

# PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



How to...

Connect the Hilscher NL 51N-DPL for the  
Flex controller series



**PENKO**

*an ETC Company*

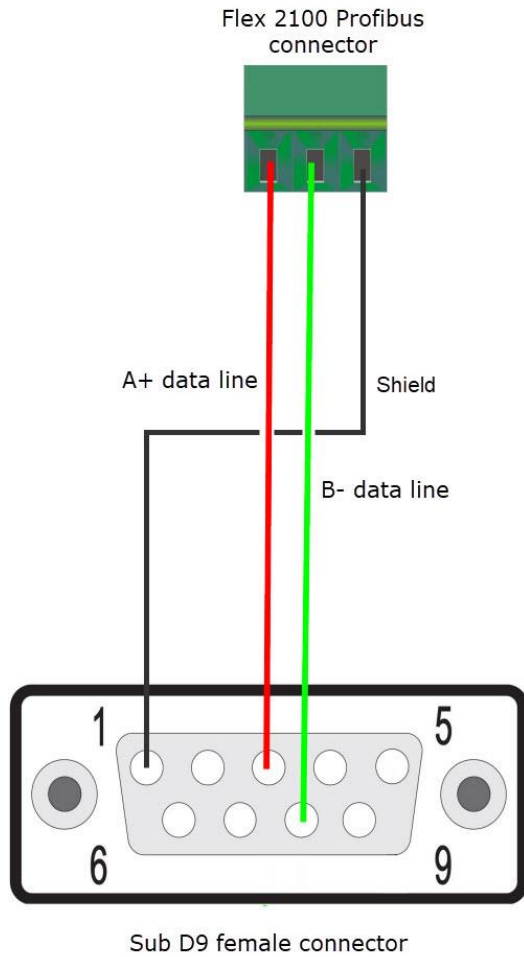
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## Hardware setup

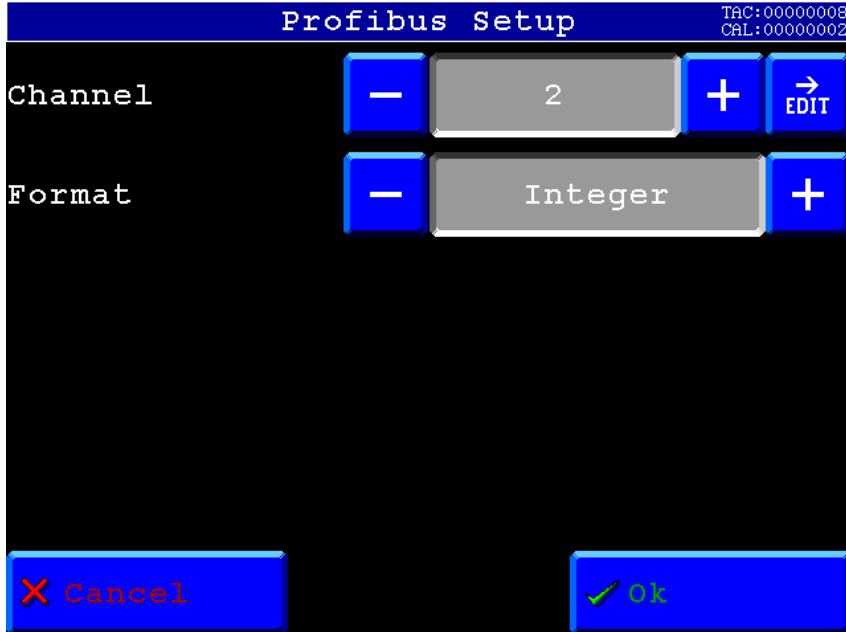
Connect the device to the Profibus connector of the Flex and connect 24Vdc to the NL 51N-DPL.

For the Flex 2100 you have to make an adapter for Profibus:



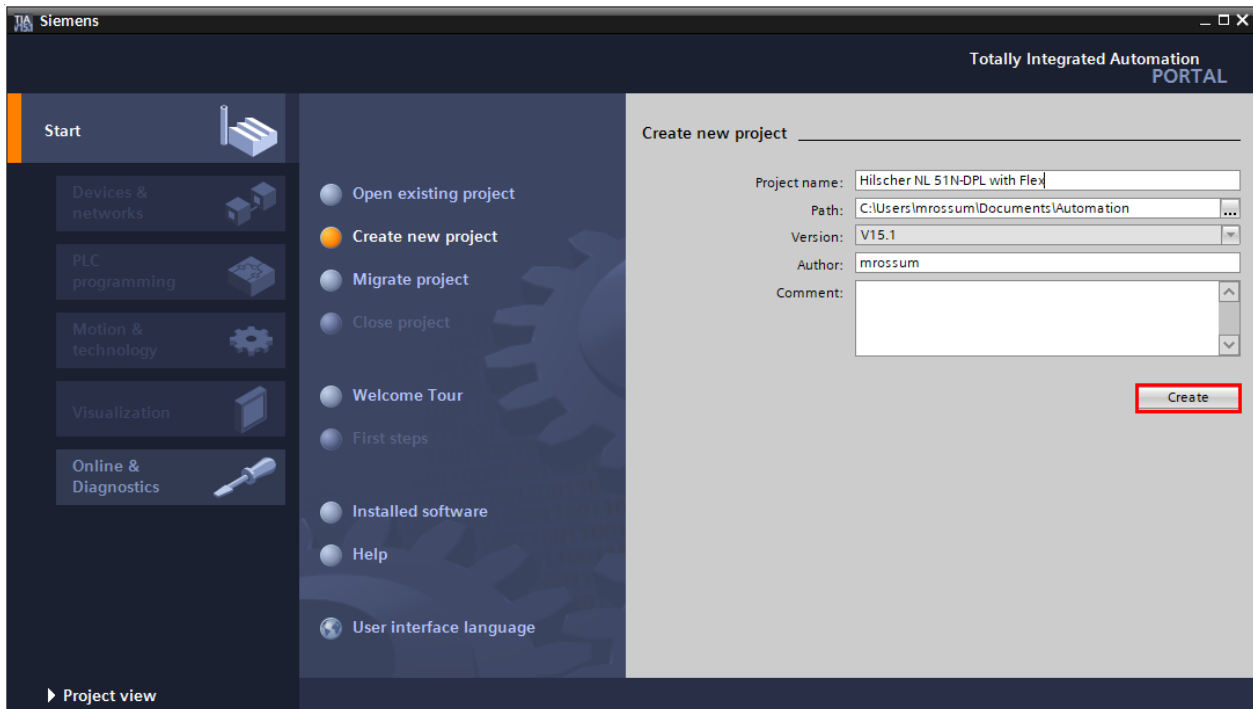
## Setup the Flex

To setup the Profibus settings in the Flex, press on System settings – System Setup – Port Setup – Profibus Setup. Set the Channel to value 2 and Format to Integer. Then press OK and Home to return to the Selection menu.



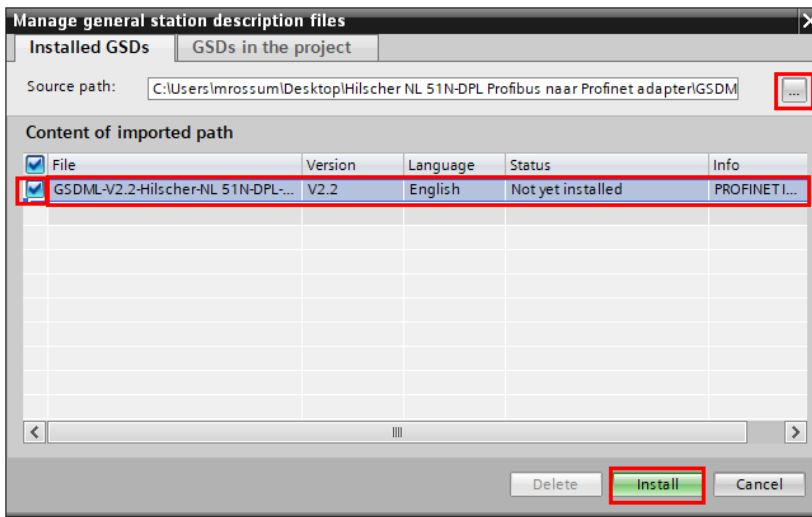
## Tia Portal

Open Tia Portal and create a new project, give the project a name and click on Create.



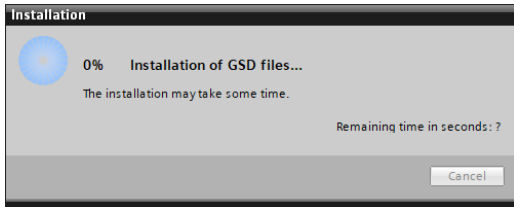
To import the generated GSDML file into Tia Portal, click on Options – Manage general station description files (GSD). Open the folder where the GSDML file is saved and open the file.

The file is now shown but not installed yet, check the box in front of the file and click on Install.

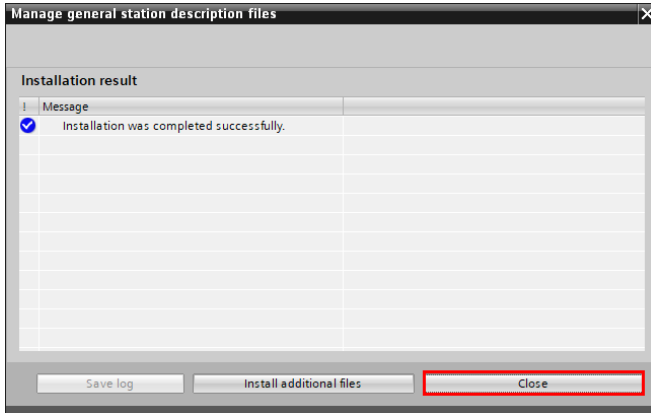


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Setup the Hilscher NL 51N-DPL for the Flex controller

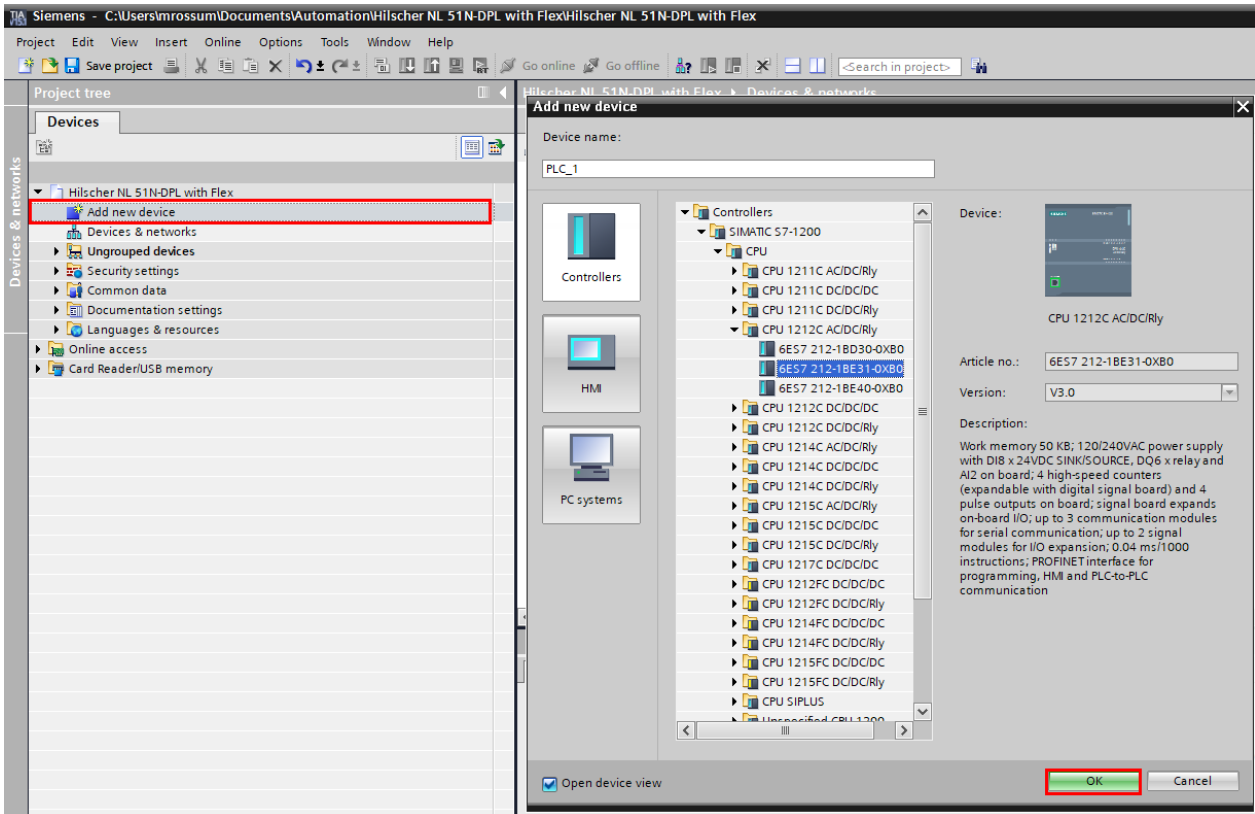
The GSDML file will now install.



When installed, click on Close, the hardware catalog will start updating.

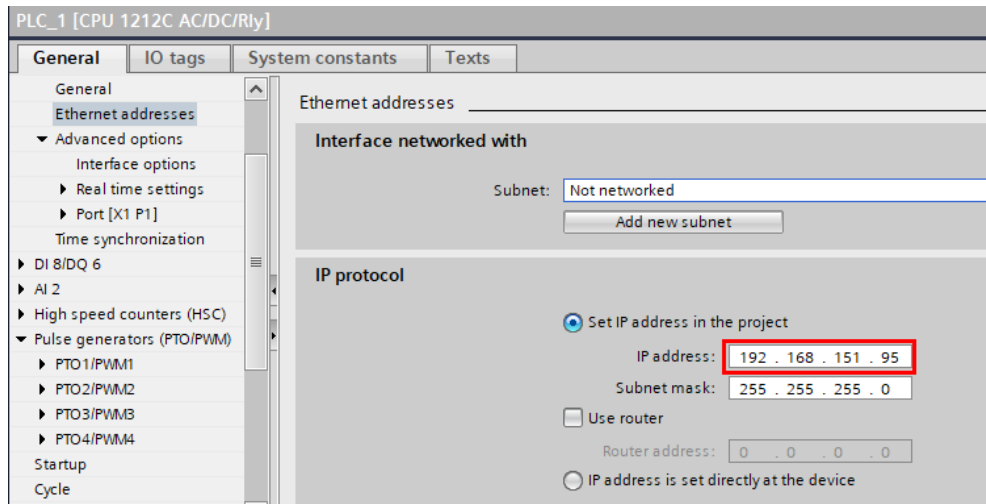


Double click on Add new device, select your PLC and click on OK.

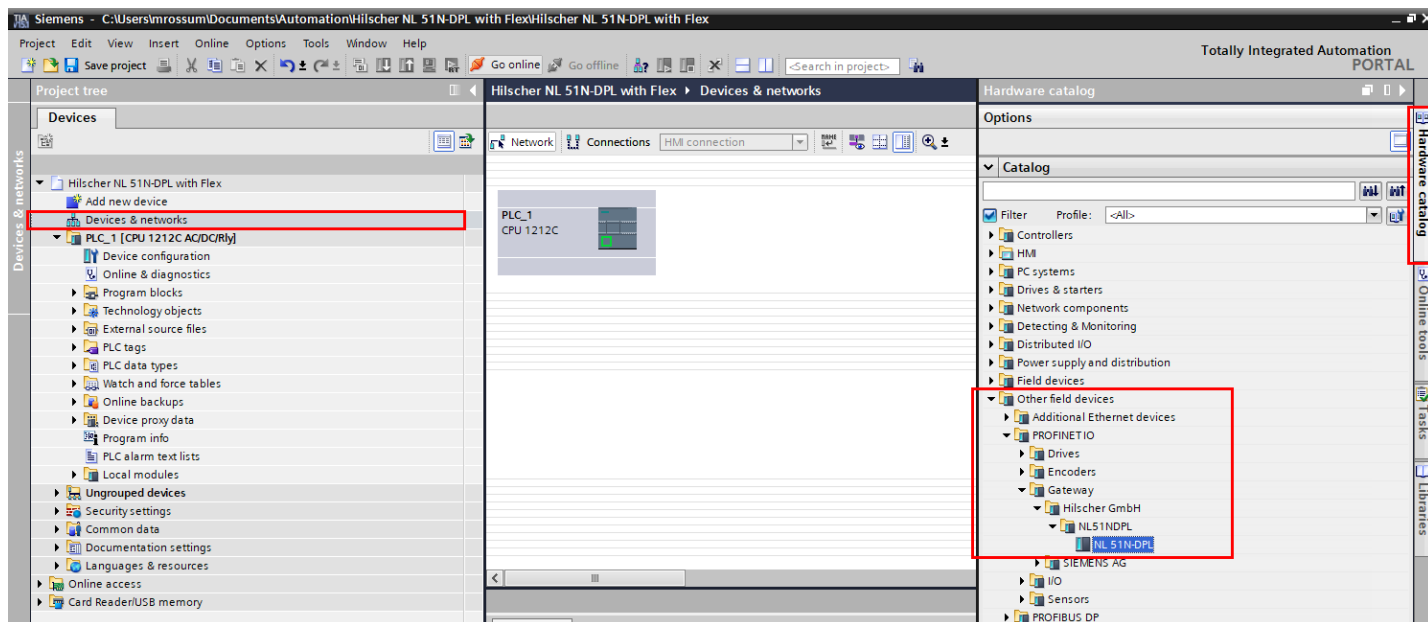


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Set the IP Address of the PLC.

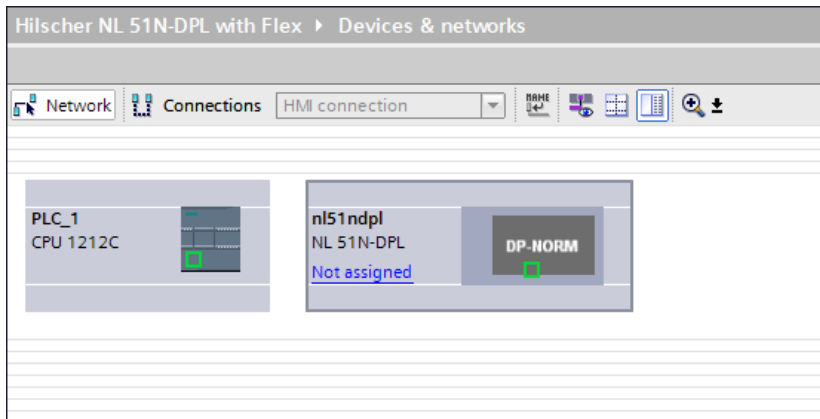


Double click on Devices & networks, open the Hardware catalog and double click on the NL 51N-DPL.

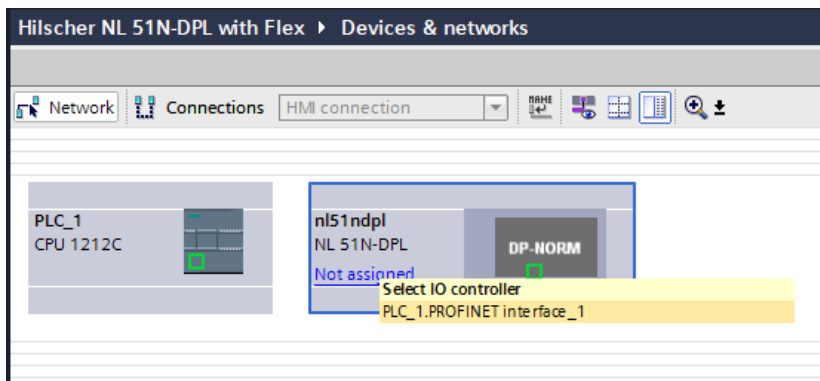


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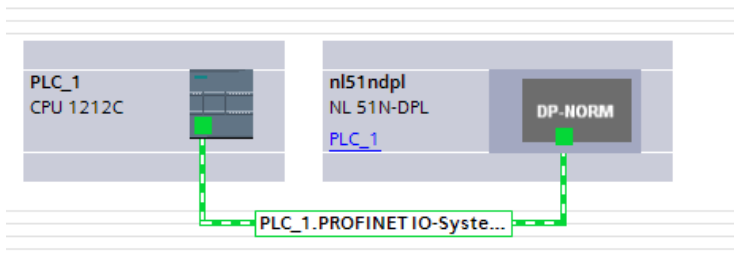
The device is now added into the project.



Click on Not assigned and select the PLC.



The device is now connected to the PLC.

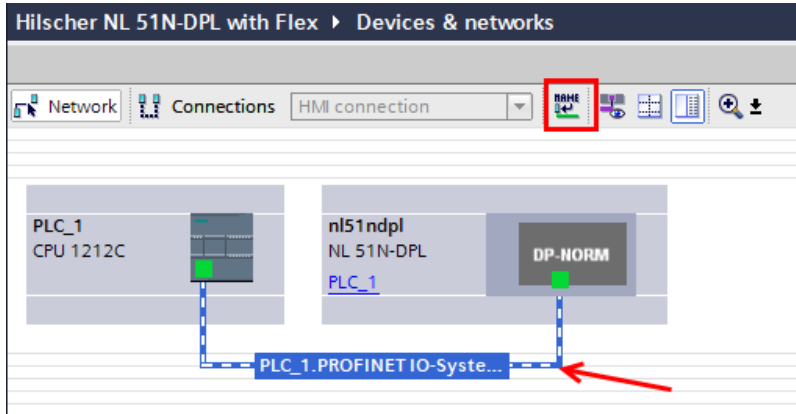




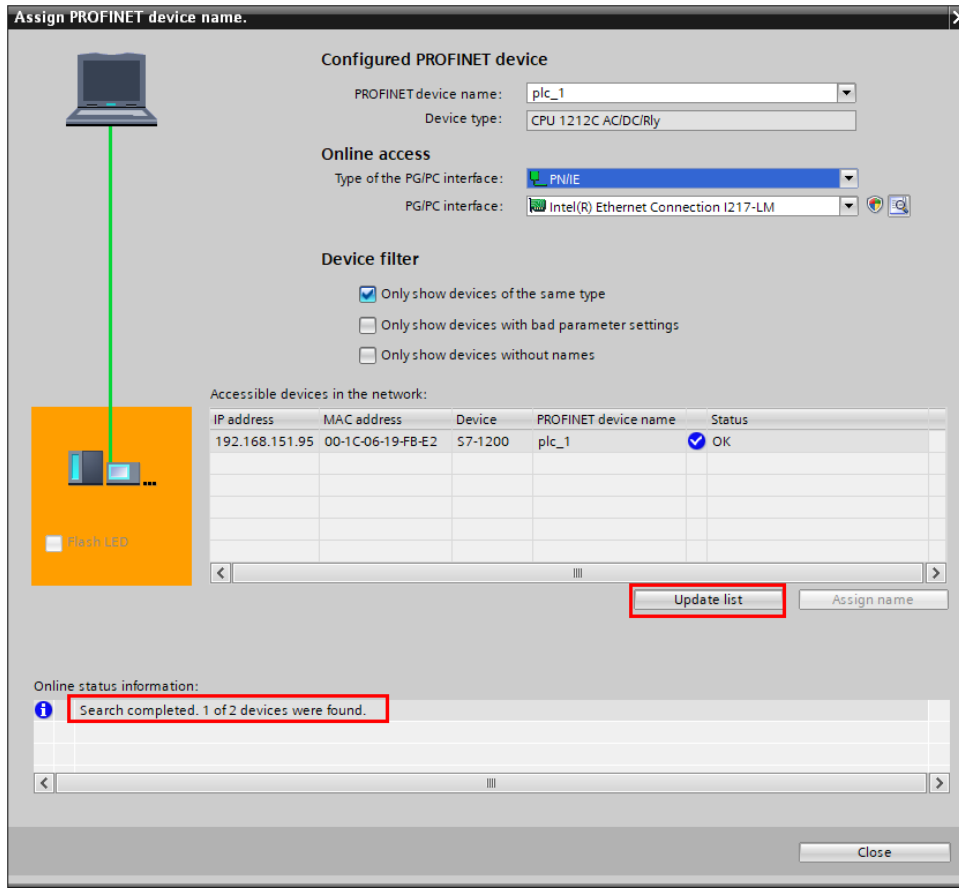
## PENKO How to...

### Setup the Hilscher NL 51N-DPL for the Flex controller

Select the Profinet connection and click on the Name icon.



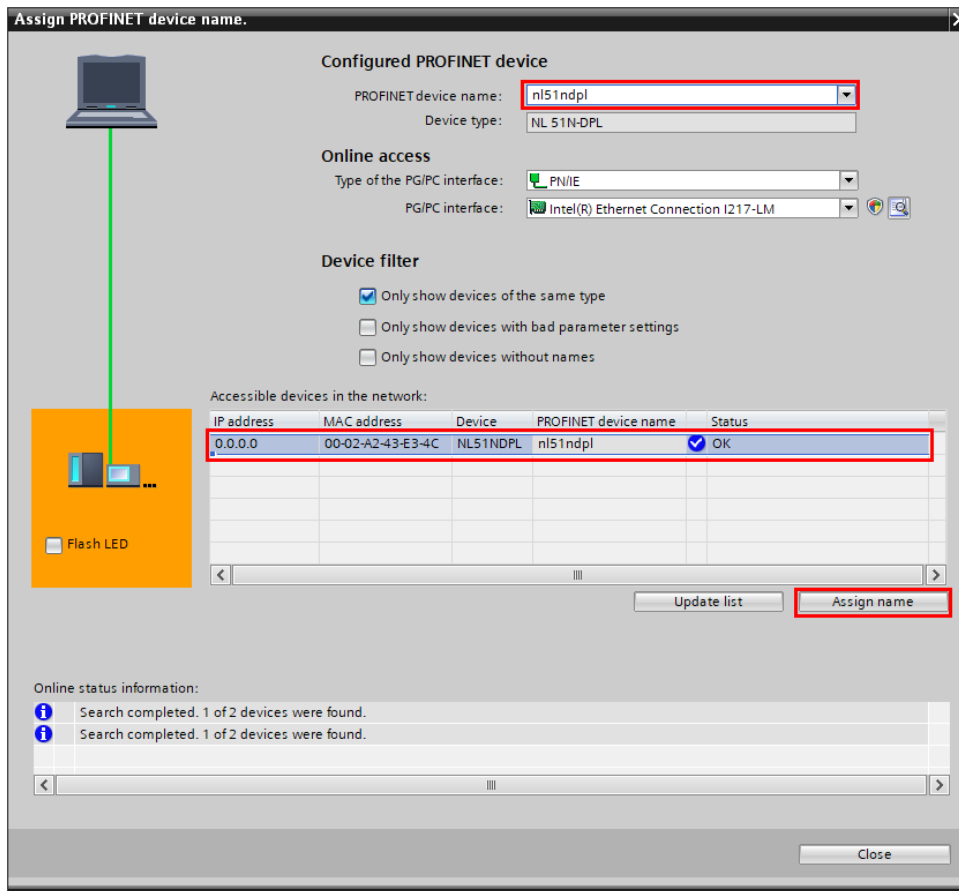
Set the correct interface settings and click on Update list, at least two devices should be found, the PLC and the device.



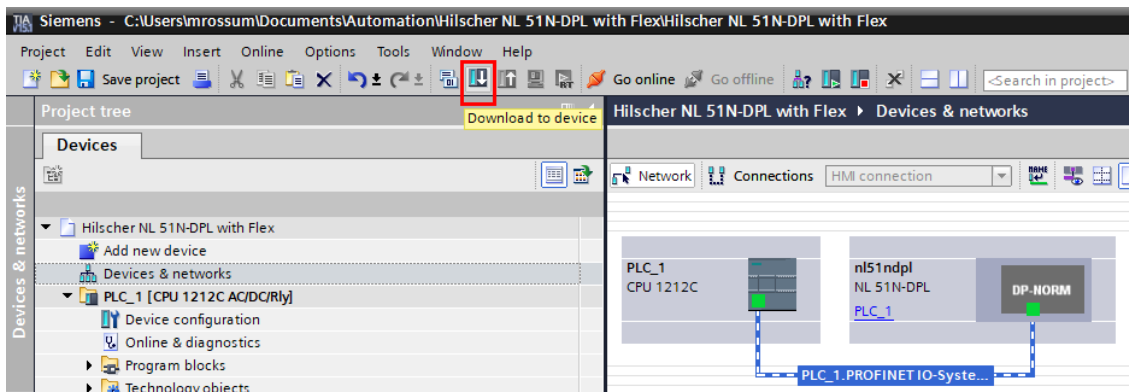
## PENKO How to...

### Setup the Hilscher NL 51N-DPL for the Flex controller

Select the Profinet name nl51ndpl, select the name and click on Assign name. Then click on Close.

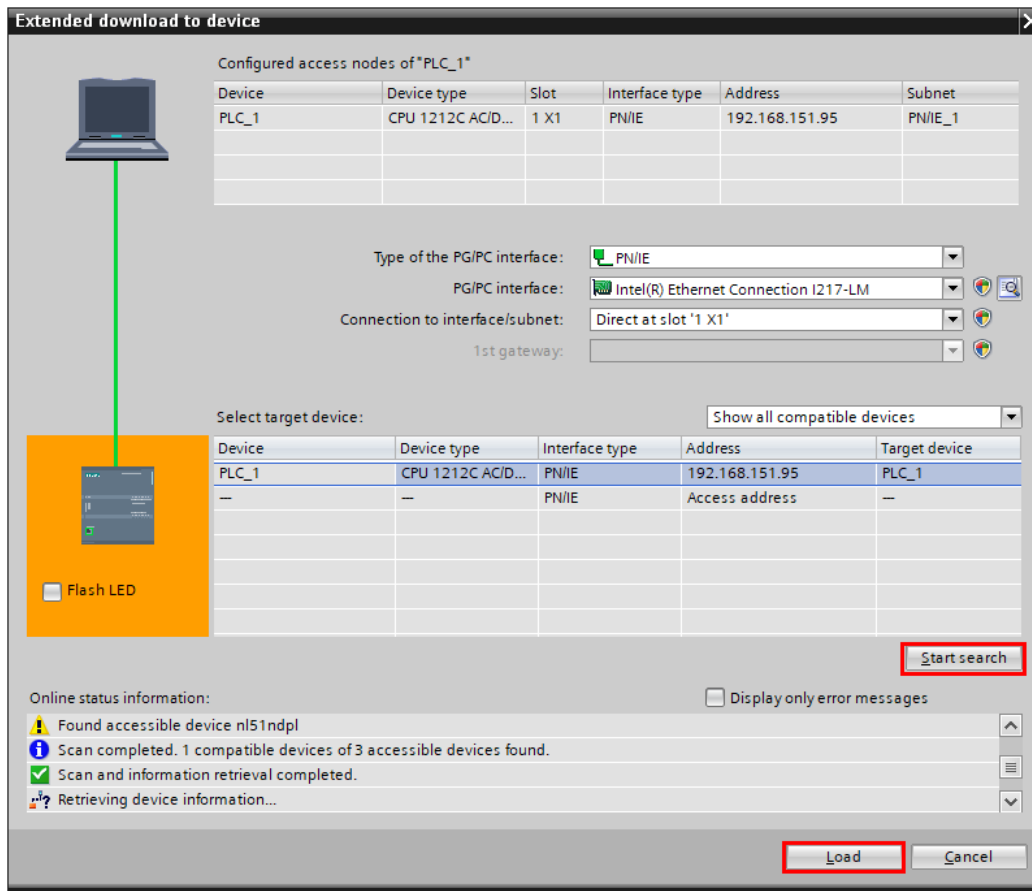


Download the setup into the PLC, click on the Download to device icon.

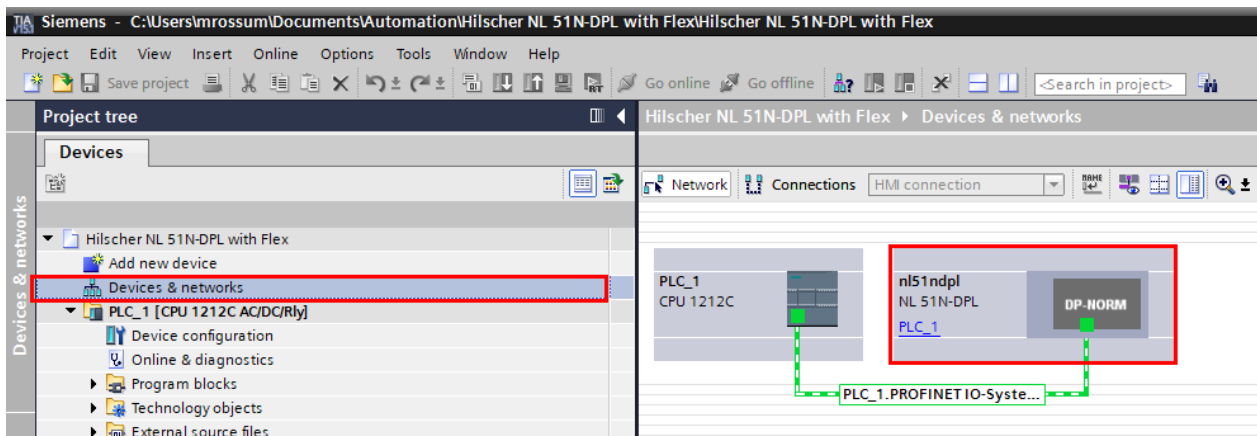


PENKO How to...  
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Click on Start search, when the PLC is found select the PLC and click on Load.

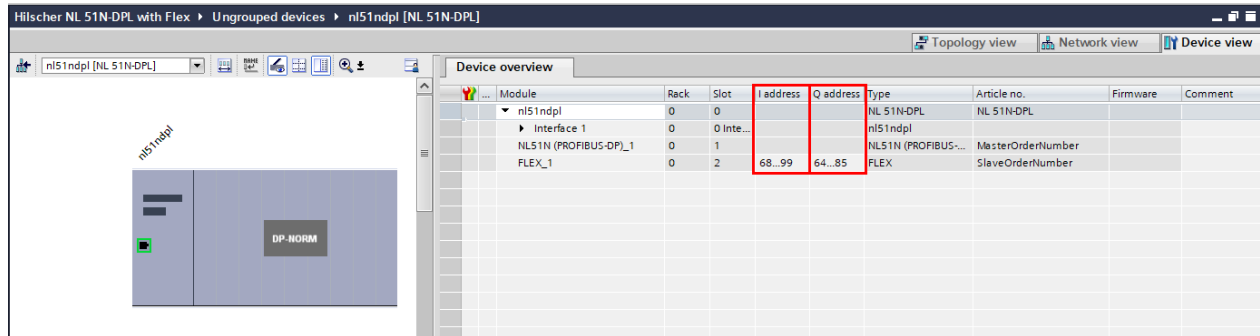


Go Offline, double click on Devices & networks and double click on the n151ndpl module.

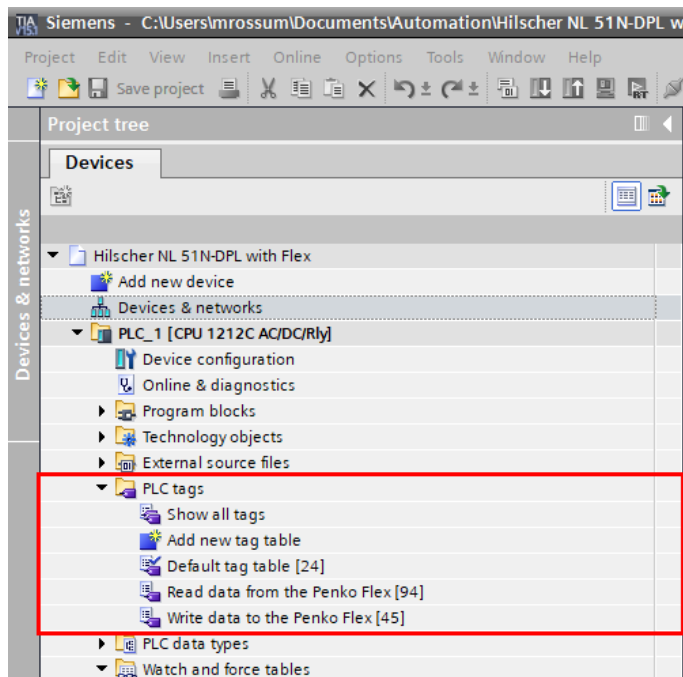


## PENKO How to... Setup the Hilscher NL 51N-DPL for the Flex controller

In the device overview you can see the I addresses and Q addresses. These are the addresses where the data can be read or write to the Flex.



Go to PLC tags and add two new tag tables, name them 'Read data from the Penko Flex' and 'Read data from the Penko Flex'.



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Setup the Hilscher NL 51N-DPL for the Flex controller

Open the Read data form the Penko Flex, below you can see the tag list to read all the data form the Flex.

<input type="checkbox"/>	Weight	DInt	%ID68
<input type="checkbox"/>	Status_Hardware_Overload	Bool	%I73.0
<input type="checkbox"/>	Status_Above_Max_Load	Bool	%I73.1
<input type="checkbox"/>	Status_Stable_Signal	Bool	%I73.2
<input type="checkbox"/>	Status_In_Stable_Range	Bool	%I73.3
<input type="checkbox"/>	Status_Zero_Corrected	Bool	%I73.4
<input type="checkbox"/>	Status_Center_of_Zero	Bool	%I73.5
<input type="checkbox"/>	Status_In_Zero_Range	Bool	%I73.6
<input type="checkbox"/>	Status_Zero_Tracking_Possible	Bool	%I73.7
<input type="checkbox"/>	Status_Tare_Active	Bool	%I72.0
<input type="checkbox"/>	Status_Preset_Tare_Active	Bool	%I72.1
<input type="checkbox"/>	Status_New_Sample_Available	Bool	%I72.2
<input type="checkbox"/>	Status_Calibration_Invalid	Bool	%I72.3
<input type="checkbox"/>	Status_Calibration_Enabled	Bool	%I72.4
<input type="checkbox"/>	Status_Certified_Mode	Bool	%I72.5
<input type="checkbox"/>	Status_Invalid_Weight	Bool	%I72.6
<input type="checkbox"/>	Status_Register_Function_active	Bool	%I72.7
<input type="checkbox"/>	Read_Command_Zero_Reset	Bool	%I74.0
<input type="checkbox"/>	Read_Command_Zero_Set	Bool	%I74.1
<input type="checkbox"/>	Read_Command_Tare_Off	Bool	%I74.2
<input type="checkbox"/>	Read_Command_Tare_On	Bool	%I74.3
<input type="checkbox"/>	Read_Command_Reserved	Bool	%I74.4
<input type="checkbox"/>	Read_Command_Freeze_Weight	Bool	%I74.5
<input type="checkbox"/>	Read_Command_IND_Channel_2^0	Bool	%I74.6
<input type="checkbox"/>	Read_Command_IND_Channel_2^1	Bool	%I74.7
<input type="checkbox"/>	Read_Weight_Select_register	Byte	%IB75
<input type="checkbox"/>	Input_1	Bool	%I77.0
<input type="checkbox"/>	Input_2	Bool	%I77.1
<input type="checkbox"/>	Input_3	Bool	%I77.2
<input type="checkbox"/>	Input_4	Bool	%I77.3
<input type="checkbox"/>	Input_5	Bool	%I77.4
<input type="checkbox"/>	Input_6	Bool	%I77.5
<input type="checkbox"/>	Input_7	Bool	%I77.6
<input type="checkbox"/>	Input_8	Bool	%I77.7
<input type="checkbox"/>	Input_9	Bool	%I76.0
<input type="checkbox"/>	Input_10	Bool	%I76.1
<input type="checkbox"/>	Input_11	Bool	%I76.2
<input type="checkbox"/>	Input_12	Bool	%I76.3
<input type="checkbox"/>	Input_13	Bool	%I76.4
<input type="checkbox"/>	Input_14	Bool	%I76.5
<input type="checkbox"/>	Input_15	Bool	%I76.6
<input type="checkbox"/>	Input_16	Bool	%I76.7
<input type="checkbox"/>	Output_1	Bool	%I79.0
<input type="checkbox"/>	Output_2	Bool	%I79.1
<input type="checkbox"/>	Output_3	Bool	%I79.2
<input type="checkbox"/>	Output_4	Bool	%I79.3
<input type="checkbox"/>	Output_5	Bool	%I79.4
<input type="checkbox"/>	Output_6	Bool	%I79.5
<input type="checkbox"/>	Output_7	Bool	%I79.6
<input type="checkbox"/>	Output_8	Bool	%I79.7
<input type="checkbox"/>	Output_9	Bool	%I78.0
<input type="checkbox"/>	Output_10	Bool	%I78.1
<input type="checkbox"/>	Output_11	Bool	%I78.2
<input type="checkbox"/>	Output_12	Bool	%I78.3
<input type="checkbox"/>	Output_13	Bool	%I78.4
<input type="checkbox"/>	Output_14	Bool	%I78.5
<input type="checkbox"/>	Output_15	Bool	%I78.6
<input type="checkbox"/>	Output_16	Bool	%I78.7

<input type="checkbox"/>	Marker_401	Bool	%I81.0
<input type="checkbox"/>	Marker_402	Bool	%I81.1
<input type="checkbox"/>	Marker_403	Bool	%I81.2
<input type="checkbox"/>	Marker_404	Bool	%I81.3
<input type="checkbox"/>	Marker_405	Bool	%I81.4
<input type="checkbox"/>	Marker_406	Bool	%I81.5
<input type="checkbox"/>	Marker_407	Bool	%I81.6
<input type="checkbox"/>	Marker_408	Bool	%I81.7
<input type="checkbox"/>	Marker_409	Bool	%I80.0
<input type="checkbox"/>	Marker_410	Bool	%I80.1
<input type="checkbox"/>	Marker_411	Bool	%I80.2
<input type="checkbox"/>	Marker_412	Bool	%I80.3
<input type="checkbox"/>	Marker_413	Bool	%I80.4
<input type="checkbox"/>	Marker_414	Bool	%I80.5
<input type="checkbox"/>	Marker_415	Bool	%I80.6
<input type="checkbox"/>	Marker_416	Bool	%I80.7
<input type="checkbox"/>	Marker_417	Bool	%I83.0
<input type="checkbox"/>	Marker_418	Bool	%I83.1
<input type="checkbox"/>	Marker_419	Bool	%I83.2
<input type="checkbox"/>	Marker_420	Bool	%I83.3
<input type="checkbox"/>	Marker_421	Bool	%I83.4
<input type="checkbox"/>	Marker_422	Bool	%I83.5
<input type="checkbox"/>	Marker_423	Bool	%I83.6
<input type="checkbox"/>	Marker_424	Bool	%I83.7
<input type="checkbox"/>	Marker_425	Bool	%I82.0
<input type="checkbox"/>	Marker_426	Bool	%I82.1
<input type="checkbox"/>	Marker_427	Bool	%I82.2
<input type="checkbox"/>	Marker_428	Bool	%I82.3
<input type="checkbox"/>	Marker_429	Bool	%I82.4
<input type="checkbox"/>	Marker_430	Bool	%I82.5
<input type="checkbox"/>	Marker_431	Bool	%I82.6
<input type="checkbox"/>	Marker_432	Bool	%I82.7
<input type="checkbox"/>	Register_1	DInt	%ID84
<input type="checkbox"/>	Register_2	DInt	%ID88
<input type="checkbox"/>	Register_3	DInt	%ID92
<input type="checkbox"/>	Register_4	DInt	%ID96
<input type="checkbox"/>	<Add new>		



## PENKO How to...

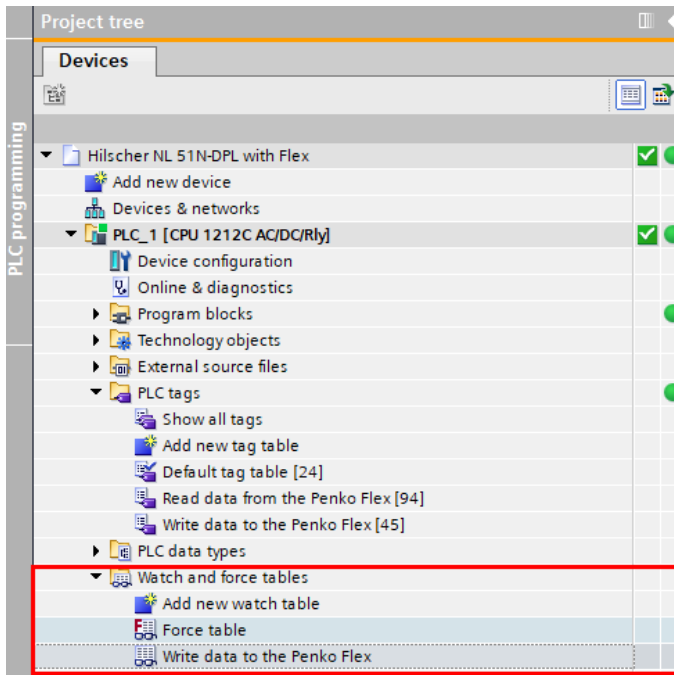
### Setup the Hilscher NL 51N-DPL for the Flex controller

Open the Write data to the Penko Flex, below you can see the tag list to write all the data to the Flex.

	Write_Command_Zero_Reset	Bool	%Q64.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command_Zero_Set	Bool	%Q64.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command_Tare_Off	Bool	%Q64.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command_Tare_On	Bool	%Q64.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command_Reserved	Bool	%Q64.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command_Freeze_Weight	Bool	%Q64.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command__IND_Chann...	Bool	%Q64.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Command__IND_Chann...	Bool	%Q64.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Write_Weight_Select_register	Byte	%QB65	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_969	Bool	%Q67.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_970	Bool	%Q67.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_971	Bool	%Q67.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_972	Bool	%Q67.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_973	Bool	%Q67.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_974	Bool	%Q67.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_975	Bool	%Q67.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_976	Bool	%Q67.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_977	Bool	%Q66.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_978	Bool	%Q66.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_979	Bool	%Q66.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_980	Bool	%Q66.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_981	Bool	%Q66.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_982	Bool	%Q66.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_983	Bool	%Q66.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_984	Bool	%Q66.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_985	Bool	%Q69.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_986	Bool	%Q69.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_987	Bool	%Q69.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_988	Bool	%Q69.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_989	Bool	%Q69.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_990	Bool	%Q69.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_991	Bool	%Q69.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_992	Bool	%Q69.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_993	Bool	%Q68.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_994	Bool	%Q68.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_995	Bool	%Q68.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_996	Bool	%Q68.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_997	Bool	%Q68.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_998	Bool	%Q68.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_999	Bool	%Q68.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Marker_1000	Bool	%Q68.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Register_97	DInt	%QD70	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Register_98	DInt	%QD74	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Register_99	DInt	%QD78	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Register_100	DInt	%QD82	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<Add new>			<input type="checkbox"/>	<input checked="" type="checkbox"/>

PENKO How to...  
Setup the Hilscher NL 51N-DPL for the Flex controller

You can also add a Watch table to write data to the Flex.



When online you can set command or Markers, and write values into register 97 – 100.

*Write_Command_Zero_Reset*	%Q64.0	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Write_Command_Zero_Set*	%Q64.1	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Write_Command_Tare_Off*	%Q64.2	Bool	<input type="checkbox"/> FALSE	FALSE	<input checked="" type="checkbox"/>
*Write_Command_Tare_On*	%Q64.3	Bool	<input checked="" type="checkbox"/> TRUE	TRUE	<input checked="" type="checkbox"/>
*Write_Command_Reserved*	%Q64.4	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Write_Command_Freeze_Weight*	%Q64.5	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Write_Command_IND_Channel_2^0*	%Q64.6	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Write_Command_IND_Channel_2^1*	%Q64.7	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_969*	%Q67.0	Bool	<input checked="" type="checkbox"/> TRUE	TRUE	<input checked="" type="checkbox"/>
*Marker_970*	%Q67.1	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_971*	%Q67.2	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_972*	%Q67.3	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_973*	%Q67.4	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_974*	%Q67.5	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_975*	%Q67.6	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_976*	%Q67.7	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_977*	%Q66.0	Bool	<input checked="" type="checkbox"/> TRUE	TRUE	<input checked="" type="checkbox"/>
*Marker_978*	%Q66.1	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_979*	%Q66.2	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_980*	%Q66.3	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_981*	%Q66.4	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_982*	%Q66.5	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_983*	%Q66.6	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_984*	%Q66.7	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_985*	%Q69.0	Bool	<input checked="" type="checkbox"/> TRUE	TRUE	<input checked="" type="checkbox"/>
*Marker_986*	%Q69.1	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_987*	%Q69.2	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_988*	%Q69.3	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_989*	%Q69.4	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_990*	%Q69.5	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_991*	%Q69.6	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_992*	%Q69.7	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_993*	%Q68.0	Bool	<input checked="" type="checkbox"/> TRUE	TRUE	<input checked="" type="checkbox"/>
*Marker_994*	%Q68.1	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_995*	%Q68.2	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_996*	%Q68.3	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_997*	%Q68.4	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_998*	%Q68.5	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_999*	%Q68.6	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Marker_1000*	%Q68.7	Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
*Register_97*	%QD70	DEC+/-	97	97	<input checked="" type="checkbox"/>
*Register_98*	%QD74	DEC+/-	98	98	<input checked="" type="checkbox"/>
*Register_99*	%QD78	DEC+/-	99	99	<input checked="" type="checkbox"/>
*Register_100*	%QD82	DEC+/-	100	100	<input checked="" type="checkbox"/>





## About PENKO

Our design expertise include systems for manufacturing plants, bulk weighing, check weighing, force measuring and process control. For over 35 years, PENKO Engineering B.V. has been at the forefront of development and production of high-accuracy, high-speed weighing systems and our solutions continue to help cut costs, increase ROI and drive profits for some of the largest global brands, such as Cargill, Sara Lee, Heinz, Kraft Foods and Unilever to name but a few.

Whether you are looking for a simple stand-alone weighing system or a high-speed weighing and dosing controller for a complex automated production line, PENKO has a comprehensive range of standard solutions you can rely on.

## Certifications

PENKO sets high standards for its products and product performance which are tested, certified and approved by independent expert and government organizations to ensure they meet – and even – exceed metrology industry guidelines. A library of testing certificates is available for reference on:

[http://penko.com/nl/publications\\_certificates.html](http://penko.com/nl/publications_certificates.html)



## PENKO Professional Services

PENKO is committed to ensuring every system is installed, tested, programmed, commissioned and operational to client specifications. Our engineers, at our weighing center in Ede, Netherlands, as well as our distributors around the world, strive to solve most weighing-system issues within the same day. On a monthly basis PENKO offers free training classes to anyone interested in exploring modern, high-speed weighing instruments and solutions. A schedule of training sessions is found on: [www.penko.com/training](http://www.penko.com/training)

## PENKO Alliances

PENKO's worldwide network: Australia, Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Slovakia Sweden, Switzerland and Singapore. A complete overview you will find on: [www.penko.com/dealers](http://www.penko.com/dealers)

