CATCH Control
Electrician's Guide to Fixing RS485 Communication Issues

Purpose

This guide serves as a quick-reference tool for electricians to diagnose and resolve RS485 communication problems effectively. RS485 is a robust communication standard used in various applications, but issues can arise due to wiring, configuration, or interference. Follow these steps to ensure reliable communication.

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How to Identify RS485 Communication Problems

Using the **CATCH Configurator**, you can quickly determine if there's an RS485 issue by checking two key indicators:

RS485

Signal Found:	1
Locked On:	0
Rcv Msg Count:	0
CRC Errors:	0
Timeouts:	3444
Bad Device ID:	0

Live Data: Diagnosing RS485 Connection Issues

In the **Configurator > Live Data** section, a properly configured RS485 connection will show:

•**Locked On = 1**

If this value is not "1," it indicates an issue with the setup or connection. This could be due to incorrect wiring, configuration errors, or faulty hardware.

The following is an example of a bad setup or a poor connection, which requires troubleshooting to resolve.

Wizard: Diagnosing RS485 Connection Issues

In the **Configurator > Wizard**, a correctly configured RS485 connection will display

•**All Green Ticks**

If any field shows a red ✖ instead of a green ✓, it indicates a problem with the setup or connection.

The following is an example of a bad setup or poor connection that needs troubleshooting to fix.

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Step 6: Inverter Control

Connected to Serial Number: **3907**

Select your inverter below

Inverter
GOODWE-NS-G3 GM1000 Meter

Signal Found: ✓

Locked On: ✖

Have you chosen the correct meter?
Is cable polarity correct?
Have you put the terminate resistor in?

Communication: ✖

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So… You Have a Problem

If you're experiencing RS485 communication issues, it will typically be caused by one of the following three problems:

1. Not Plugged Into the Correct Inverter Port:

Ensure the RS485 cable is connected to the correct port on the inverter as per the manufacturer's instructions.

2. Bad Electrical Connection:

Check the wiring for loose or damaged connections. Ensure the RS485 A+ and B- terminals are securely fastened and free of corrosion or damage.

3. Incorrect Setup:

Verify that the RS485 configuration (e.g., baud rate, device ID, terminator resistors) is properly set in the software and matches the inverter's settings.

Not Plugged Into the Correct Port

The simplest way to verify this is to carefully re-read the installation instructions and ensure you're using the correct port. If you're still unsure, you can use a multimeter to check the connection as follows:

1.Set Your Multimeter: Switch your multimeter to measure **DC Volts**.

2.Check the Inverter Terminals:
Place your multimeter probes on the RS485 terminals of the inverter.

3.What to Look For: **Fixed Voltage (3.0 – 5.0V)**:
This indicates an idle RS485 line. It means you're connected to an RS485 terminal, but there's no active transmission (e.g., the inverter is not communicating).

Voltage Fluctuating (Small and Jumping):
This indicates an active RS485 bus. The fluctuating voltage shows that the inverter is actively transmitting data.

If you don't see either of these behaviors, it's likely you're not on an RS485 port, or the connection is faulty. Double-check your wiring and refer to the inverter's documentation.
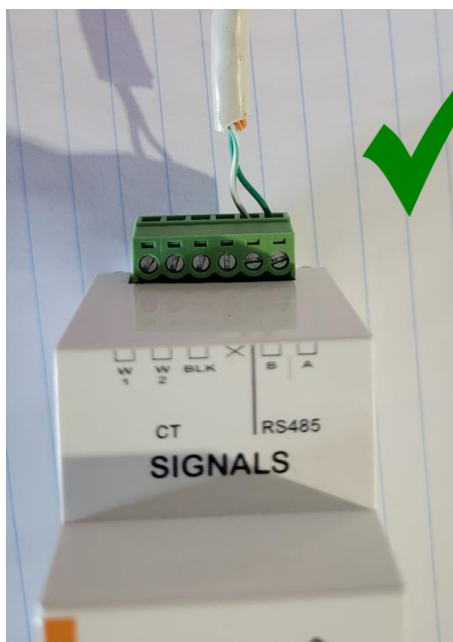
A Bad Electrical Connection

Before diving into troubleshooting, here's an important tip: **don't disconnect everything unless absolutely necessary.** Each time you reconnect wires, you risk introducing new issues, effectively "moving the goalposts." Instead, use your multimeter to systematically identify whether there's a connection issue.

Firstly about the wiring. Most people will use CAT6 cable for RS485 runs, and that is perfectly OK, but there are a couple of things to note.
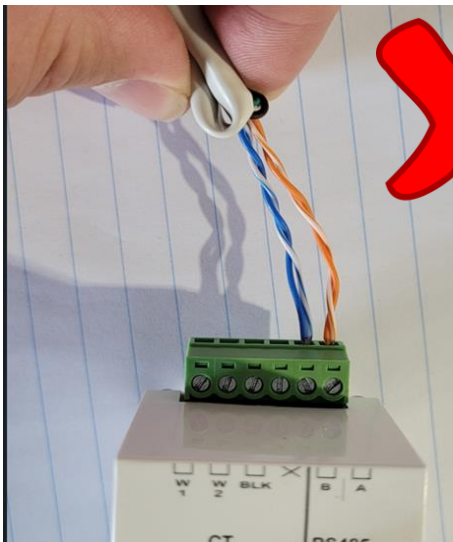
DO NOT DO THIS!!

DON'T USE TWO PAIRS LIKE THIS
I know more seems like it should be better. But you change the characteristic impedance of the cable and things wont work.

THIS IS CORRECT

Just use a single Pair. Leave the others

A Bad Electrical Connection

To identify and diagnose a bad electrical connection, follow these steps using the **CATCH Configurator**:

1.Open the Configurator:

Navigate to the **Live Data** page or go to **Step 6** of the Commissioning Wizard.

2.Check Signal Status:

If **"Signal Found"** shows **0** (no signal detected), this indicates a connection problem.

By using the Configurator, you can quickly confirm whether the issue lies with the electrical connection and proceed to troubleshoot the wiring.

If you have confirmed you are plugged into the right slot on the inverter, this Indicates a bad connection

RS485

Signal Found:	0
Locked On:	0
Rcv Msg Count:	0
CRC Errors:	0
Timeouts:	3444
Bad Device ID:	0

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Step 6: Inverter Control

Connected to Serial Number: **3907**

Select your inverter below

Inverter
GOODWE-NS-G3 GM1000 Meter ▼

Signal Found: ✗

Locked On: ✗

Have you chosen the correct meter?
Is cable polarity correct?
Have you put the terminate resistor in?

Communication: ✗

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A Bad Electrical Connection

To diagnose a potential electrical connection issue, use the **CATCH Configurator**:

Access the Configurator:

1. Open the **Live Data** page, or
2. Go to **Step 6** of the Commissioning Wizard.

Check for Signal:

1. Look for the **"Signal Found"** indicator.
2. If the signal is **not detected** (shows "0"), this confirms there is a connection problem.

Test the Connection at the CATCH Control.

Set the Multimeter to DC Volts:

Measure Voltage at the A/B Terminals:

Put your multimeter on volts DC and put your probes on the Catch Control A/B terminal screws.

If you measure a constant voltage in the range of 3-5V,
this indicates that the RS485 connection is physically good, but the inverter is not transmitting. The issue lies with the inverter setup,

If you read **no voltage** or a **very small voltage,** this indicates a connection problem, such as loose wiring, incorrect polarity, or a break in the RS485 cable.

Take the multimeter to the **inverter's RS485 connection point** and measure the voltage.

If you measure a voltage here, the issue is likely a connection problem or a broken wire between the inverter and the CATCH Control.

Incorrect Setup

To check for an incorrect setup, follow these steps:

1.Open the Configurator App:
1. Navigate to the **Live Data** page and locate the **RS485 Info** section.

2.Check the Signal Status:
1. Ensure **"Signal Found"** is displayed. If no signal is found, there may be a wiring or connection issue.

3.Verify Locked On:
1. If **"Locked On"** is **not equal to 1**, the RS485 communication is still not properly established, indicating an issue with the setup. Double-check your configuration settings.

Signal has now been found, But has not locked on. CRC numbers climbing indicates a polarity problem.

RS485

Signal Found:	1
Locked On:	0
Rcv Msg Count:	0
CRC Errors:	3444
Timeouts:	0
Bad Device ID:	0

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Step 6: Inverter Control

Connected to Serial Number: 3907

Select your inverter below

Inverter
GOODWE-NS-G3 GM1000 Meter

Signal Found: ✓

Locked On: ✗

Have you chosen the correct meter?
Is cable polarity correct?
Have you put the terminate resistor in?

Communication: ✗

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Resolving RS485 Communication Issues

If you're still experiencing RS485 communication problems, follow these steps to troubleshoot:

1. Check CRC Error Count

If the **CRC Error Count** is increasing:

- The **A+ and B- wires** are likely around the wrong way.
- **Fix**: Swap the wires over at one end, and the CRC errors should stop.

2. Verify the Correct Meter Type

- If the **CRC Count** is **NOT** increasing:
- You may have selected the wrong **Meter Type** in the configurator account.

Fix: Go to Device settings in the configurator app and scroll to **Modbus settings** and select the correct Inverter type

3. Once updated, shut down the inverter:

- Turn off the **AC supply**
- Isolate all **DC Sources**
- Wait until the inverter powers down completely before restarting.

Confirm RS485 is Working

After restarting, verify the RS485 connection:

- Check the **"Locked On"** field in the RS485 summary (it should display **1**).
- Alternatively, confirm **3 green ticks** in the **Commissioning Wizard**.

4. Check Device ID (Less Common Issue)

If the problem persists, the **Modbus RTU Device ID** may be incorrect

Fix:

Consult the inverter manufacturer's manual to identify the correct Device ID.

Update the Device ID in the Configurator settings.
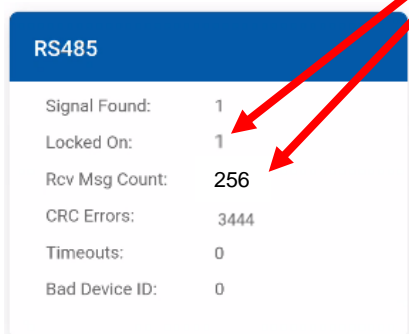
Correct Setup

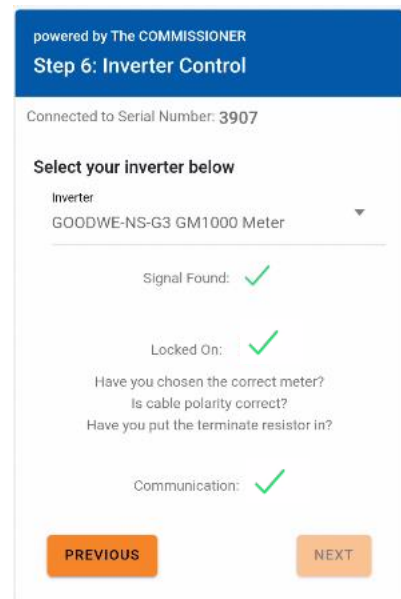Congratulations! If you've made it to this point, your RS485 setup is now correctly configured.

The screenshots below demonstrate what a **correct setup** should look like, including proper signal detection, communication status, and locked-on state. Use these as a reference to ensure everything matches the expected results.

Locked on should stay at 1, and the Rcv Msg Count should be climbing.

The other fields can have non zero values and that is OK. As long as the CRC Errors is not climbing. Timeouts and Bad Device ID may be increasing, and that does not indicate a problem.

RS485

Signal Found:	1
Locked On:	1
Rcv Msg Count:	256
CRC Errors:	3444
Timeouts:	0
Bad Device ID:	0

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Step 6: Inverter Control

Connected to Serial Number: 3907

Select your inverter below

Inverter
GOODWE-NS-G3 GM1000 Meter

Signal Found: ✓

Locked On: ✓

Have you chosen the correct meter?
Is cable polarity correct?
Have you put the terminate resistor in?

Communication: ✓

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