

Technical Note



Migrating from an existing 5207/52x8-MNET-HART to PLX51-HART-4I

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Applicable products include:

Converting from:

- 5207-MNET-HART
- 5208-MNET-HART
- 5228-MNET-HART



Converting to:

- PLX51-HART-4I



How to Contact Us

Asia Pacific

Regional Office

+60.3.7941.2888

support.ap@prosoft-technology.com

North Asia

(China, Hong Kong)

+86.21.5187.7337

support.ap@prosoft-technology.com

Europe/Middle East/Africa

Regional Office

+33.(0)5.34.36.87.20

support.emea@prosoft-technology.com

Latin America

Regional Office

+52.222.264.1814

support.la@prosoft-technology.com

North America

Corporate Office

+1.661.716.5100

support@prosoft-technology.com

Migrating from an existing 5207/52x8-MNET-HART to the new PLX51-HART-4I is a simple and straight forward process. These modules use different configuration software for the configuration, but both remain easy to use.

It is highly recommended to review the PLX51-HART-4I training video on ProSoft Technology's YouTube channel: <https://www.youtube.com/watch?v=EvkF5s7zCqc>

- 5207/52x8-MNET-HART use **ProSoft Configuration Builder** (aka PCB)
- PLX51-HART-4I uses **ProSoft PLX50 Configuration Utility**

You can download the tools free of charge on our website:

- ProSoft Configuration Builder:
https://www.prosoft-technology.com/Products/ProSoft-Software/ProSoft-Configuration-Builder#related_downloads
- ProSoft PLX51 Configuration Utility:
https://www.prosoft-technology.com/Products/ProSoft-Software/ProSoft-PLX50-Configuration-Utility#related_downloads

The PLX51-HART-4I is built with 4 HART channels, you will have to use 2 gateways to connect up to 8 analog input devices, 3 gateways to connect up to 12 analog input devices...

Additional features/functions are available on PLX51-HART-4I:

- FTD-DTM compatible for Asset Management Systems
- Ethernet configuration and diagnostic
 - HART device discovery, configuration, status, statistics, trends...
 - HART analog input calibration

Limitations:

- Only peer-to-peer connection is available with Modbus TCP communication.
- The PLX51-HART-4I acts as a Modbus TCP server on the network.

Audience:

You would be interested in this Technical Note if you are currently using 5207-MNET-HART or 52x8-MNET-HART gateways as server on Modbus TCP network to collect analog values or HART digital data from HART sensors.

Migrating 5207-MNET-HART or 52x8-MNET-HART to PLX51-HART-4I

The following steps will guide you through migrating an existing 5207-MNET-HART to a PLX51-HART-4I.

The configuration of your gateway should look like this:

```
# EtherNet Configuration

my_ip           : 192.168.0.100
netmask        : 255.255.255.0
gateway        : 192.168.0.1

# Module Configuration

[Module]
Module Type : 5207-MNET-HART
Module Name : 5207-MNET-HART

[Module Comment]
# Put Comment Here

[MNet Servers]
Enron-Daniels      : No
Output Offset      : 0
Bit Input Offset   : 0
Holding Register Offset : 0
Word Input Offset  : 0
Connection Timeout : 600

[MNet client 0]
Minimum Command Delay : 0
Response Timeout      : 1000
Retry Count           : 0
Enron-Daniels        : No
ARP Timeout           : 5000

[MNet client 0 Commands]
START
END

[HART Port 0]
Enabled             : Yes
Preambles          : 5
Primary Master     : Yes
Retry Count        : 2
DB Address Status  : 100
Command Count      : 0
Auto-Poll Code     : p2p
Auto-Poll DB Address : 2000
Auto-Poll Swap Float : No Change
Max Device Count   : 1

[HART Port 0 Commands]
START
END
```

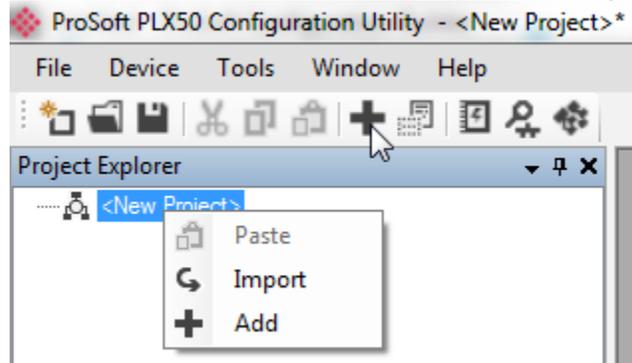
The IP address varies of course, but basically, this is your configuration.

Please note the DB Address Status and Auto-Poll DB Address, it will be used later on.

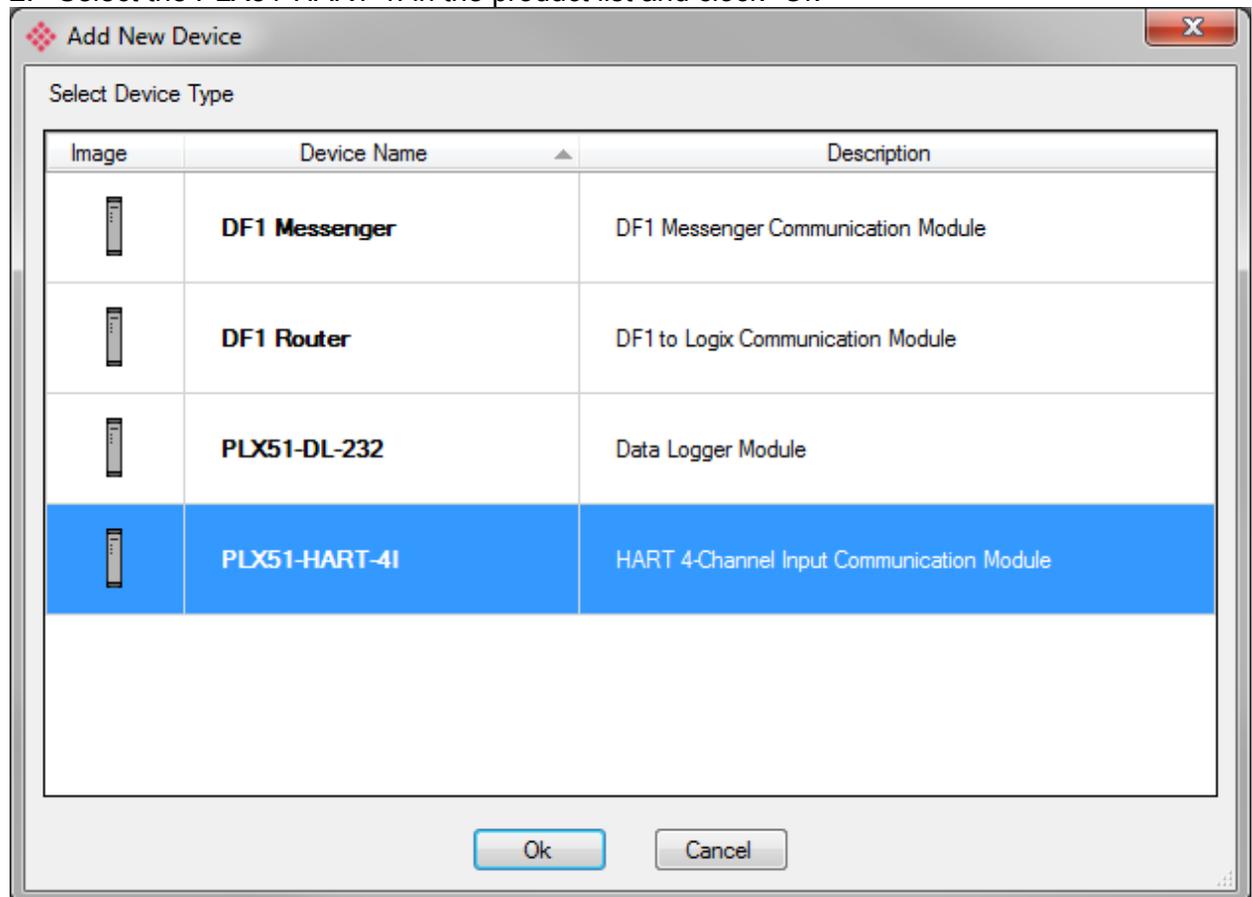
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Below are the steps to follow for a basic configuration using p2p communication:

1. Start a new project in ProSoft PLX50 Configuration utility and add a device.
You can either click the “+” button, either right-click on project and select “Add”



2. Select the PLX51-HART-4I in the product list and click “Ok”



3. In the “General” tab, enter the IP address of your PLX51-HART-4I

You can also browse for connected devices by clicking the “...” button on the right of the IP address field.

4. Select the protocol as “Modbus TCP”

HART 4 In - Configuration

General | Ch 0 | Ch 0 - Adv. (Disabled) | Ch 1 | Ch 1 - Adv. (Disabled) | Ch 2 | Ch 2 - Adv. (Disabled) | Ch 3 | Ch 3 - Adv. (Disabl)

Instance Name:

Description:

IP Address: ... Major Revision:

Protocol:

Node Address:

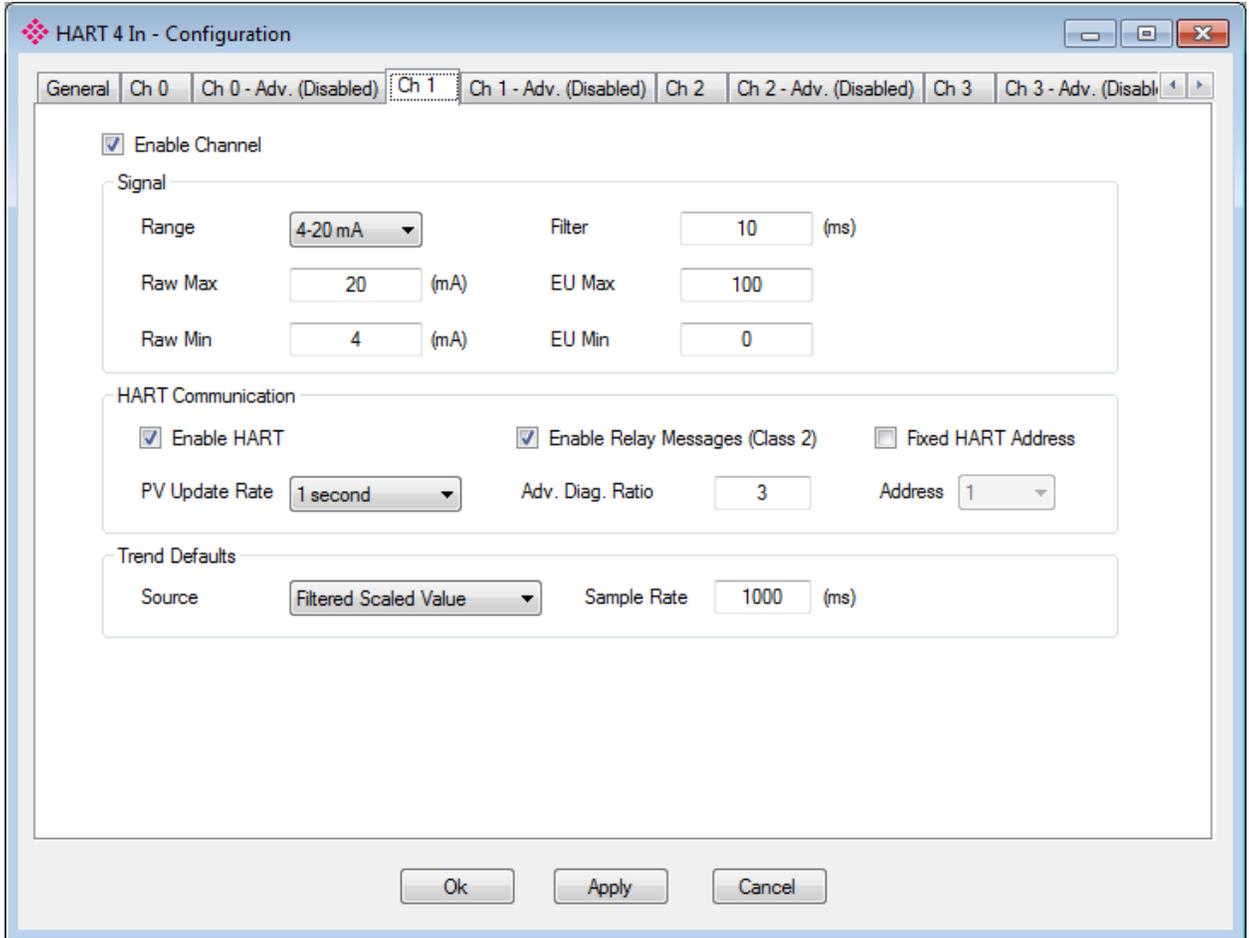
EtherNet/IP Advanced Diagnostics

Logix Path:

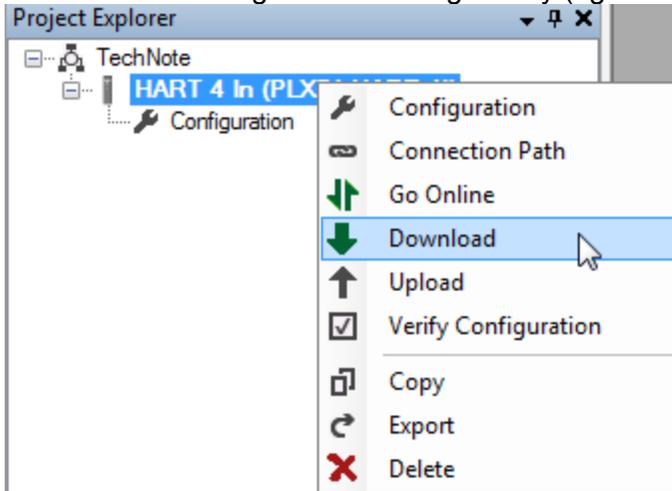
Ok Apply Cancel

Migrating from an existing 5207/52x8-MNET-HART to PLX51-HART-4I

- In the different “Ch. X” tabs, select the right parameters for your application if defaults don’t match



- Download configuration to the gateway (right click on gateway and select “Download”)

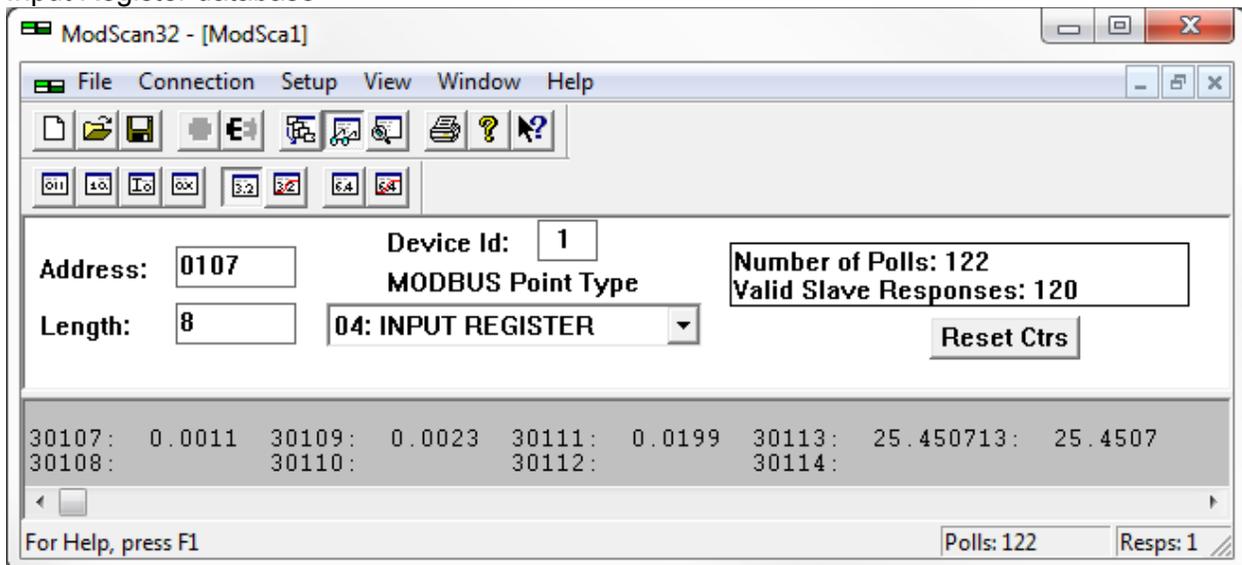


Access the data via Modbus TCP

Once configuration is downloaded, you can access the data from the HART devices as per below table:

Register Type:	Input Registers 3xxxx (Function Code 4)						
Parameter	Byte Length	Date Type	Register				
			General	Channel 0	Channel 1	Channel 2	Channel 3
Device Process Variables							
Raw current	4	REAL	-	0	100	200	300
Scaled Value	4	REAL	-	2	102	202	302
Digital current	4	REAL	-	4	104	204	304
PV	4	REAL	-	6	106	206	306
SV	4	REAL	-	8	108	208	308
TV	4	REAL	-	10	110	210	310
FV	4	REAL	-	12	112	212	312
PV units code	1	SINT	-	14	114	214	314
SV units code	1	SINT	-				
TV units code	1	SINT	-	15	115	215	315
FV units code	1	SINT	-				

For example, to read the 4 variables of the HART device attached to channel 1, you will have to setup Modbus TCP to read floating point values from Modbus TCP address 106 to 113 of the Input Register database

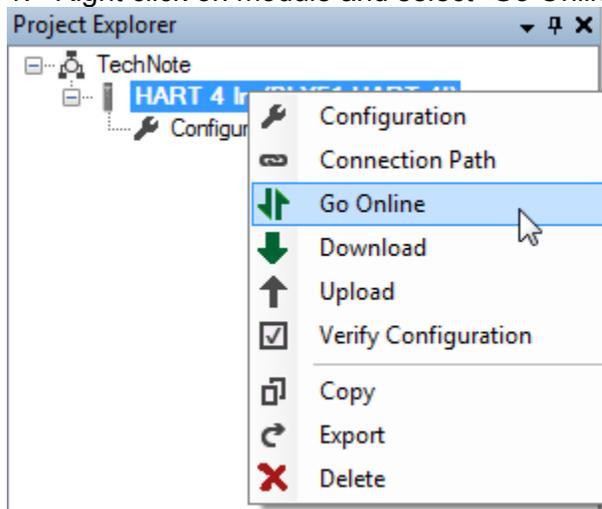


The addresses on Modbus can vary, with most devices, you will have to add an offset of 30001 to read Input registers, the address to read data would then be 30107 with the simulator I used. In this example, I read differential pressures and temperature.

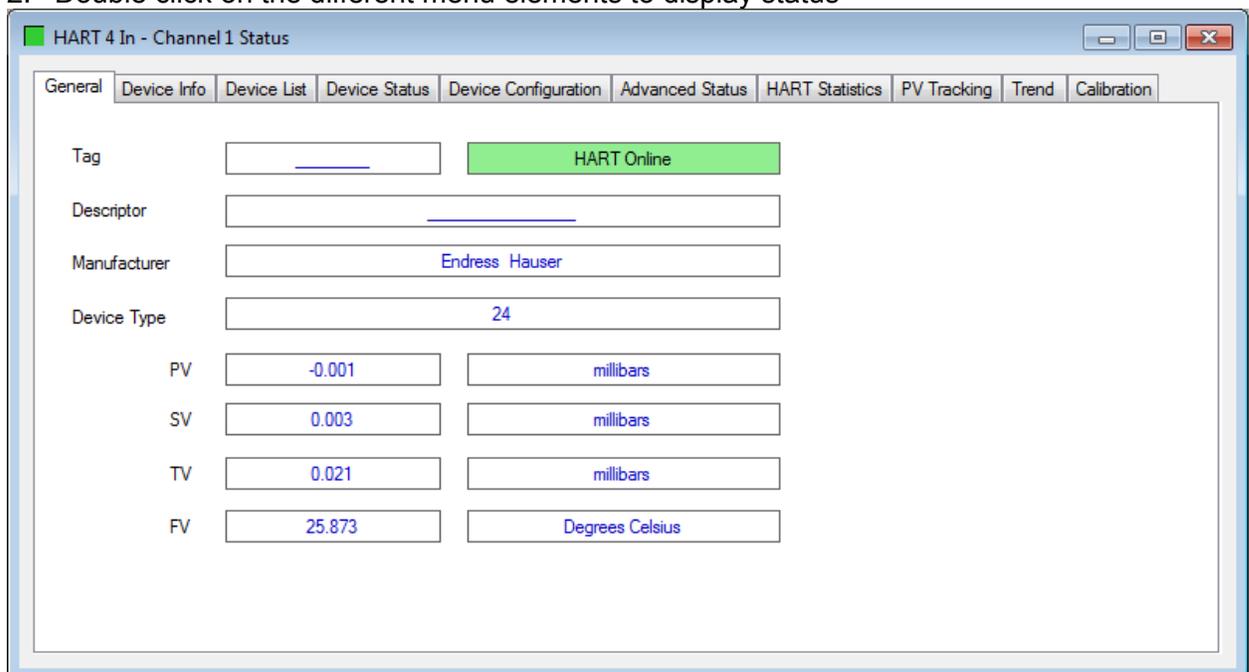
Troubleshooting

When going online with the module, you can access different status information. It would allow you comparing HART variables to what you see in your Modbus client for example or get communication statistics..

1. Right click on module and select "Go Online"



2. Double click on the different menu elements to display status



Here for example, you can see the different variables and you can compare then.

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Eventually, the Event Viewer will allow you troubleshooting further.

You can also troubleshoot the PLX51-HART-4I module using Modbus TCP, you will find in the user manual of the PLX51-HART-4I the Modbus mapping for the status information.

Register Type:	Holding Registers 4xxx (Function Code 3)						
Parameter	Byte Length	Date Type	Register				
			General	Channel 0	Channel 1	Channel 2	Channel 3
Module Status							
Bit 0 – Configuration Valid							
Bit 1 – Channel 0 Enabled							
Bit 2 – Channel 1 Enabled							
Bit 3 – Channel 2 Enabled							
Bit 4 – Channel 3 Enabled	2	INT	0	-	-	-	-
Bit 5 – Channel 0 HART Enabled							
Bit 6 – Channel 1 HART Enabled							
Bit 7 – Channel 2 HART Enabled							
Bit 8 – Channel 3 HART Enabled							
Modbus Statistics							
Rx Packet Count	4	DINT	20	-	-	-	-
Tx Packet Count	4	DINT	22	-	-	-	-
Checksum Errors	4	DINT	24	-	-	-	-
Timeouts	4	DINT	26	-	-	-	-
Device Info							
Manufacturer ID	1	BYTE	-	100	200	300	400
Manufacturer Device Type Code	1	BYTE	-				
Number of Preambles Required	1	BYTE	-	101	201	301	401
Universal Command Rev	1	BYTE	-				
Device Specific Command Rev	1	BYTE	-	102	202	302	402
Software Rev	1	BYTE	-				
Hardware Rev	1	BYTE	-	103	203	303	403
Device Function Flags	1	BYTE	-				
Device ID Number	3	BYTE[3]	-	104	204	304	404
Pad Byte	1	BYTE	-				
Sensor Serial Number	3	BYTE[3]	-	106	206	306	406
Units Code for Sensor	1	BYTE	-				
Sensor Upper Limit	4	REAL	-	108	208	308	408
Sensor Lower Limit	4	REAL	-	110	210	310	410
Sensor Minimum Span	4	REAL	-	112	212	312	412
Tag	8	BYTE[8]	-	114	214	314	414
Descriptor	16	BYTE[16]	-	118	218	318	418
Date	3	BYTE[3]	-	126	226	326	426

_____END OF TECHNICAL NOTE_____