

Training Course

Troubleshooting smartLink HW-DP



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1 **Troubleshooting**

In this training session you will learn how to handle and solve common troubleshooting and what you need to do for Softing support to assist you in these scenarios.

2 Problem analysis

2.1 Problem description

In order to understand the issue please provide a detailed description of the issue you observed.

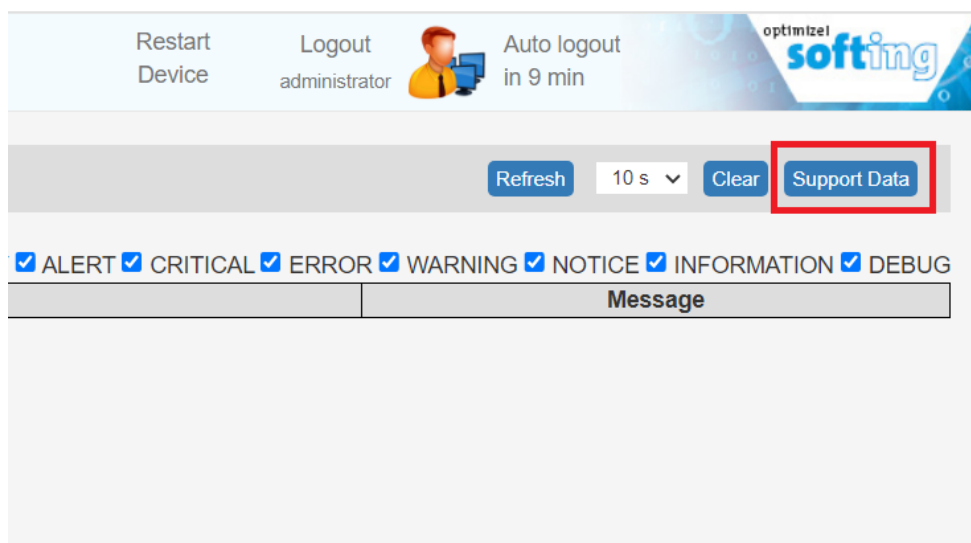
Environment

For the analysis of an issue a detailed description of the environment is essential. This should contain information about the addresses and types of the PROFIBUS devices connected to the segment. Additionally, it should contain information about the HART IO modules connected to the RIOs as well as the HART devices that are connected to the different channels of an HART IO module.

smartLink HW-DP configuration and device data

The configuration and device data of your smartLink HW-DP is essential to any problem analysis. The following steps describe how to save the current smartLink HW-DP configuration and device data to a file.

1. Log onto web server of your smartLink HW-DP.
2. Select **Diagnosis** → **Log File**.
3. Click **[Support Data]**.
A zip file containing the current device data and configuration data is created.



2.2 PROFIBUS capture

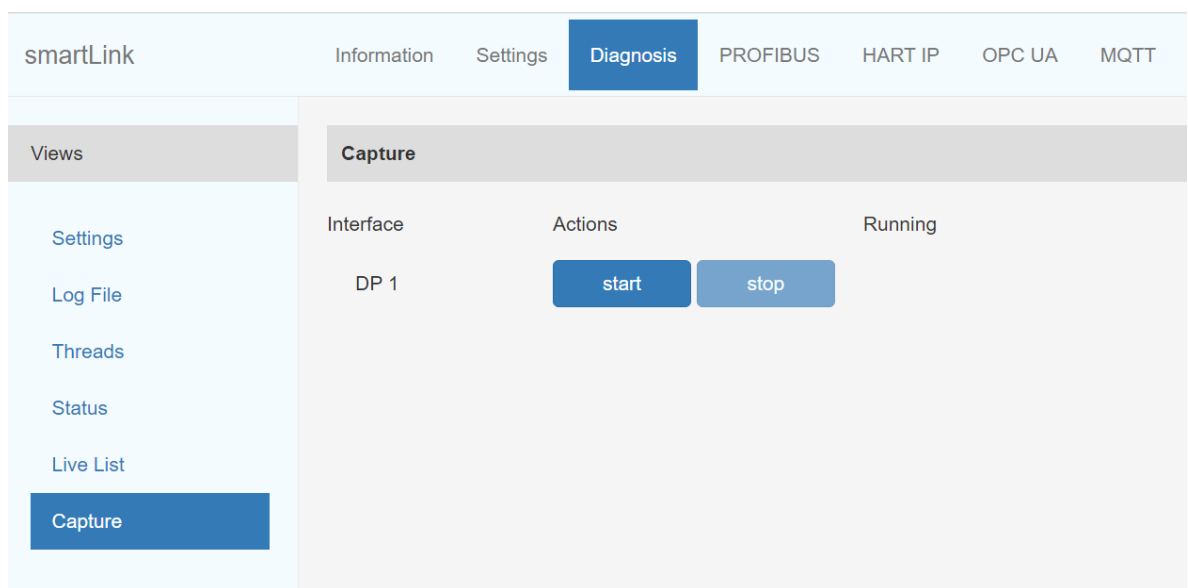
For a thorough analysis of a problem, the PROFIBUS communication is often required. The following describes how to perform a PROFIBUS capture within the smartLink HW-DP.



Note

You will need to be logged on with the user role **Diagnostic** to make a PROFIBUS capture. If you do not have a Diagnostic user configured for your smartLink HW-DP you will first need to create the user account. See the smartLink HW-DP User Guide on how to create user accounts.

1. Log out of the smartLink HW-DP user interface and log in again with user role **Diagnostic**.
2. Select **Diagnosis** → **Capture**.



3. Click **[start]**.



Note

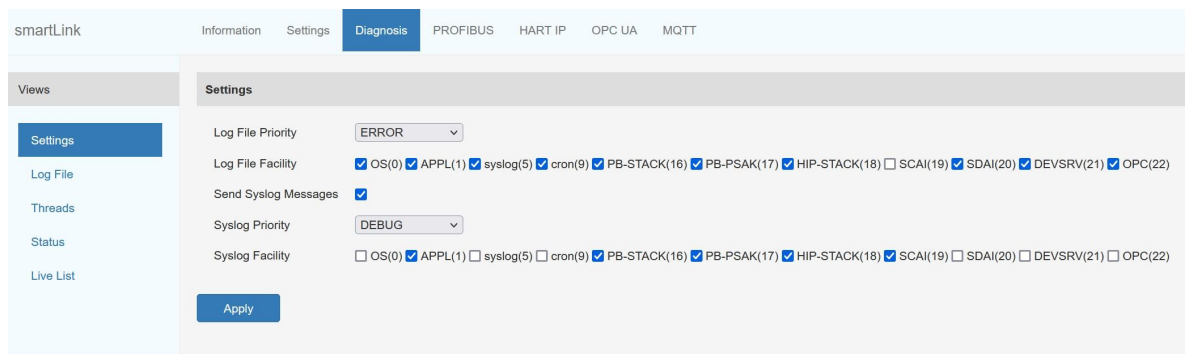
The HART IP server must be activated to perform a PROFIBUS capture. Otherwise the capturing stops immediately and an empty file is created.

4. Click **[stop]** to halt the capturing process.
A file containing the PROFIBUS communication is created.

2.3 Wireshark capture

To analyze the communication between Emerson AMS Device Manager and the smartLink HW-DP, an HART IP communication is required. Additionally, the smartLink HW-DP can be configured to use syslog for message logging. To ensure that important messages are logged by the smartLink HW-DP, the following adjustments need to be made in the diagnosis settings.

1. Log in to web server of the smartLink HW-DP.
2. Select **Diagnosis** → **Settings**.
3. Enable Send Syslog Messages and configure the Syslog Priority and the Syslog facility as shown in the screenshot.

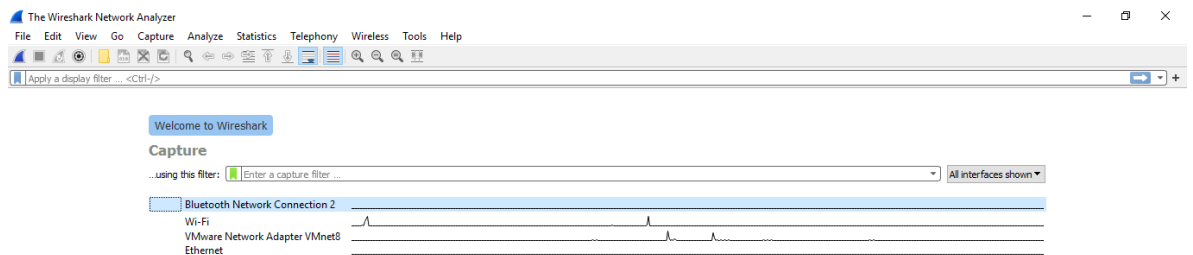




4. Click **[Apply]**.

2.4 Wireshark Network Analyzer

Emerson AMS Device Manager communicates with the smartLink HW-DP via HART IP. To analyze problems, the message logging of smartLink HW-DP must be able to communicate with the Emerson AMS Device Manager. The following describes how an Ethernet communication can be captured using the Wireshark Network Analyzer

1. Install **Wireshark Network Analyzer**.
2. Start the Wireshark application.
3. Select the Ethernet adapter connected to your smartLink HW-DP.



1. Click the  icon to start the recording of the Ethernet communication on the selected Ethernet adapter.
2. Click the  icon to halt the recording.
3. Select **File** → **Save** or **File** → **Save As...** to save the capture to a file.

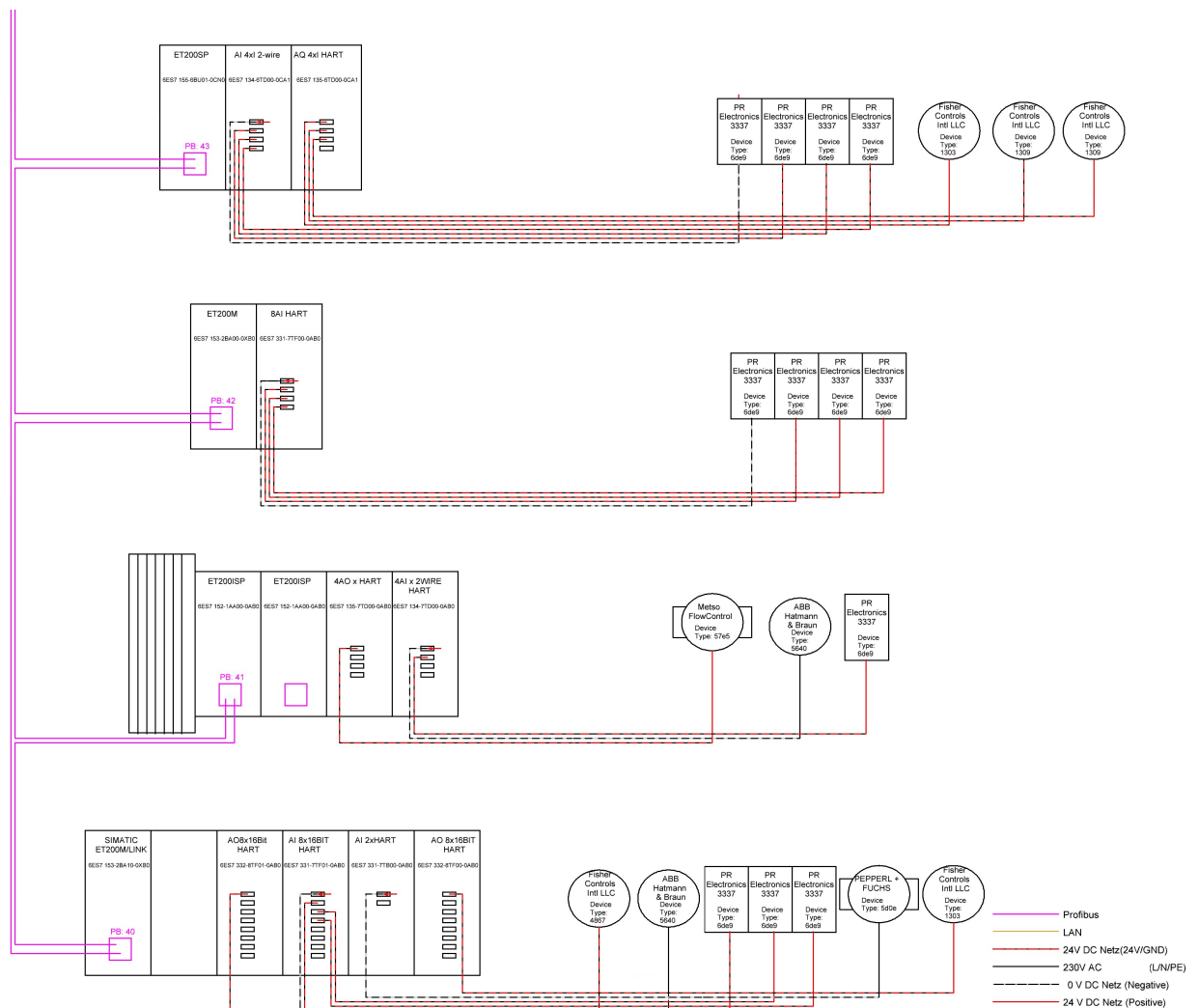
3 Problem example

In the following we will show you an example when facing an issue where a HART device is not showing up in the live list of the smartLink HW-DP.

3.1 Problem description

We are currently experiencing a problem with an ABB HART device. It is not showing up in the live list of the smartLink HW-DP. The HART device is connected to the first channel of a Siemens HART AI module of type 331-7TF01-0AB0. The HART AI module is connected to the Siemens Remote IO ET200M on address 40. Other HART devices connected to the same AI module are present in the live list. We applied the PROFIBUS bus parameters used in the corresponding TIA portal project in the PROFIBUS bus parameters page of the smartLink HW-DP. Additionally, we have increased the slot time and the retry limit in the bus parameters of the smartLink HW-DP without success. The HART device is not appearing in the Live List.

Here is an overview of the corresponding PROFIBUS segment.



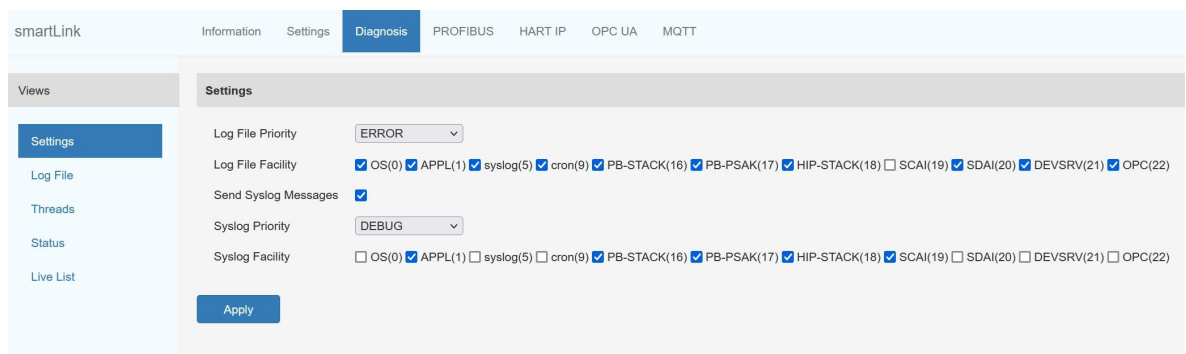
3.2 Gathering information




Note

Ensure that the Wireshark Network Analyzer is installed and a Diagnostic user account is available to log on to your smartLink HW-DP. See the smartLink HW-DP User Guide on how to create user accounts.

1. Log on to your smartLink HW-DP as Diagnostic user.
2. Select **HART IP** → **Settings** and deactivate the HART IP server if activated.
3. Select **Diagnosis** → **Settings** and apply the settings shown in the following image.



4. Click the  icon to start the Wireshark capture for the Ethernet adapter to which the smartLink HW-DP is connected.
5. Select **HART IP** → **Settings** and activate the HART IP server.
6. Select **Diagnosis** → **Capture**.
7. Click **[start]** to start the PROFIBUS capture.
8. Wait a few minutes and verify that the described behavior is seen.
9. Select **Diagnosis** → **Capture**.
10. Click **[stop]** to halt the PROFIBUS capture.
A file is created.
11. Stop the Wireshark capture and save the captured data to a file.
12. Select **Diagnosis** → **Log File**
13. Click **[Support data]**.
A zip file is created.
14. Send the problem description together with the two capture files and the Support data to Softing support.

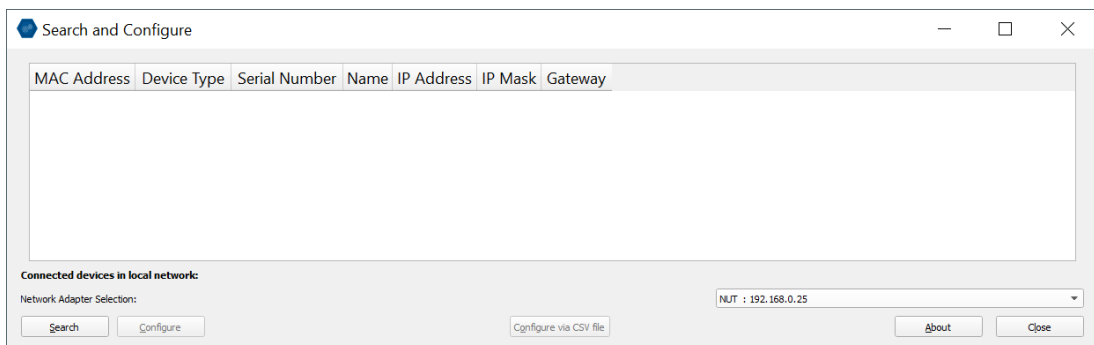
4 Error scenarios

4.1 Locating a smartLink HW-DP

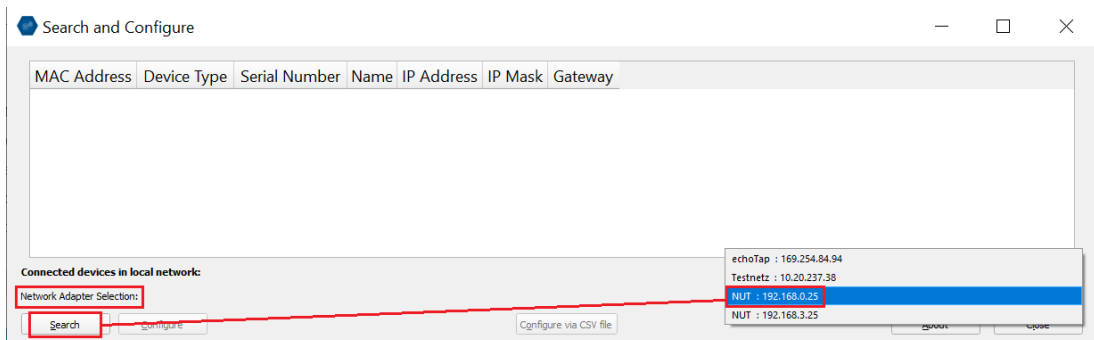
If you forgot the IP address of the smartLink HW-DP you can use the application **Search & Configure** to find the gateway. The following section describes how to locate a smartLink HW-DP in your network.

Search & Configure

1. Download *Search And Configure* tool from product web site and install it.
2. Start the tool.



3. Click the dropdown list of the **Network Adapter Selection**. This selection menu shows all network adapters of your PC.

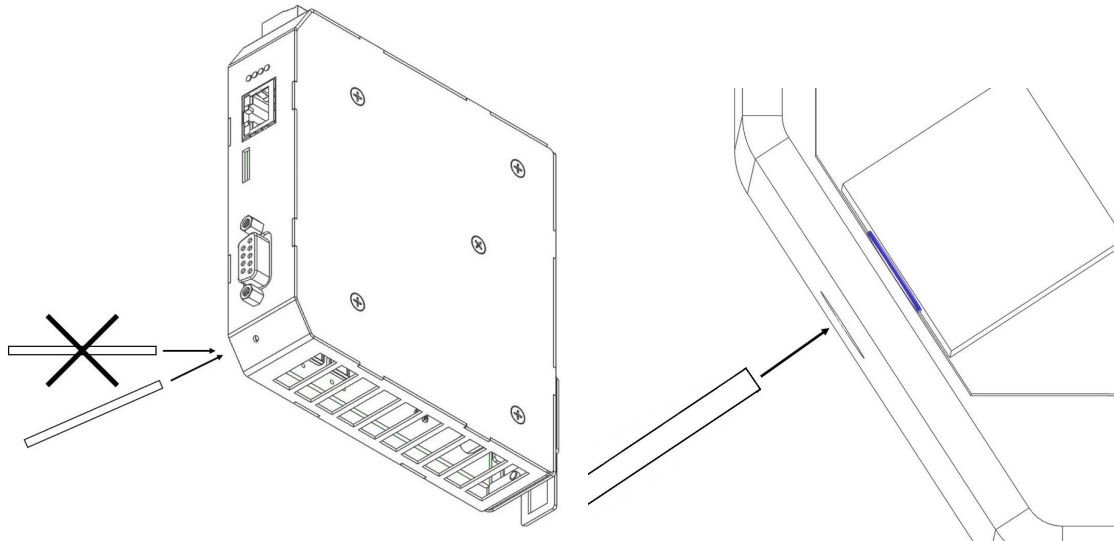


4. Select the network adapter which is connected to the smartLink HW-DP.
5. Click **[Search]** to start searching for connected devices. The search may take a moment.
6. The smartLink HW-DP is shown with the corresponding IP address.



4.2 Forgotten login credentials

If you are not able to log in to the web server of the smartLink HW-DP because you have forgotten the login credentials you can restore the smartLink HW-DP to factory settings by performing a hard reset.



1. Disconnect the power supply from the smartLink HW-DP device.
2. Insert the tip of a metal pin, of a pen or the end of an unwound paper clip into the hole of the reset button as shown above.
3. Press the reset button very carefully while powering up the device again and hold the button until the RUN LED turns red and is flashing fast (see the User Guide for details).
4. Release the reset button.
5. Wait for a few seconds.
6. Press the reset button again and hold for about 15 seconds. The LEDs (except for PWR) are flashing red.
7. Release the reset button. The two LEDs in the middle (RUN and ERR) are flashing red. When the light turn off, the smartLink HW-DP is reset and starts in factory settings. First the LED PWR turns from yellow to green, then the LED RUN turns from red to green. Now the device is operational again.

4.3 License issues

Lost licenses

Up to factory version 2.00.00.22594 the licenses were deleted when performing a factory reset. If you purchased your smartLink HW-DP with pre-installed licenses you most likely do not have a license file to restore the license after a factory reset. In this case please contact Softing support for a new license file. Softing support will need you to provide the **Host ID** of the smartLink HW-DP and a picture of the label on the smartLink HW-DP showing the contained licenses.

smartLink

Information

Settings

Diagnosis

PROFIBUS

HART IP

OPC UA

MQTT

Views

System

License

About

Serial Number	202200115
Firmware Version	1.21.00.22594
Bootloader Version	2.00.00.12337
Factory Version	2.00.00.13038M
Hardware Version	2.00
System ID	smartLink HW-DP
Host ID	#00-06-71-71-02-B2#04AF#0C0D5433#

Motherboard	
Serial Number	202200115
Firmware Version	-
Hardware Version	1.11

Old licenses

As of version 1.20 there is one license (smartPlus DP) that is valid for both PROFIBUS and HART devices. The old licenses (smartPlus PB and smartPlus HT) are no longer supported and importing of these license files will be rejected. If you face this situation, please contact Softing Support to get a new license. Softing support will need you to provide the old license file.

4.4 Devices missing in Live List of smartLink HW-DP

Do the following:

1. If some devices fail to appear in the Live List of the smartLink HW-DP please check first if 4-20 mA is enabled and HART is activated for the corresponding HART IO Modules and channels. Also double check if the PROFIBUS bus parameters in the DCS system and the smartLink HW-DP are identical.
2. If all HART devices are missing on a Remote IO verify that the Remote IO is in data exchange. To do this check the diagnostics for this RIO in the DCS system.
3. Next, increase the Max Retry Limit in the PROFIBUS bus parameters of the smartLink HW-DP to a value between 5 and 7.



Note

After adapting the PROFIBUS bus parameters confirm the configuration with **[Apply Configuration]** and reactivate the HART IP server in the **HART IP → Settings**.

4. Finally, if possible, increase the slot time (**Tsl**) in the PROFIBUS bus parameters of the DCS system and the smartLink HW-DP.



Note

The slot time (**Tsl**) must be identical in the PROFIBUS bus parameters of the DCS system and the smartLink HW-DP.

5. If the problem persists please collect the information and related files as described in section [Problem example](#)¹⁰ and send everything to Softing support.

4.5 Unknown Devices shown in AMS

If unknown devices are shown in AMS check if the devices are also present in the Live List of the smartLink HW-DP. If the devices no longer shown in the Live List, please collect the information and related files as described in section [Problem example](#)¹⁰ and send everything to Softing support. However, if the devices are still present in the smartLink HW-DP the problem can be associated with the Emerson AMS Device Manager.

All HART devices are shown as unknown

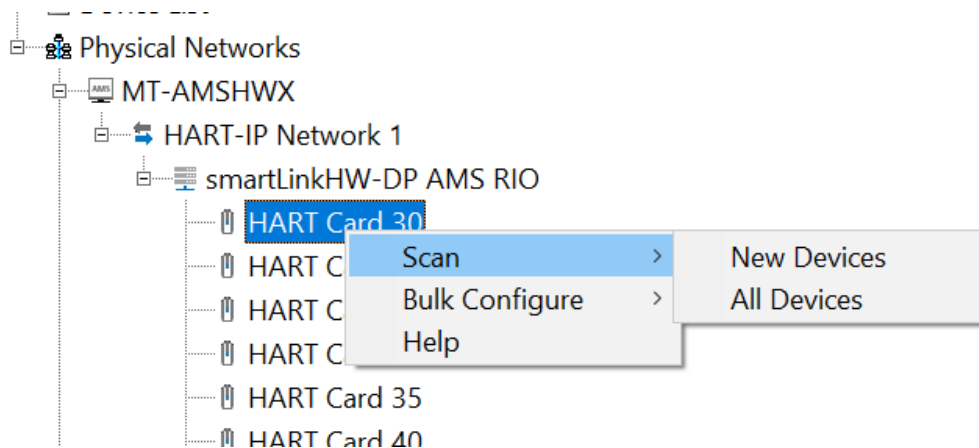
If all HART devices are shown as Unknown Devices, close the Emerson AMS Device Manager application, reboot the machine and start AMS Device Manager application again.

If the problem persists please perform a Wireshark capture while reproducing the problem and send the capture to Softing support.

Some HART device are shown as unknown

If individual devices are shown as unknown please perform a **Scan of All devices** on the corresponding **HART Card** in Emerson AMS Device Manager.

If the problem persists please perform a Wireshark capture while reproducing the problem and send the capture to Softing support.



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