



P2M2HBVL/P2H IO-LINK  
FUNCTION BLOCK FOR SIEMENS  
PLC S7-1200/1500 WITH  
BALLUFF BN100AZ PROFINET IO-  
LINK MASTER  
QUICK START GUIDE

## CONTENTS

PREFACE .....	3
1. Setting P2M\P2H Slave with BNI00AZ Balluff IO-Link Master .....	4
2. Importing function block library .....	5
3. Process Data Function Block Instruction.....	7
3.1. Add instance of function block .....	7
3.2. Using the instruction.....	13
3.2.1. Solenoid Valves Control (Cyclic).....	13
3.2.2. Monitoring Status Bits (Cyclic).....	14
4. Parameter Data Example Code .....	15
4.2. Add instance of function block .....	15
4.3. Using the instruction.....	19
4.3.1. Reading parameters.....	19
4.3.2. Writing Parameters.....	21
APPENDIX.....	24

## PREFACE

This Quick Start Guide (QSG) is designed to help integrate Parker Hannifin's P2M or P2H IO-link valve manifold into a Siemens PLC environment using Balluff BNI00AZ profinet IO-Link Master module. The QSG assumes that you are already using the balluff network interface profinet and that it is connected and configured to the siemens PLC S7-1200/1500 via a profinet network in Tia portal V16 environment.

The QSG is agnostic to IO Link Device Classification, such that it shall function the same whether you are controlling an A-Class or B-Class P2M / P2H Module. The guide will walk the user through obtaining the necessary files, importing/configuring the FB's, and initiating parameter reads and writes from/to the P2M / P2H IO-Link device.

The **"P2M\_IOL\_BNI00AZ\_PD"** function block facilitates communication and handling of process data between PLC and the IO-Link slave device.

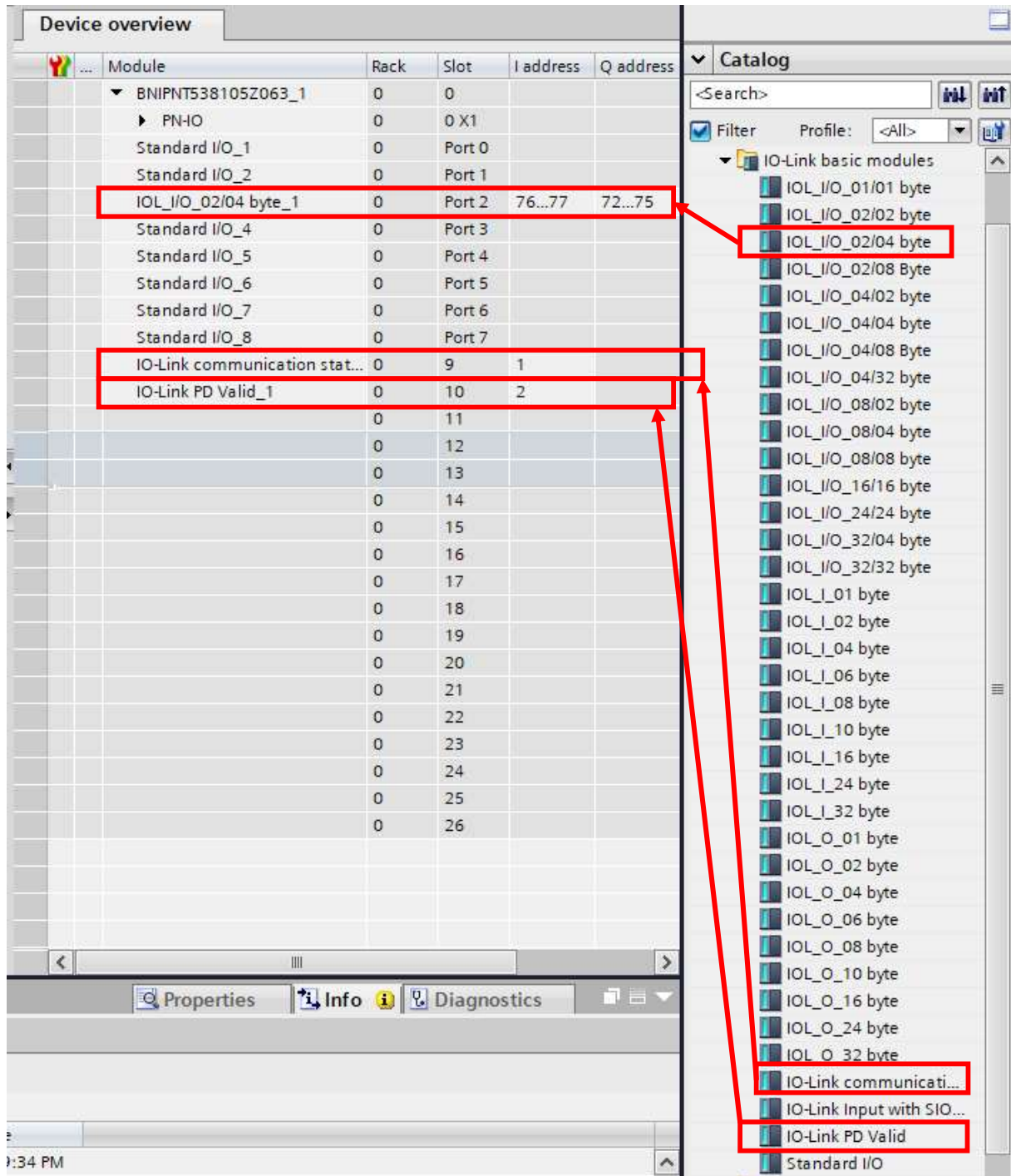
The **"P2M\_IOL\_BNI00AZ\_PRM"** function block facilitates the call-up of the acyclic service data.

You can download resources such as the IODD configuration file, this QSG, a sample TIA portal file **"P2M2HBVL\_P2HL\_TIA\_S71200\_BNI00AZ\_R0"** and the full P2M manual here:

<http://www.parker.com/pdn/io-Link>

## 1. SETTING P2M\P2H SLAVE WITH BNI00AZ BALLUFF IO-LINK MASTER

In the project tree double click "Devices & networks" move to "Network view" double click the Balluff IO-Link master, drag and drop "IOL\_I/O\_02/04 byte", IO-Link Communication state and IO-Link PD Valid from Hardware catalog >> Module>>IO-Link basic modules to "Device view".



The screenshot displays the Siemens TIA Portal interface. The 'Device overview' window on the left shows a table of modules installed in a rack. The 'Catalog' window on the right shows the available modules for selection.

**Device overview table:**

Module	Rack	Slot	I address	Q address
BNIPNT538105Z063_1	0	0		
▶ PN-IO	0	0 X1		
Standard I/O_1	0	Port 0		
Standard I/O_2	0	Port 1		
IOL_I/O_02/04 byte_1	0	Port 2	76...77	72...75
Standard I/O_4	0	Port 3		
Standard I/O_5	0	Port 4		
Standard I/O_6	0	Port 5		
Standard I/O_7	0	Port 6		
Standard I/O_8	0	Port 7		
IO-Link communication stat...	0	9	1	
IO-Link PD Valid_1	0	10	2	
	0	11		
	0	12		
	0	13		
	0	14		
	0	15		
	0	16		
	0	17		
	0	18		
	0	19		
	0	20		
	0	21		
	0	22		
	0	23		
	0	24		
	0	25		
	0	26		

**Catalog window:**

- IO-Link basic modules
  - IOL\_I/O\_01/01 byte
  - IOL\_I/O\_02/02 byte
  - IOL\_I/O\_02/04 byte
  - IOL\_I/O\_02/08 Byte
  - IOL\_I/O\_04/02 byte
  - IOL\_I/O\_04/04 byte
  - IOL\_I/O\_04/08 Byte
  - IOL\_I/O\_04/32 byte
  - IOL\_I/O\_08/02 byte
  - IOL\_I/O\_08/04 byte
  - IOL\_I/O\_08/08 byte
  - IOL\_I/O\_16/16 byte
  - IOL\_I/O\_24/24 byte
  - IOL\_I/O\_32/04 byte
  - IOL\_I/O\_32/32 byte
  - IOL\_I\_01 byte
  - IOL\_I\_02 byte
  - IOL\_I\_04 byte
  - IOL\_I\_06 byte
  - IOL\_I\_08 byte
  - IOL\_I\_10 byte
  - IOL\_I\_16 byte
  - IOL\_I\_24 byte
  - IOL\_I\_32 byte
  - IOL\_O\_01 byte
  - IOL\_O\_02 byte
  - IOL\_O\_04 byte
  - IOL\_O\_06 byte
  - IOL\_O\_08 byte
  - IOL\_O\_10 byte
  - IOL\_O\_16 byte
  - IOL\_O\_24 byte
  - IOL\_O\_32 byte
  - IO-Link communicati...
  - IO-Link Input with SIO...
  - IO-Link PD Valid
  - Standard I/O

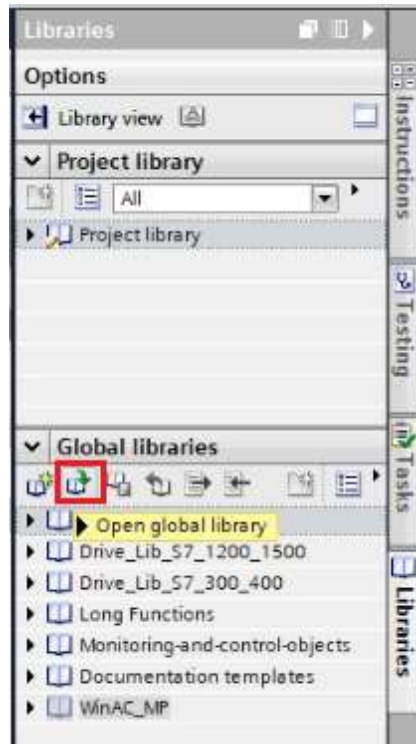
Red boxes highlight the following modules in both windows:

- IOL\_I/O\_02/04 byte\_1 (in Device overview) and IOL\_I/O\_02/04 byte (in Catalog)
- IO-Link communication stat... (in Device overview) and IO-Link communicati... (in Catalog)
- IO-Link PD Valid\_1 (in Device overview) and IO-Link PD Valid (in Catalog)

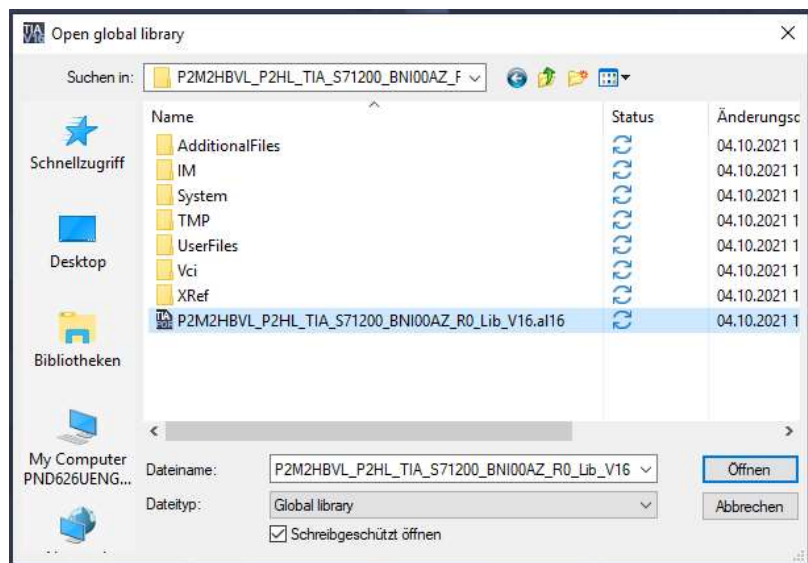
Red arrows indicate the drag-and-drop process from the Catalog to the Device overview.

## 2. IMPORTING FUNCTION BLOCK LIBRARY

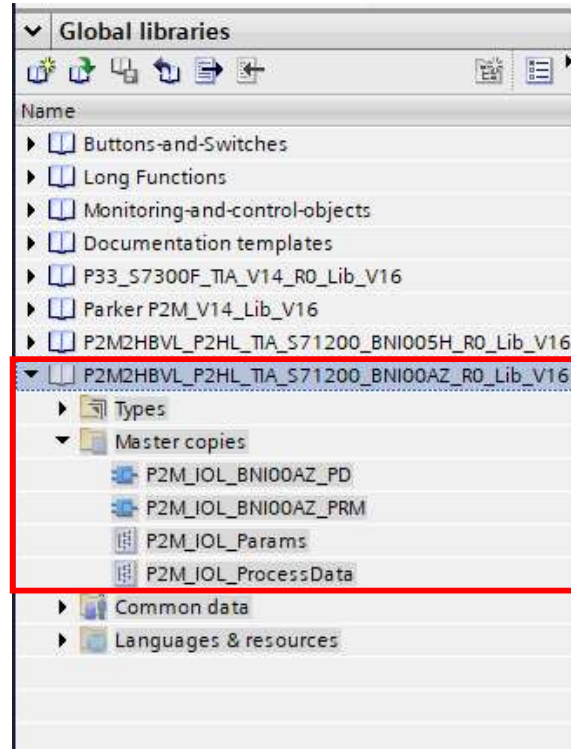
In Tia portal environment at right side, open the tab “Global Libraries” by clicking on “Libraries”, then select “open global library”.



In “Open global Library” view move to your stored library function block folder “P2M2HBVL\_P2HL\_TIA\_S71200\_BNI00AZ\_R0\_Lib\_V16” and select “.al16” file then click **open**

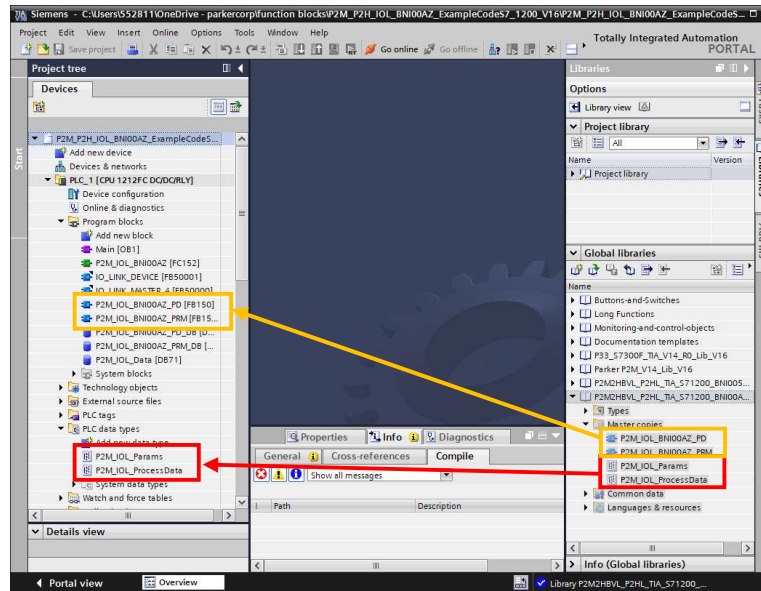


You should then see the new Library “P2M2HBVL\_P2HL\_TIA\_S71200\_BNI00AZ\_R0\_Lib\_V16” in the Global Libraries list, click on your imported Library title to view your function blocks and PLC data types from drop-down menu.



Drag and drop data type **"P2M\_IOL\_Params"** and the **"P2M\_IOL\_ProcessData"** from Global libraries to the project tree **"PLC data types"** folder (red).

Then drag and drop function block **"P2M\_IOL\_BNI00AZ\_PD"** and **"P2M\_IOL\_BNI00AZ\_PRM"** to the project tree folder **"Program blocks"** (orange).

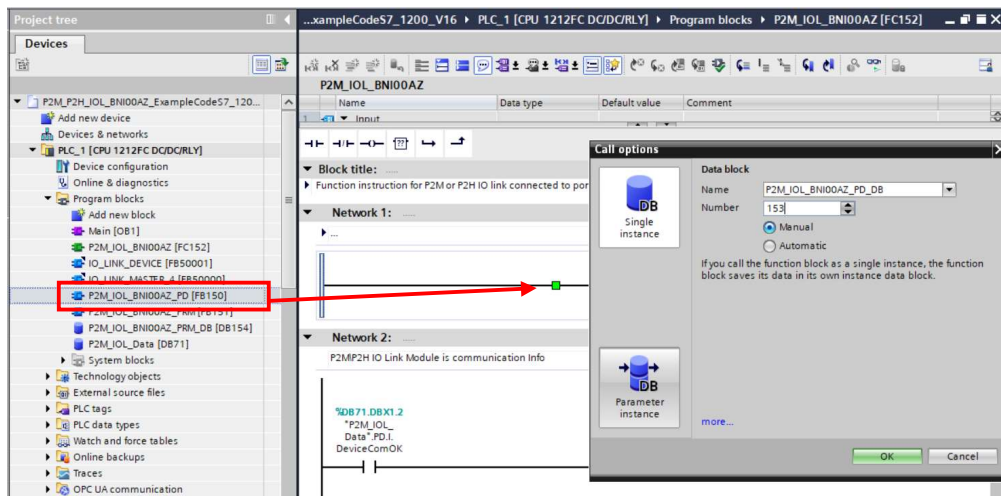


### 3. PROCESS DATA FUNCTION BLOCK INSTRUCTION

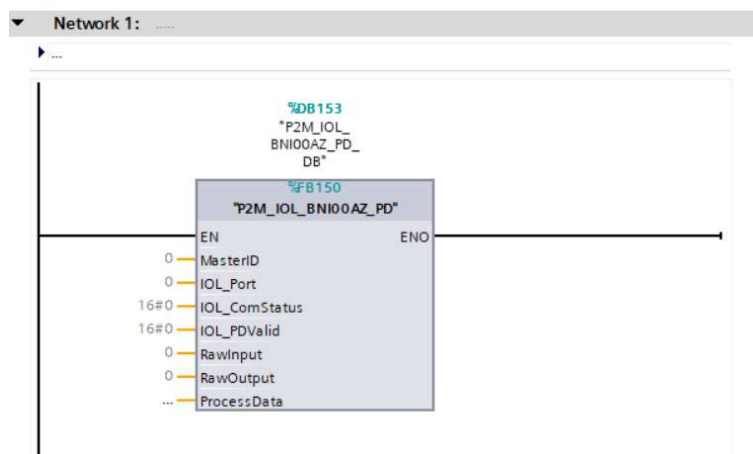
The **"P2M\_IOL\_BNI00AZ\_PD"** function block simplifies the usage of Parker P2M and P2H IO-link devices with Siemens S7-1200/1500 PLCs when connected via profinet to Balluff BNI00AZ IO-Link Master. Data is mapped to user-friendly control and diagnostic tags on the PLC side.

#### 3.1. Add instance of function block

Add instance of instruction to an empty Network of ladder, drag and drop the function block **"P2M\_IOL\_BNI00AZ\_PD"** onto the selected Network, create data instance associated with function block then click Ok.

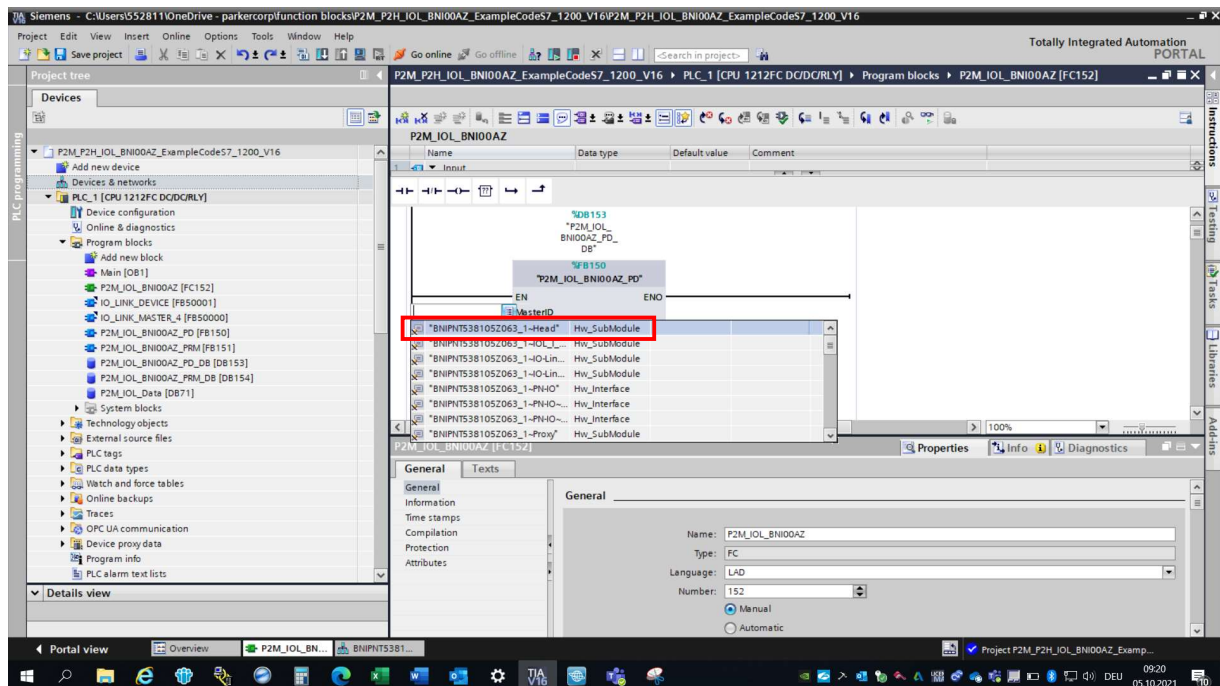


Function block view with default data in the Network

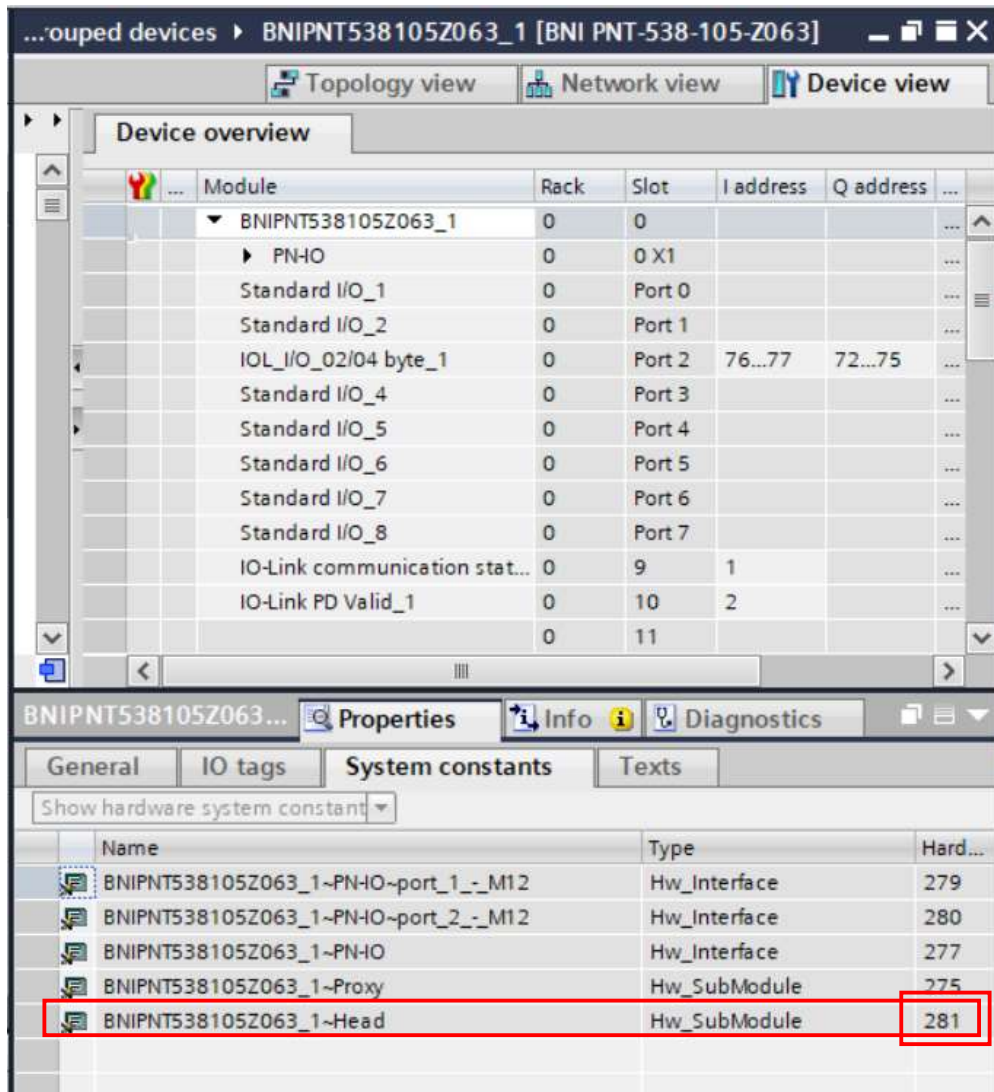


Choose **MasterID** by click the "0" left to "MasterID" and then click the selection button. The displayed choice appears in a drop down menu. Select "**BNIPNT538105Z063\_1 ~Head**" | **Hw\_SubModule**".





Hint: The related address number is also visible at “Devices & networks” > “Device View” > “System Constants”. In this case it is 281.



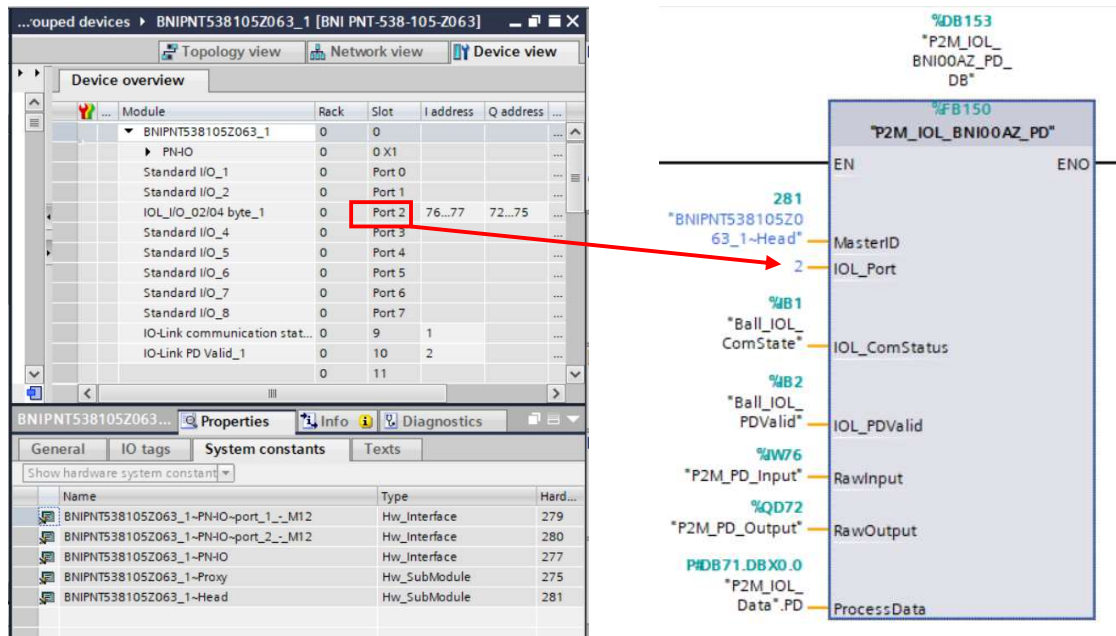
The screenshot displays the 'Device overview' window for the device BNIPNT538105Z063\_1. The 'Device view' tab is active, showing a table of modules and their addresses. Below this, the 'Properties' window is open, showing the 'System constants' tab. A red box highlights the 'BNIPNT538105Z063\_1~Head' entry in the 'System constants' table, which has a hardware address of 281.

Module	Rack	Slot	I address	Q address
BNIPNT538105Z063_1	0	0		
PN-IO	0	0 X1		
Standard I/O_1	0	Port 0		
Standard I/O_2	0	Port 1		
IOL_I/O_02/04 byte_1	0	Port 2	76...77	72...75
Standard I/O_4	0	Port 3		
Standard I/O_5	0	Port 4		
Standard I/O_6	0	Port 5		
Standard I/O_7	0	Port 6		
Standard I/O_8	0	Port 7		
IO-Link communication stat...	0	9	1	
IO-Link PD Valid_1	0	10	2	
	0	11		

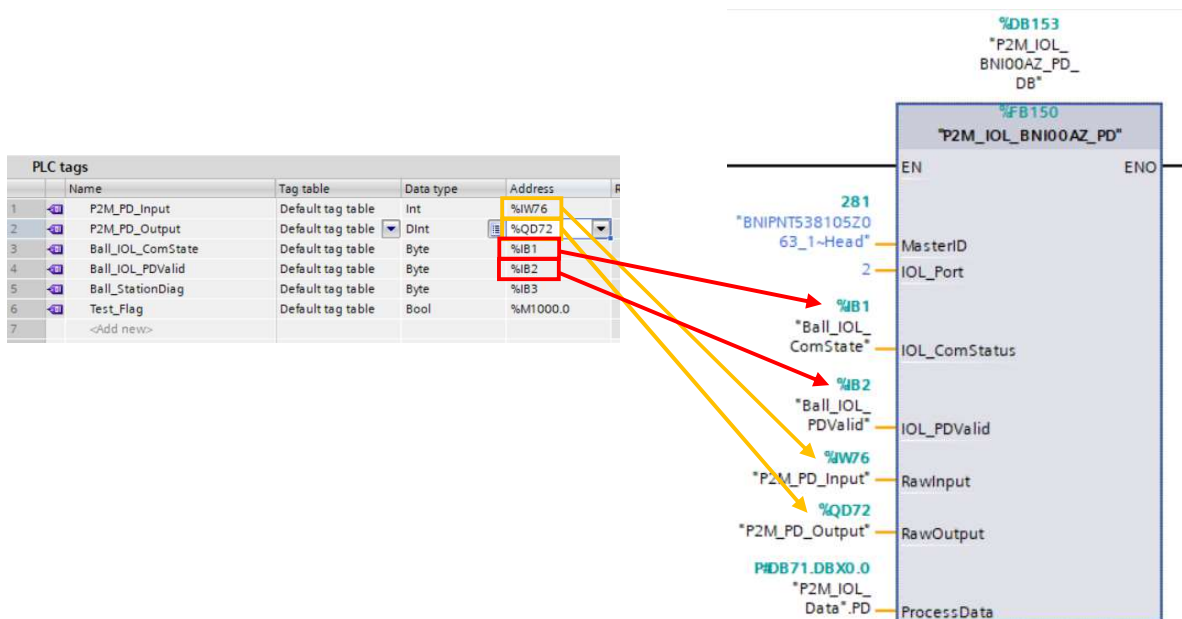
  

Name	Type	Hard...
BNIPNT538105Z063_1~PN-IO~port_1_-_M12	Hw_Interface	279
BNIPNT538105Z063_1~PN-IO~port_2_-_M12	Hw_Interface	280
BNIPNT538105Z063_1~PN-IO	Hw_Interface	277
BNIPNT538105Z063_1~Proxy	Hw_SubModule	275
BNIPNT538105Z063_1~Head	Hw_SubModule	281

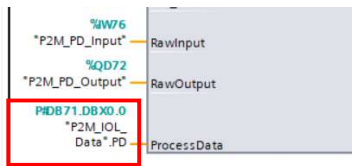
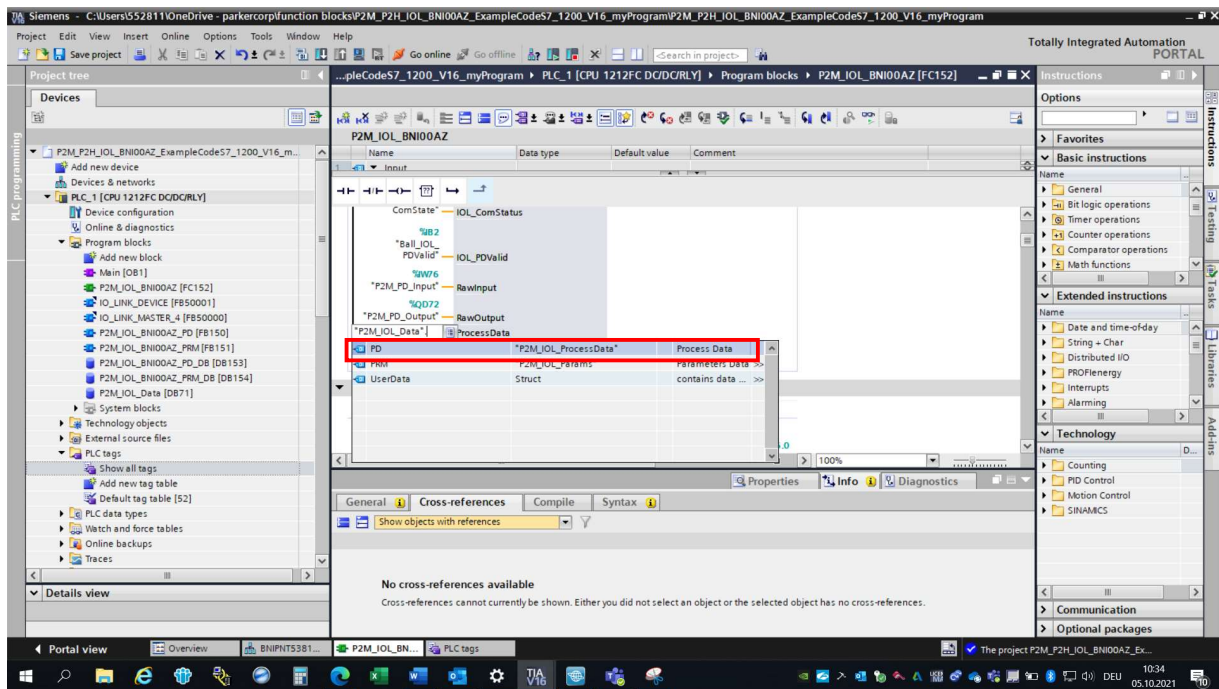
**IOL\_Port:** The **IOL\_Port** is dependent on the physical port the P2M / P2H is connected to! If you choose the incorrect port the function block will not work, and undesired results are likely. IO-Link is sensitive to the port which it has been assigned to communicate on.



Point IOL\_ComStatus, IOL\_PDValid, RawInput and RawOutput fields to the "PLC Tags" associated with IO-Link Basic module that the P2M / P2H is connected to.



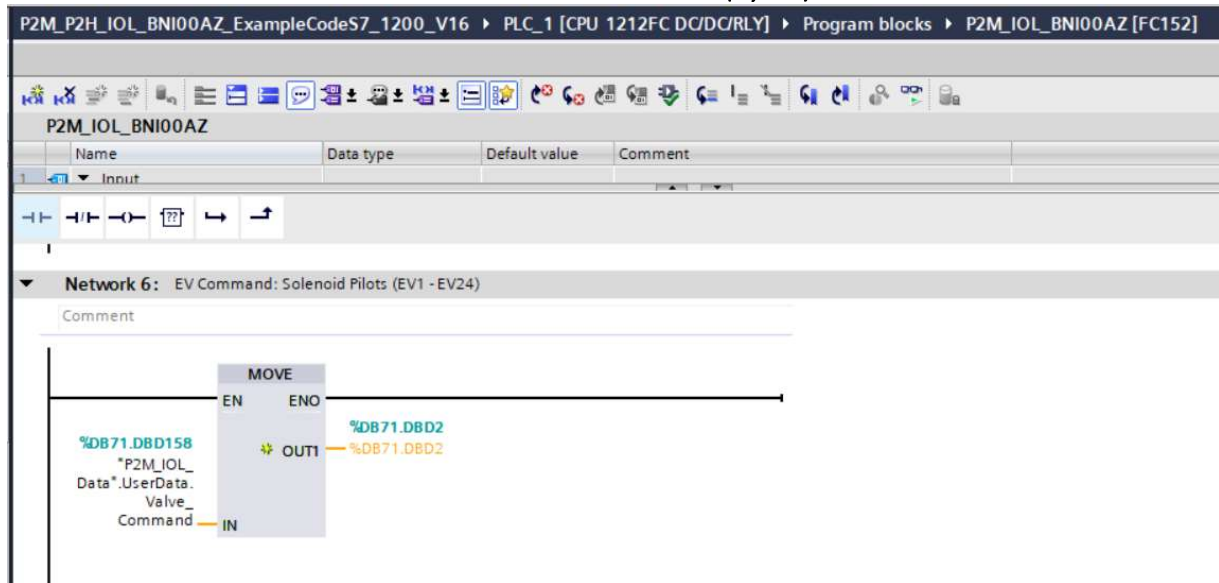
Point "ProcessData" to a variable type "P2M\_IOL\_ProcessData" created in a user data block



### 3.2. Using the instruction

It is important to note the difference between cyclic and acyclic data. Process Data (cyclic) is updated without a request; whereas Parameter Data (acyclic) requires the program to toggle a bit to pull data. Cyclic data includes input module status, and valve output control. This means that created variables “P2M\_IOL\_Data”.PD.I.xxx and “P2M\_IOL\_Data”.PD.O.EV[xx] are live tags with real data just by calling the Function Block. See appendix for all data points available. See ladder logic examples below:

#### 3.2.1. Solenoid Valves Control (Cyclic)



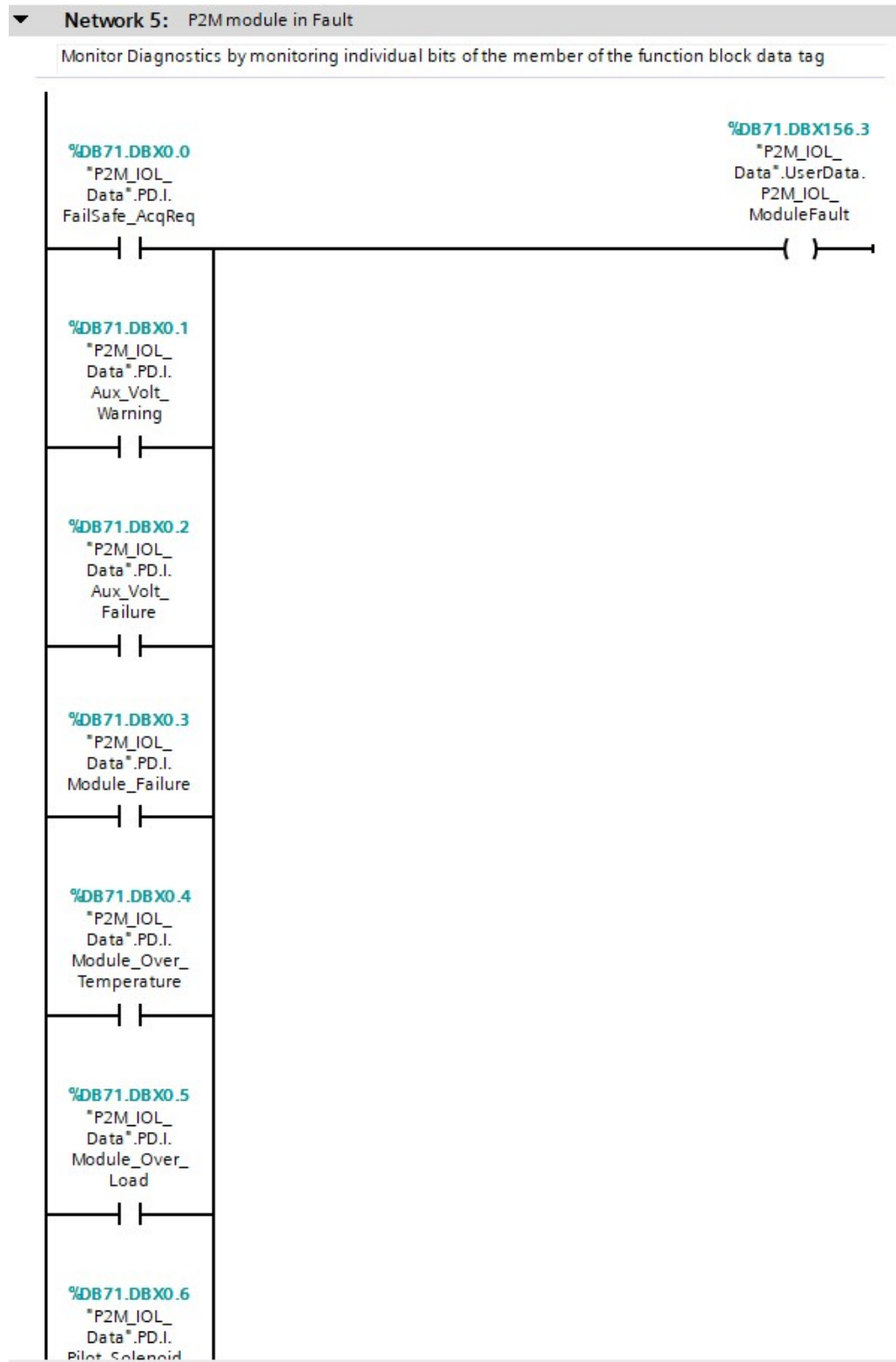
#### Example command

The “P2M\_IOL\_Data”.UserData.Valve\_Command value is a decimal number indicating which valves you want Switching ON .

Value correlation to solenoids address	
“P2M_IOL_Data”.UserData.Valve_Command = 1	“P2M_IOL_Data”.PD.O.EV[1]=1
“P2M_IOL_Data”.UserData.Valve_Command = 2	“P2M_IOL_Data”.PD.O.EV[2]=1
“P2M_IOL_Data”.UserData.Valve_Command = 4	“P2M_IOL_Data”.PD.O.EV[3]=1
“P2M_IOL_Data”.UserData.Valve_Command = 8	“P2M_IOL_Data”.PD.O.EV[4]=1
“P2M_IOL_Data”.UserData.Valve_Command = 16	“P2M_IOL_Data”.PD.O.EV[5]=1
.	
.	
.	
“P2M_IOL_Data”.UserData.Valve_Command = 8 388 608	“P2M_IOL_Data”.PD.O.EV[24]=1

### 3.2.2. Monitoring Status Bits (Cyclic)

FC152, NW5





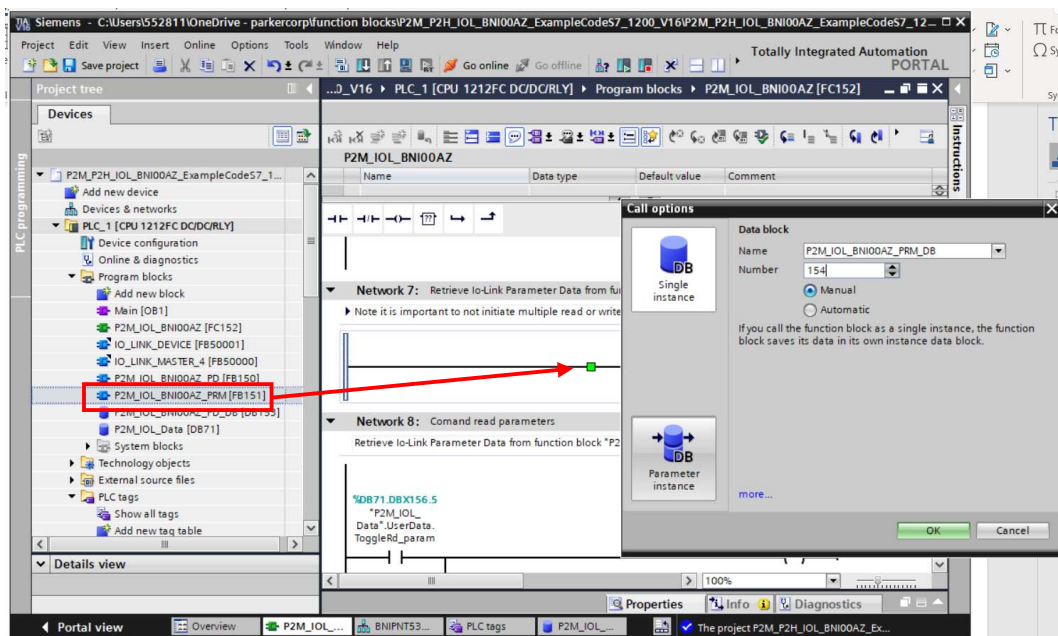
#### 4. PARAMETER DATA EXAMPLE CODE

**Note\*\*:** It is important to NOT initiate multiple read or write requests at the same time. Write your logic such that only one of the request bits is turned on at a time and wait for the done bit to go high before executing the next request.

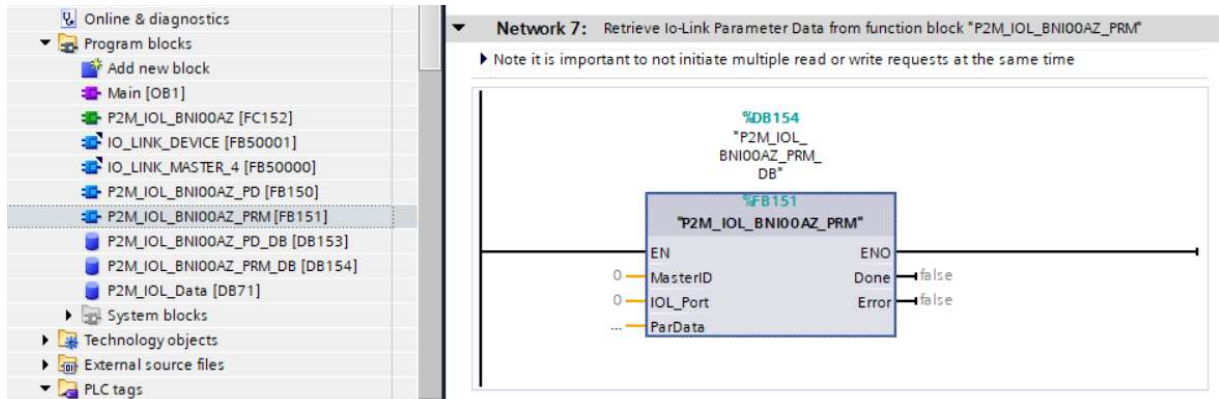
The “P2M\_IOL\_BNI00AZ\_PRM” function block simplifies the usage of Parker P2M and P2H IO-link devices with Siemens S7-1200/1500 PLCs when connected via profinet to Balluff BNI00AZ IO-Link Master. The Function block facilitates the read/write acyclic data between the PLC and the Parker P2M or P2H IO-Link device. We assume that the Global Libraries importing steps are already done by following the described steps above.

##### 4.2. Add instance of function block

From “Program Blocks” Drag and drop the function block “P2M\_IOL\_BNI00AZ\_PRM” to add an instance of instruction to an empty network of ladder

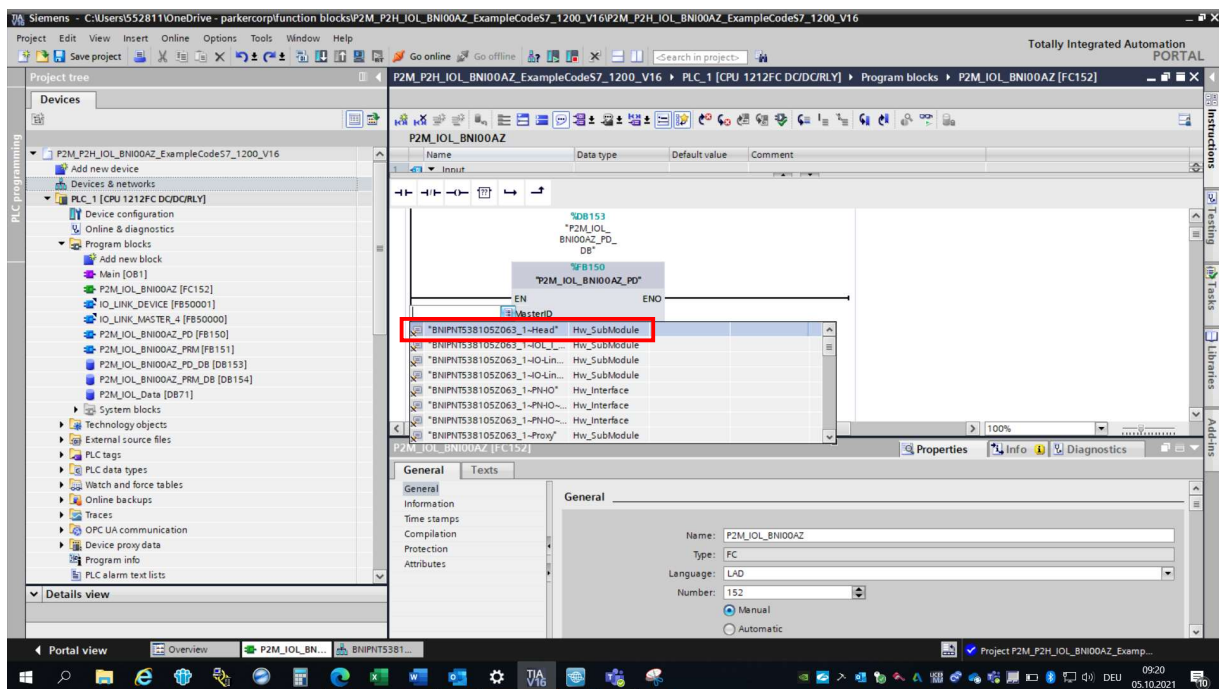


Assign a data block to the instance, define the name and the number. View the create instance below with default data.



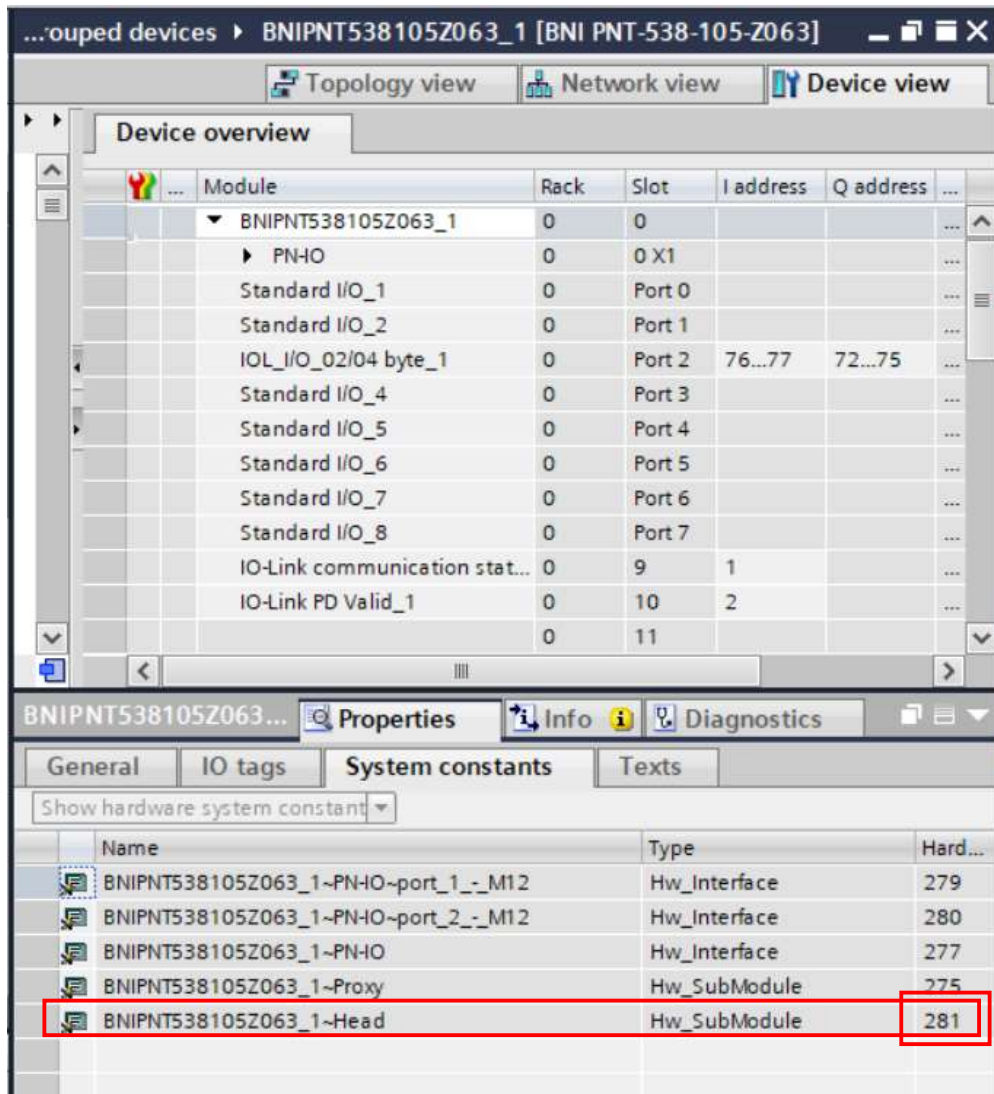
Create Tags necessary for operation.

**MasterID:** Choose MasterID by click the "0" and then click the selection button. The displayed choice appears in a drop down menu. Select "*BNIPNT538105Z063\_1 ~Head*" | *Hw\_SubModule*".





The related address number is also visible at “Devices & networks” > “Device View” > “System Constants”. In this case it is 281.



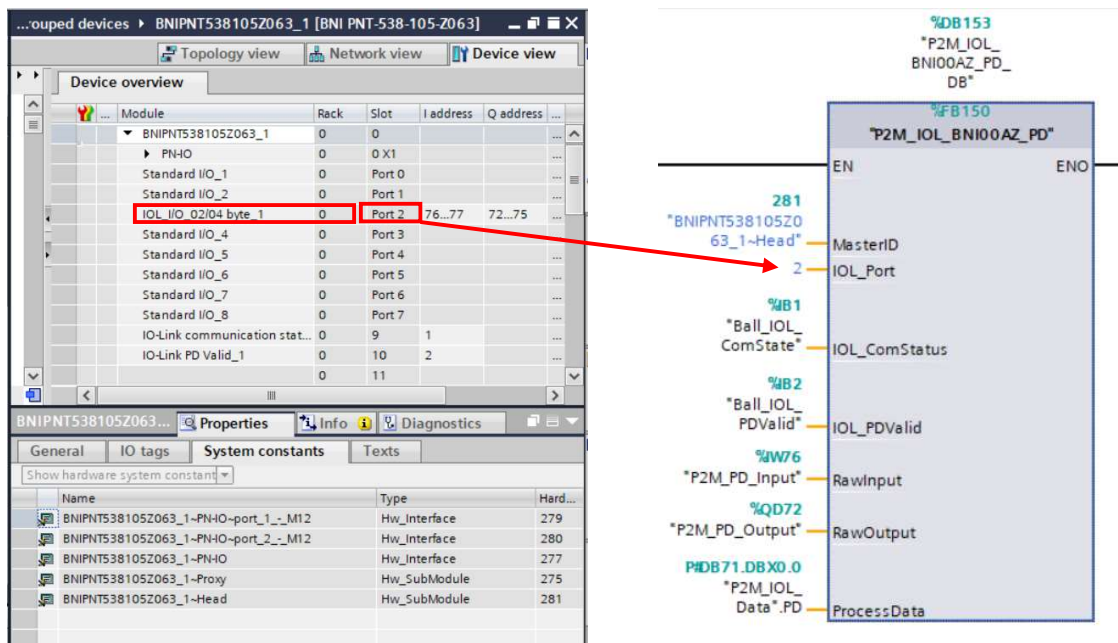
The screenshot displays the 'Device overview' window for the device BNIPNT538105Z063\_1. The 'Device view' tab is active, showing a table of modules and their addresses. Below this, the 'Properties' window is open, showing the 'System constants' tab. The 'System constants' table lists various hardware interfaces and their addresses, with the 'BNIPNT538105Z063\_1~Head' entry highlighted in red, showing an address of 281.

Module	Rack	Slot	I address	Q address
BNIPNT538105Z063_1	0	0		
PN-IO	0	0 X1		
Standard I/O_1	0	Port 0		
Standard I/O_2	0	Port 1		
IOL_I/O_02/04 byte_1	0	Port 2	76...77	72...75
Standard I/O_4	0	Port 3		
Standard I/O_5	0	Port 4		
Standard I/O_6	0	Port 5		
Standard I/O_7	0	Port 6		
Standard I/O_8	0	Port 7		
IO-Link communication stat...	0	9	1	
IO-Link PD Valid_1	0	10	2	
	0	11		

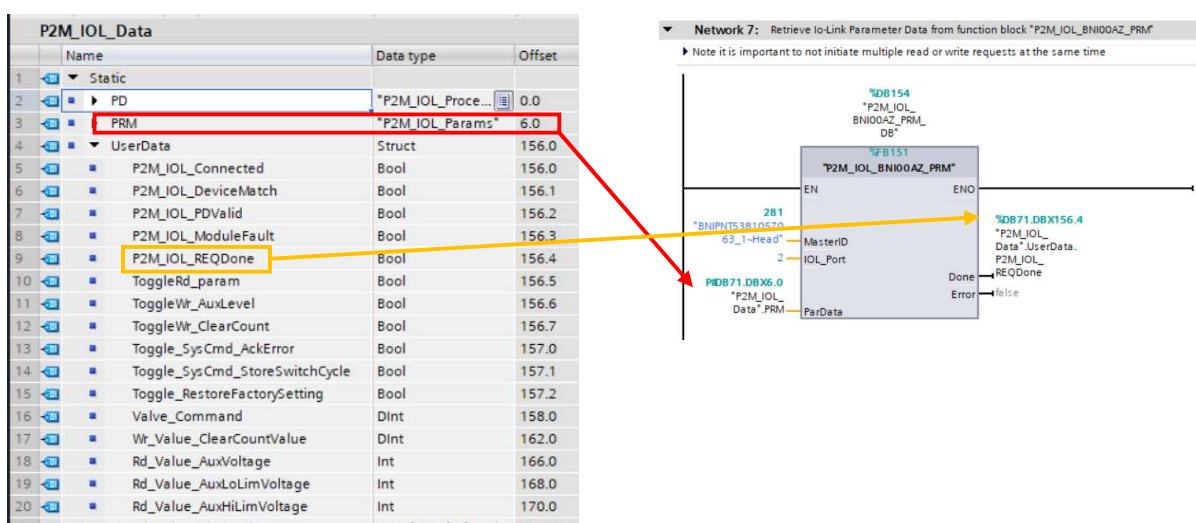
Name	Type	Hard...
BNIPNT538105Z063_1~PN-IO~port_1_-_M12	Hw_Interface	279
BNIPNT538105Z063_1~PN-IO~port_2_-_M12	Hw_Interface	280
BNIPNT538105Z063_1~PN-IO	Hw_Interface	277
BNIPNT538105Z063_1~Proxy	Hw_SubModule	275
BNIPNT538105Z063_1~Head	Hw_SubModule	281

Read and set **IOL\_Port** from “Devices & networks” > “Device Overview”. The **IOL\_Port** is **dependent on the physical port the P2M / P2H is connected to!** If you choose the incorrect port the function block will not work, and undesired results are likely. IO-Link is sensitive to the port which it has been assigned to communicate on.



Point “ParData” to a variable type

“P2M\_IOL\_Params” created in a user data block and “Done” to a variable type BOOL created in an user data block.

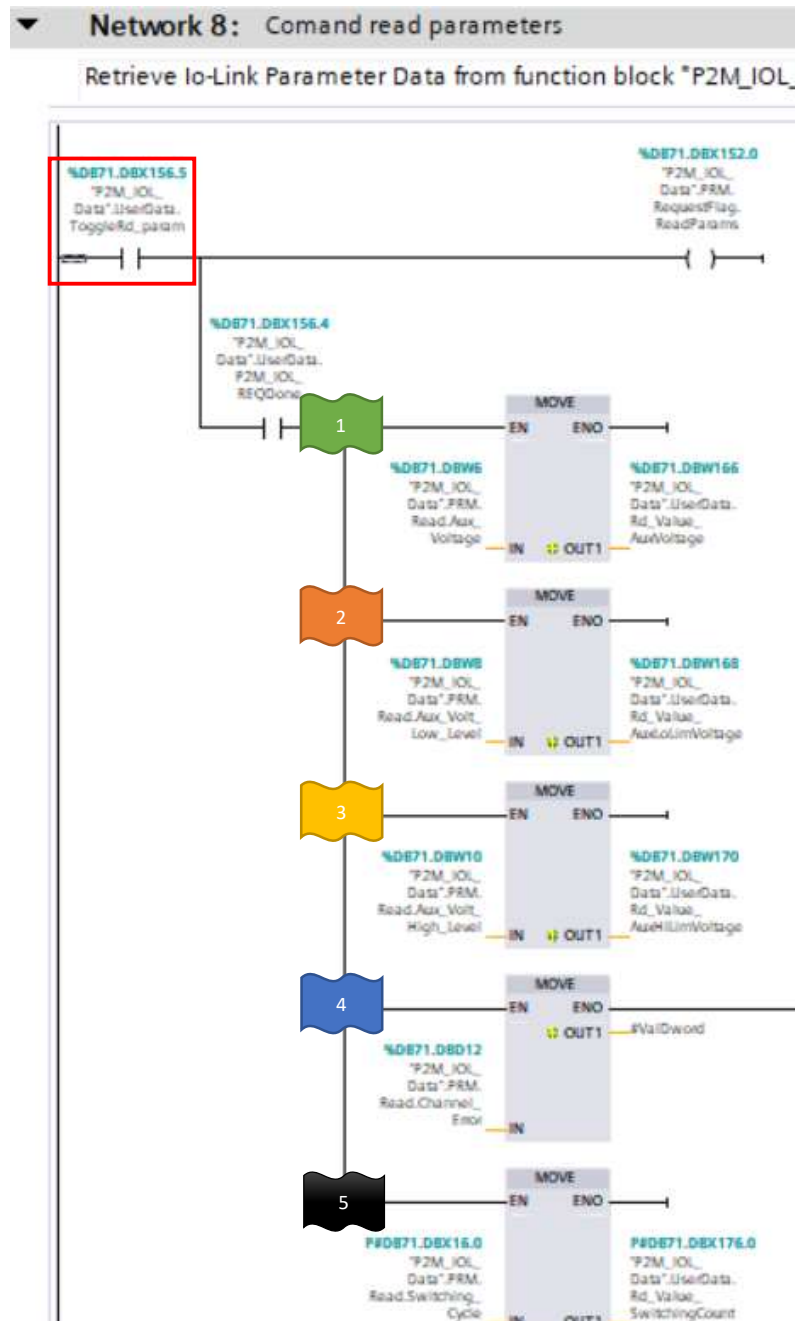


#### 4.3. Using the instruction

The parameter data (acyclic) requires the program to toggle a bit (red) to read or write data contained inside the slave device.

##### 4.3.1. Reading parameters.

see below for logic example (FC152, NW8)



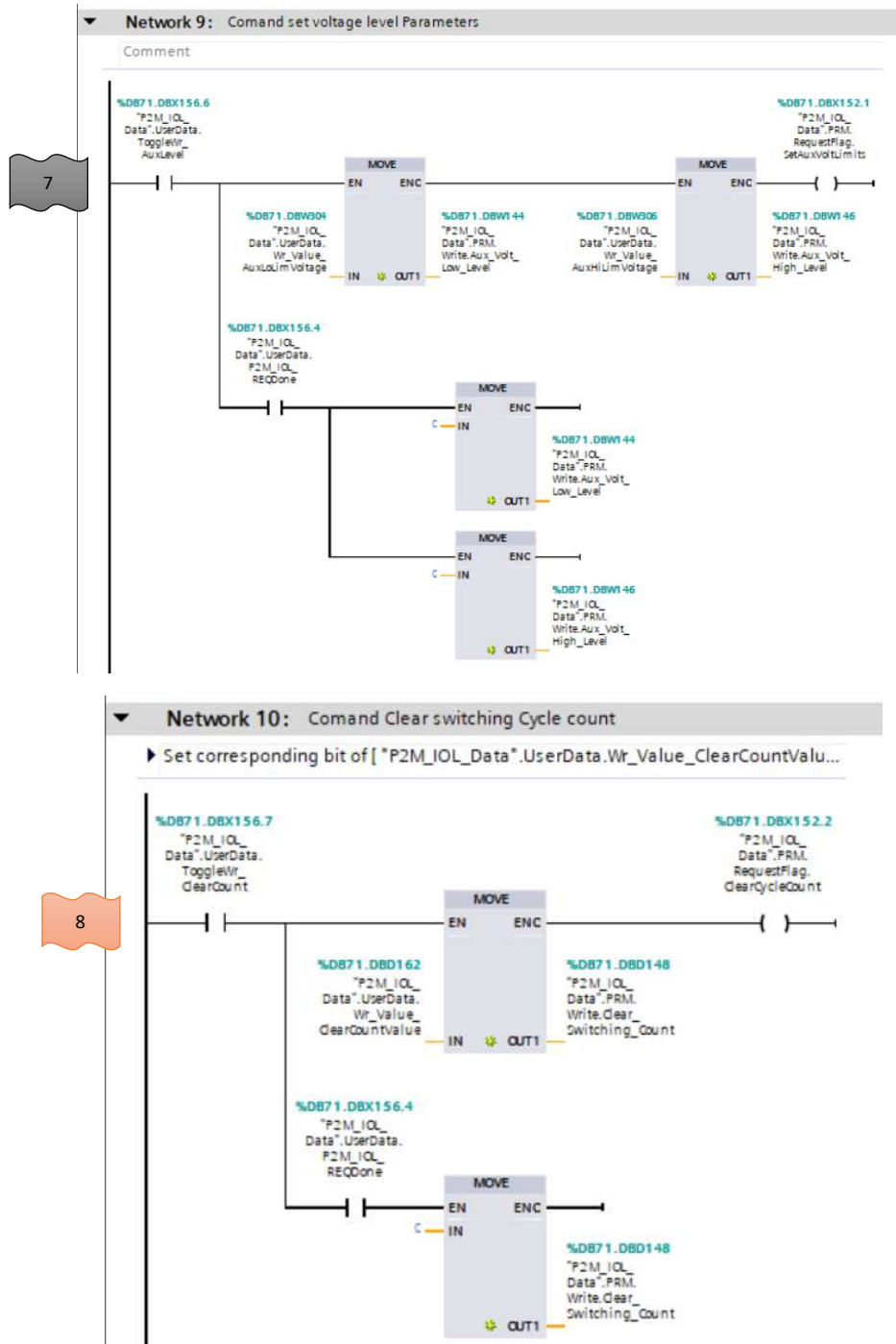


Description	Index	Destination Element
<b>Read Auxiliary Voltage</b>	67	P2M_IOL_Data.PRM.Read.AuxVoltage
<b>Read Auxiliary Voltage Low Limit Warning</b>	70	P2M_IOL_Data.PRM.Aux_Volt_Low_Lev
<b>Read Auxiliary Voltage High Limit Warning</b>		P2M_IOL_Data.PRM.Aux_Volt_High_Lev
<b>Read Channel Errors</b>	66	P2M_IOL_Data.PRM.Channel_Error
<b>Read Cycle Counters</b>	64	P2M_IOL_Data.PRM.Switching_Cycle

### 4.3.2. Writing Parameters.

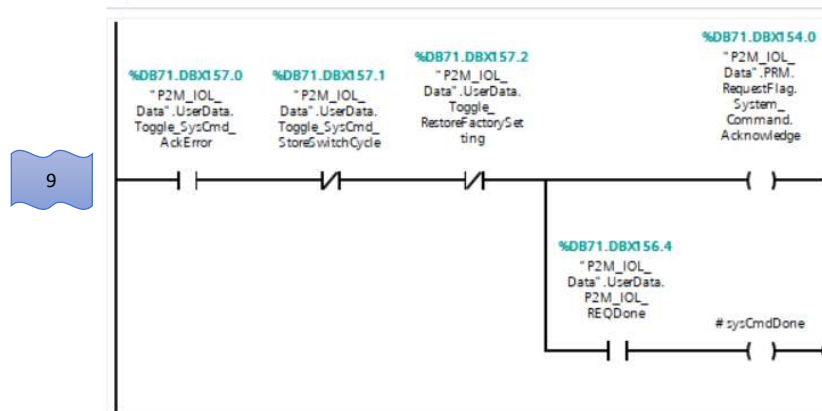
Writing Auxiliary Voltage Low and High Limits, clearing cycle counters example, send systems command.

**Note: \*\*When sending new limit setpoints to the P2M module, the values will not be written unless the high limit is more than one volt greater than the low limit, and greater than zero.\*\***

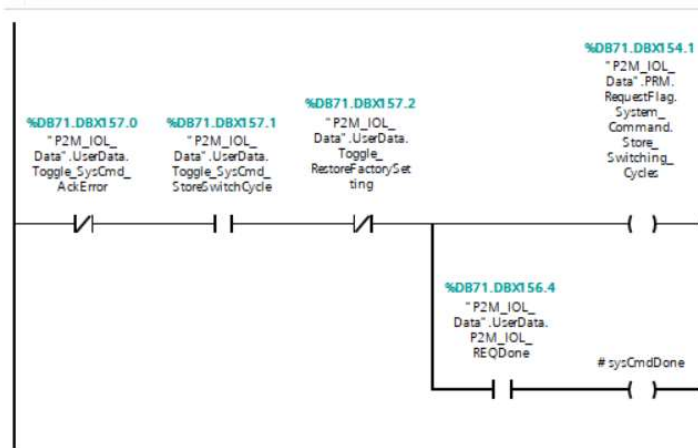


**Network 11: Acknowledge Error**

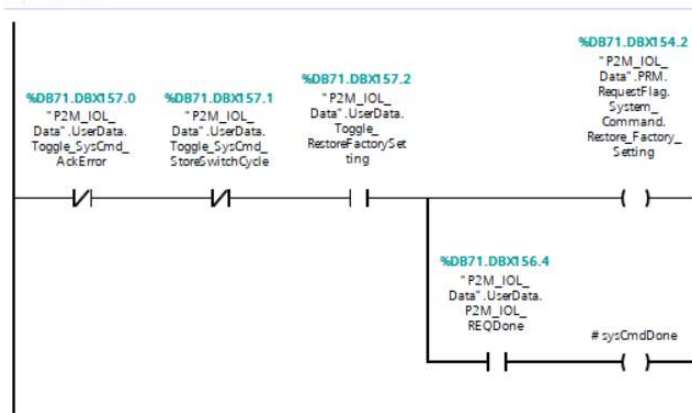
Comment


**Network 12: The current Value of the switching Cycle Counters are stored into EEPROM**

Comment


**Network 13: Reset Parameters to default Values**

Comment

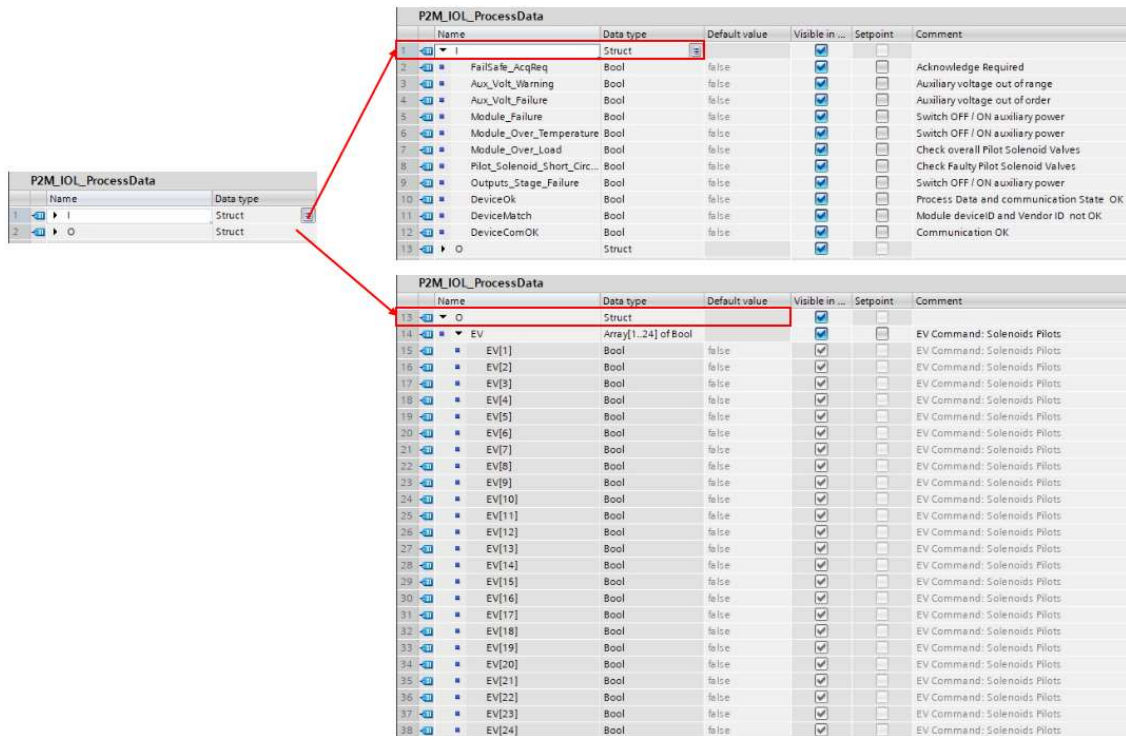


Description	Index	Source Element		Source Length (bytes)
Write Auxiliary Voltage Low Limit Warning	70	P2M_IOL_Data.PRM.Write.Aux_Volt_Low_Level		4
Write Auxiliary Voltage High Limit Warning		P2M_IOL_Data.PRM.Write.Aux_Volt_High_Level		Note**: first 16bits=Low level, second 16bits=high level
Clear Cycle Counters	65	P2M_IOL_Data.PRM.Write.Clear_Switching_Count		4
System Command	2	P2M_IOL_Data.PRM.RequestFlag.System_Command: Note: **By sending a system command request these values are written		1
		Command Value	Command Send	
		160	Acknowledge	
		161	Store Switching Cycles	
		130	Restore Factory Value	



## APPENDIX

- **Process Data Structures:** User Defined Data Structures utilized by FB “P2M\_IOL\_BNI00AZ\_PD”  
From project tree\PLC click on “PLC data types” then double click to open “P2M\_IOL\_ProcessData” data types.



Name	Data type	Default value	Visible in ...	Setpoint	Comment
1	I	Struct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2	FailSafe_AcqReq	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Acknowledge Required
3	Aux_Volt_Warning	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Auxiliary voltage out of range
4	Aux_Volt_Failure	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Auxiliary voltage out of order
5	Module_Failure	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Switch OFF / ON auxiliary power
6	Module_Over_Temperature	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Switch OFF / ON auxiliary power
7	Module_Over_Load	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Check overall Pilot Solenoid Valves
8	Pilot_Solenoid_Short_Circ...	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Check Faulty Pilot Solenoid Valves
9	Outputs_Stage_Failure	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Switch OFF / ON auxiliary power
10	DeviceOk	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Process Data and communication State OK
11	DeviceMatch	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Module deviceID and Vendor ID not OK
12	DeviceComOK	Bool	<input type="checkbox"/>	<input type="checkbox"/>	Communication OK
13	O	Struct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Name	Data type	Default value	Visible in ...	Setpoint	Comment
13	O	Struct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
14	EV	Array[1..24] of Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
15	EV[1]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
16	EV[2]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
17	EV[3]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
18	EV[4]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
19	EV[5]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
20	EV[6]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
21	EV[7]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
22	EV[8]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
23	EV[9]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
24	EV[10]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
25	EV[11]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
26	EV[12]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
27	EV[13]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
28	EV[14]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
29	EV[15]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
30	EV[16]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
31	EV[17]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
32	EV[18]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
33	EV[19]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
34	EV[20]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
35	EV[21]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
36	EV[22]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
37	EV[23]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots
38	EV[24]	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EV Command: Solenoids Pilots

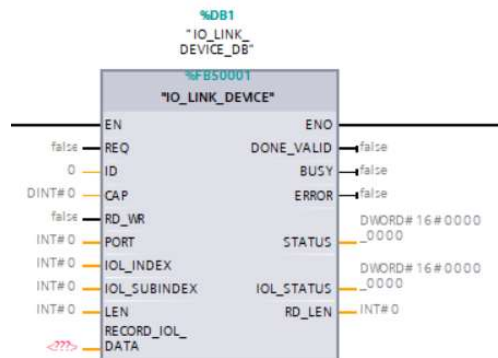
- **Parameter Data Structures:** User Defined Data Structures utilized by FB “P2M\_IOL\_BNI00AZ\_PRM”  
From project tree\PLC click on “PLC data types” then double click to open “P2M\_IOL\_Params” data types.

Name	Data type	Default value	Accessible f...	Write...	Visible in ...	Setpoint	Comment
1	Read	Struct	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	List of the parameters to Read
2	Aux_Voltage	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Current Auxiliary Voltage
3	Aux_Volt_Low_Level	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Auxiliary voltage warning low level
4	Aux_Volt_High_Level	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Auxiliary voltage warning High level
5	Channel_Error	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Shows which Channels Caused the error
6	Switching_Cycle	Array[1..24] of DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Switching Cycle Counter
7	Write	Struct	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	List of the parameters to Write
8	Aux_Volt_Low_Level	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Auxiliary voltage warning low level
9	Aux_Volt_High_Level	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Auxiliary voltage warning High level
10	Clear_Switching_Count	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Clear switching Counters
11	RequestFlag	Struct	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	List of the request command to read/write Value
12	ReadParams	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Command read parameters
13	SetAuxVoltLimits	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Command set voltage level Parameters
14	ClearCycleCount	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Command Clear switching Cycle count
15	System_Command	Struct	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
16	Acknowledge	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Acknowledge Error
17	Store_Switching_Cycles	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The current Value of the switching Cycle Counters are
18	Restore_Factory_Setting	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reset Parameters to default Values

- Use siemens function block “IO\_LINK\_DEVICE” to read and write acyclic data



IO\_LINK\_DEVICE is a function block wrote by siemens to access acyclic data of an IO-Link module this function block can be used as an alternative to Parker function block “P2M\_IOL\_BNI00AZ\_PRM” to read or write each single parameter of the P2M/P2H IO-Link slave, the function block library can be download from siemens website.



Parameter	Data Type	Description
REQ	BOOL	Positive edge: Trigger data transfer
ID	HW_IO	Hardware Identifier of IO-Link master module <b>Setting Up P2M/P2H IO-Link slave above</b>
CAP	INT	Access point of the IO-Link communication (Balluff CAP = 255 decimal)
RD_WR	BOOL	Read or write access (0: Read, 1: Write)
PORT	INT	Port number at which the IO-Link device is operated. Add one to port number read from device view (Ex: if the connected port is 0, the port input to function block is equal to 1)
IOL_INDEX	INT	Parameter index (see P2M/P2H IO-Link manual for detail) 2: System Command 64: Switching cycle counter 65: Clear Switching Cycles 66: Channel Error 67: Current Auxiliary Voltage 70: Auxiliary voltage warning levels
IOL_SUBINDEX	INT	Parameter subindex (see P2M/P2H IO-Link manual for detail) 1 to 24: Switching cycle counter, sub index 1 refers to cycle counter of the first output
LEN	INT	Length of the data to be read/written
RECORD_IOL_DATA	ARRAY [0..231] OF BYTE	Source/target area for the data to be read/written