco-server

3. https://my.autarco.com

Monitoring data becomes visible in MyAutarco platform

2.2   LED indicator lights

There are three LED status indicator lights on the WiFi-stick. The PWR light (red), or power light, indicates power status of the stick. The COM light (orange), or communication light, indicates communication between the stick and the inverter. The NET light (green), or network light, indicates communication between the stick and the Autarco server.

4. LED lights on 4-pin Stick USB Stick

5. Summary of LED information

LED indicator	Status	Description
NET/Green	ON	The stick is connected to the Autarco server. The monitoring connection was successful. Monitoring data is forwarded.
	BLINKING	The stick is trying to connect to the Autarco server.
	OFF	The stick does not connect to the Autarco server.
COM/Orange	ON	The stick can receive data from all connected inverters.
	BLINKING	A. The stick is processing data from an inverter, or, B. The stick is performing a software upgrade (if the green NET light is also flashing at the same time).
	OFF	The stick can not receive data from at least one of the connected inverters.
PWR/Red	ON	The stick is powered (the stick is on).
	BLINKING	The stick is not getting enough voltage.
	OFF	The stick is not powered (the stick if off).

If the LEDs do not turn on after installation in the inverter, proceed to chapter 6.

3   Installation

3.1   Install 4-pin Communication stick

1.   Plug the WiFi stick into the corresponding connection point on the inverter

Note: ensure that the position of the connection piece of the stick is correct. Place the small notch on the terminal correctly so that the numbering of the 4-pin connector matches the numbering on the inverter.

6. 4-pin connector notch & COM Port for Inverters with 4-pin connection
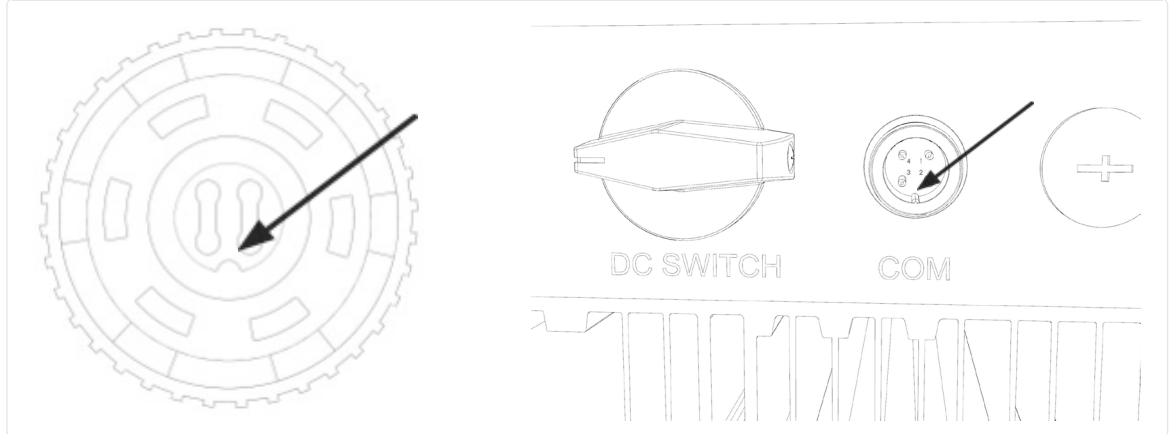
2.   Tighten the stick using the black ring on the top of the stick.

WARNING! To avoid damage, do not twist the blue housing itself. Always hold the stick with 1 hand and use the other hand to rotate the screw. Hand tightening is enough. Twisting the stick itself while in the inverter will destroy the cables inside the stick and void the warranty!

7. Connection point & 4-pin stick installation
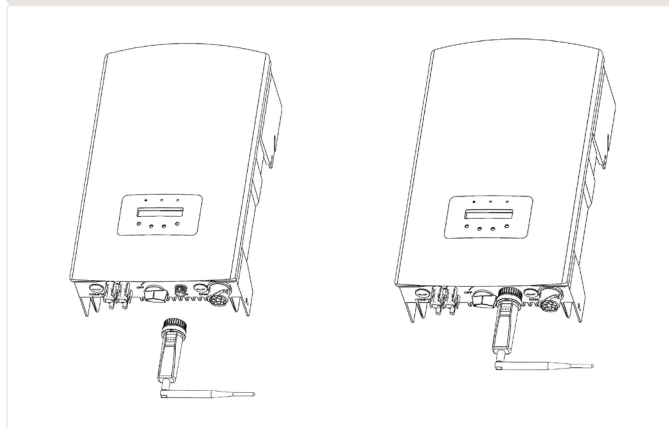
3.2 Install USB Communication stick

1.   Plug the WiFi stick into the corresponding connection point on the inverter.

Note: ensure that the position of the connection piece of the stick is correct. Match the joint indicated below on the inverter to correctly connect the USB connection.

8. USB connector notch & COM Port for Inverters with USB connection
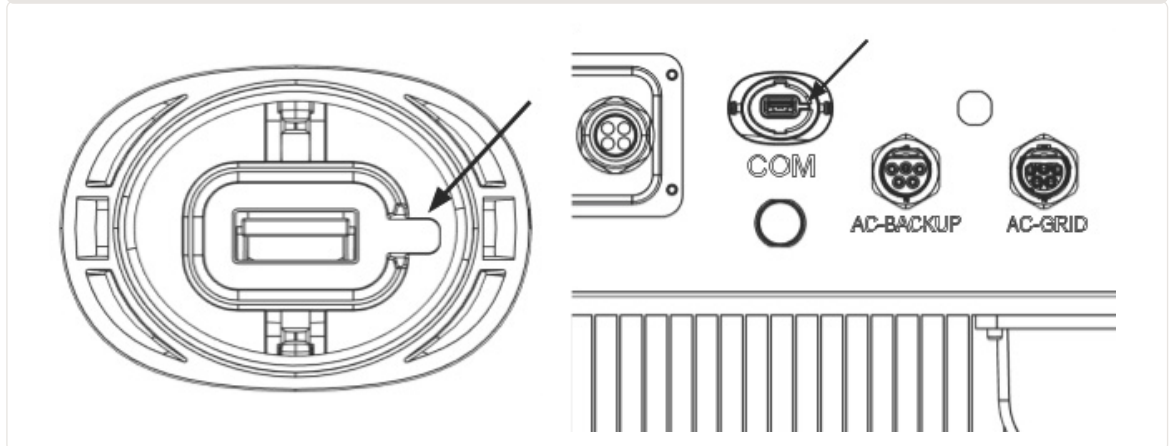
2.   Press both sides of the protective cover and open the inverter USB port protective cover. Align the WiFi data logger with the USB port groove of the inverter and install it directly.

9. Connection point & USB Stick installation
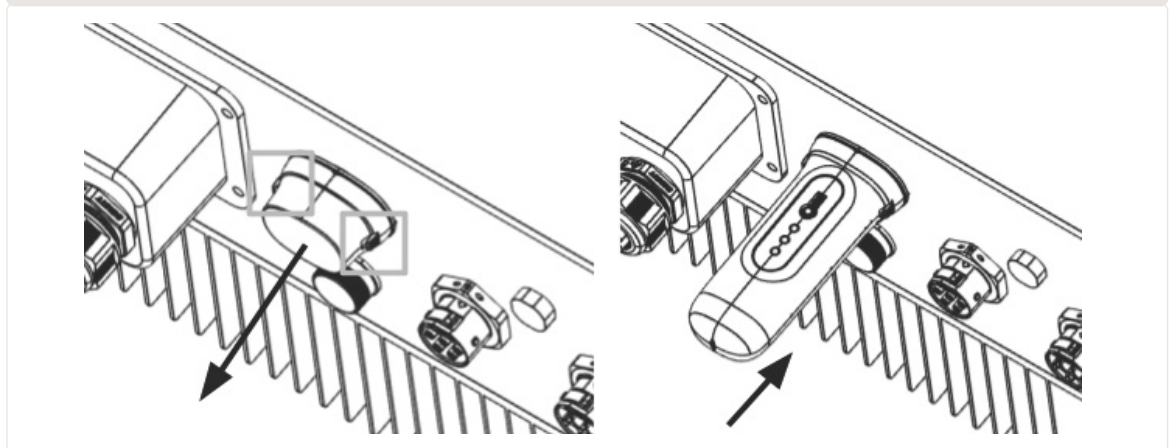
WARNING! The WiFi stick must be kept away from large metal objects and electrical devices with strong magnetic fields, such as microwave ovens, refrigerators, PV panels and metal walls to ensure the communication quality. Communication quality may be affected in lightning storms.

3.3 Connection with several inverters

The WIFI-STICK-D2 can also be used to read out several inverters.
To do this, the inverters must be daisy-chained.

1.   Connect multiple inverters in parallel with network cables.
2.   Connect the WIFI-STICK-D2 to the first inverter.
3.   Set different addresses for each inverter.
       For example, if three inverters are connected, the address of the first inverter
       should be set to "01", the second inverter to "02" and the third inverter to "03".

a.   On the inverter, press ENTER and then UP/DOWN to navigate to the SETTINGS.
b.   Select SET ADDRESS
c.   Use UP/DOWN to select the correct address and press ENTER to save.
d.   See the inverter manual for more information.

10. Daisy-chaining multiple inverters

UTP cable
(not included)

RJ45 cable
(not included)

up to 10 inverters >

3.4 Connect the stick to the local WiFi network via Bluetooth
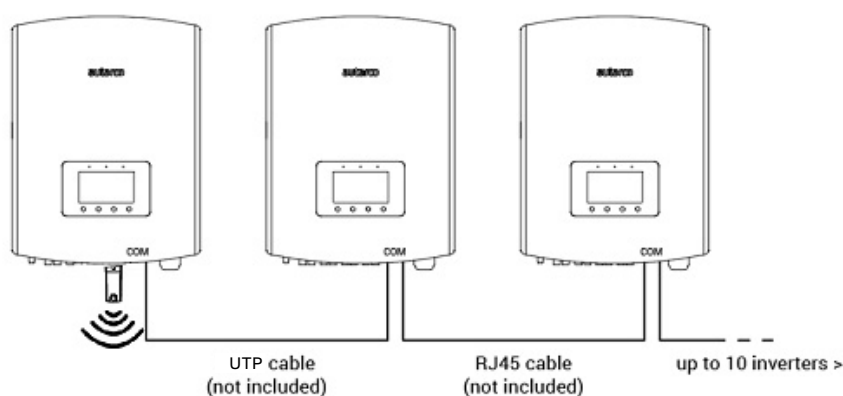
When the stick is connected to a generating inverter successfully, the red "PWR" indicator will turn on immediately. The orange "COM" indicator will start to flash and then turn solid. The "NET" indicator should be flashing.

If the PWR and/or COM LED is blinking or does not lit, go to chapter 6. Only proceed with the next steps after both PWR and COM indicators are on. You will now establish the connection between the monitoring device and Autarco's server by using the existing on-site WiFi network.

This is done in three steps:
a.   Open the system you are configuring in the Autarco Installer App
b.   Connecting to the Bluetooth network of the stick
c.   Allow the stick to connect to the local wifi router by providing the network name and password.

The stick can then use the local internet connection to send monitoring data via your local router to the Autarco server. Proceed as follows:

1.   Find the serial number of the stick. This is on a sticker on the back of the stick:

5F12092405500310

As an example we will use WiFi serial number 5F12092405500310. Your stick has a different number.
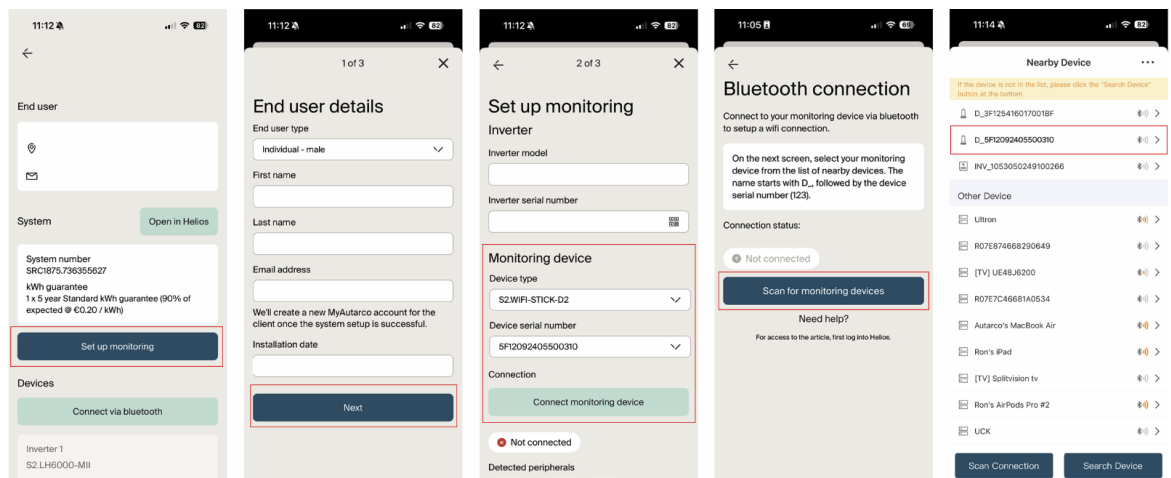
a.   Start setup in the Installer App

1.   Select the right system in the Autarco Installer App
2.   Press Set up monitoring.
3.   Fill out the end-user details.
4.   Manually input the inverter serial number, or press the QR code button to scan the sticker on the device using your phone camera.
5.   Select the appropriate monitoring device type: WiFi D2
6.   Manually input the monitoring device serial number, or press the QR code button to scan the sticker on the device using your phone camera.
7.   Press Connect monitoring device.

B.   Connect via Bluetooth

1.   On the next screen, press Scan for monitoring devices.
2.   The app will now show a list of available Bluetooth devices to connect to. Select the monitoring device (the name starts with D_ followed by the device serial number).

If you don't see your monitoring device in the list, it probably has older firmware that isn't compatible with Bluetooth, please refer to this article for a workaround
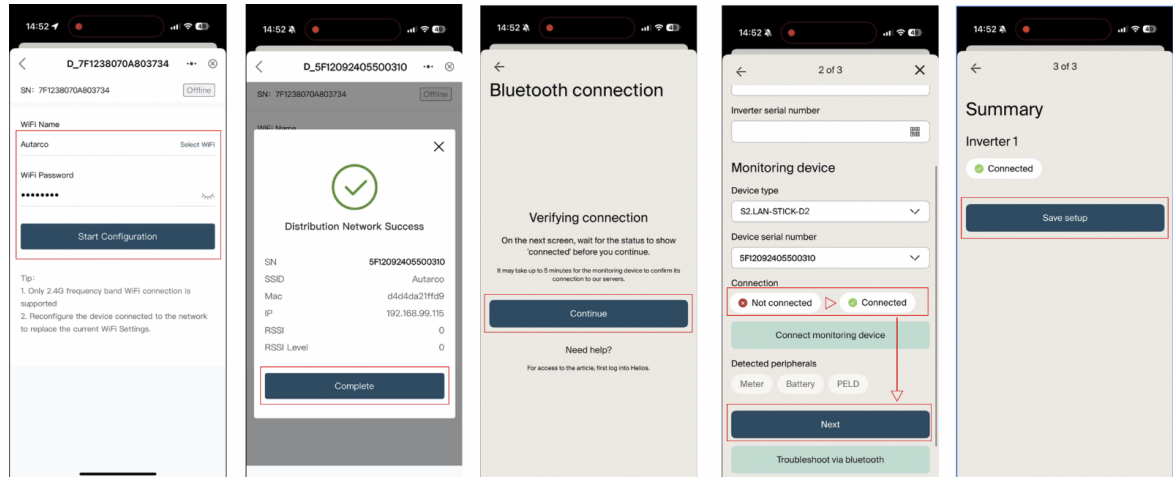
C.   Connect to WiFi

1.   Manually input the name of the residential WiFi network and the password.

Alternatively; select the wifi network via the 'Select WiFi' button. Be aware that this means you temporarily leave the app to access general wifi settings, and have to return to it manually. Once returned it will have automatically selected the wifi network name your phone is connected to.

2.   Press Start Configuration.

3.   Wait until the message Distribution Network Success appears, press Complete.

On Android, press the back button on the top left of the next screen to continue, iOS closes this page automatically.

If the configurator returns an error, this probably means the WiFi network name or password are incorrect. Make sure you copy the name precisely, e.g. include spaces between words and capitalize the right letters.

Finalise configuration

1.   Press Continue on the next screen to return to the device configuration page.
2.   Wait until the Monitoring device Connection field says connected (this may take up to 5 minutes).
3.   Press Next.

If the green light on the monitoring device stops blinking and stays lit, this signals the device has successfully connected to WiFi. It will then proceed to send a message to our servers for verification. Once that message is received the status changes to 'Connected'.

4. On the summary screen, the Inverter should show as Connected.
5. Press Save setup.

3.5   New stick's IP address after installation

After a successful connection, the stick's IP address will change. To find out this IP address, log in to the router to find the new IP address in the list of connected devices. Some routers require you to switch off and on to refresh the list of connected devices.

Note: Always make sure that your router's WiFi channel is set from **1 to 11** (not 12 or 13).

3.6   Modbus via TCP

The communication stick contains the ability to communicate with Modbus commands via the wifi network. This feature allows the use of the existing network to be used for communication with other devices that support this protocol as well. This is used for (Autarco) Energy Management System that read information or send steering commands to the inverter without the need to additionally place a communication wire.

4 Access MyAutarco monitoring platform

4.1 Access MyAutarco monitoring platform (installer)

Once the Autarco server successfully receives monitoring messages, you need to link the data to the associated system (digital twin) in Helios and generate the MyAutarco login for the end user. End users should contact their installer for this.

By registering and linking the serial numbers of the installed products, Autarco software knows to which system, inverter and string the received monitoring data must be linked. Then we start displaying the data in MyAutarco for both the dealer and the end user

⚠️

NOTE TO THE INSTALLER
Before registering the system with Autarco, you must confirm the following from your customer regarding the creation of their monitoring and kWh warranty certificates:

- First name
- Last name
- Email address
- Phone number
- Installation address

4.2 Access MyAutarco monitoring platform (user)

4.2.1 After installation of the stick by the installer

You will receive your login details by email after the installer has registered your system with Autarco. You can access monitoring data on MyAutarco, via the website http://my.autarco.com or via the MyAutarco app.

4.2.2 After installation of the stick by the user

If you, as the owner of the solar power system, have installed a stick or have replaced a stick, it is necessary that the serial number is registered by your original installer. Only then will the monitoring work on the website and in the MyAutarco app.

Only if your installer can no longer help you, you can send an email to support@autarco.com. Then we can register the serial number for you. For a quick processing, we need the following information:

- First name and last name
- Address (of installation)
- E-mail address
- Serial number of newly installed stick
- Serial number of inverter
- If applicable: serial number of removed stick

4.2.3 Download MyAutarco App

MyAutarco monitoring app is available on both Android and iOS devices. Here are three ways you may download and install the app:

1. Visit www.autarco.com to download the latest version of our app.
2. You can simply search **"MyAutarco"** in Google Play or Apple App Store to find the latest version of our app.
3. You may scan the QR code below to download the latest version of MyAutarco.

IM.S2.WIFISTICK-D2-EN V1.0

5   Resetting the stick

The reset button on the stick has two functions:

1. **Force a message**
    Briefly press the reset button once to force a message that is immediately sent to the Autarco server.

2. **Perform reset**
    Press and hold the reset button for 15 seconds to reset the stick to factory settings. The COM light (orange) and NET light (green) turn off temporarily. This reset will then re-enable the stick's WiFi Access Point (stick's WiFi network) so that you can redo the settings in chapter 3.

    Warning! **DO NOT** remove the WiFi-stick from the inverter. This is not necessary for reset.

11. Reset button on stick point & stick

6 Troubleshooting
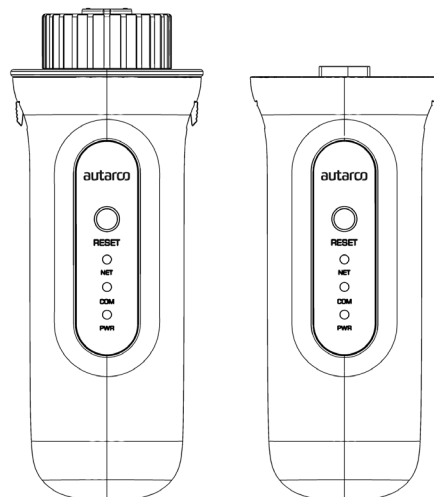
6.1 The stick has no power (red 'PWR' indicator is off)

If the inverter is powered on, the stick is installed correctly and the address setting in the inverter is <01>, but the red LED does not turn on, then the stick may be defective and/or the internal cables are broken.

Try installing another stick, making sure that you **only use the black ring** to tighten. **NOT the blue housing** of the stick. Hold the stick with one hand and turn the black ring with the other hand.

6.2 The red 'PWR' light is on, but the orange 'COM' light is off

The WiFi-stick is powered (on), but cannot receive data from at least one of the connected inverters.

1. Briefly press the button on the back of the stick once (this will attempt to force a message).

2. Check the address setting* of the inverter.

   Address setting in inverter:
   If the 4G STICK D only reads out one inverter, the address setting of the inverter must always be <01>. If the LAN-stick reads more than one inverter, the first inverter must be set to <01>. The other inverters must be numbered consecutively.

   To check the inverter address, use the up and down buttons on the inverter, go to **Settings > Set Address** > select correct number > **Enter**.

*This address is used to identify inverters when multiple inverters are read by one device.

6.3 Signal quality

The most common reason why the WiFi-stick cannot establish a good connection to the remote Autarco server is a weak WiFi connection to the local router. Check whether the stick has a sufficient signal:

- Check the signal quality in chapter 3. **A signal quality of 30% or more is sufficient**.
- If the signal quality is less than 30%, please move the router closer to the inverter with a stick. If this is not possible, install one or more WiFi repeaters (also called WiFi extenders) between the local router and the inverter.
- Make sure that the network name (SSID) of the WiFi repeater is different from the network name of the router, for example by adding "-extended". By doing so, you ensure that the LAN-stick connects to the repeater and not directly to the router. 21
- Follow the instructions in chapter 3 after installing the WiFi repeater.

6.4 Local router settings

If the signal quality is insufficient, or if you cannot connect to the local WiFi network at all, check the settings below on the local router to ensure and optimize WiFi connectivity.

- Log in to the router by browsing the router's IP address using a computer, laptop, tablet, or mobile phone that is connected to the router's wireless network.

  If you don't know the router's IP address, see the following web page:
  Find the IP address of your router

⚠ **WARNING!** Autarco does not and cannot know the router username and password. Default usernames and passwords depend on the router brand and series.

Try changing the following settings on the router:

- Many routers are configured to use multiple protocols from the WiFi 802.11 family, eg b/g/n. Configure the router to use only 802.11n or only 802.11g.

  On some routers, the alternatives are 802.11b/g/n and 802.11b/g (so-called 'mixed modes'). In these cases, select the last option: 802.11b/g.

  You want to have as few protocols as possible 'mixed'.

- Make sure the wireless channel is between 1 and 11 .
- Set WiFi encryption to only one encryption type, such as WPA2-Personal or WPA2-PSK.Disable mixed or multiple encryption types.
- The stick can handle all characters, such as ! @ # $ % & * ( ) _ + - = [ ] \ { } | ; : ' " , . / < > ?, but some characters are not allowed on all router/stick combinations. In case of problems, use only alphanumeric (letters and/or numbers) characters, such as az, AZ, A9 and 09 for the network name (SSID) and WiFi password.
- The router must dynamically assign IP addresses to connected devices. This is called DHCP (Dynamic Host Configuration Protocol). Please enable DHCP on the router.
- Some routers may require a region setting to work correctly. If so, choose a region setting.

⚠ **WARNING!** Changing some of these router settings may disconnect other connected devices such as computers, laptops, tablets or mobile phones. Please reconnect them with the new settings.

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC warning:
Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance 20cm between the radiator & your body.