

PROFINET

Communication Protocol of PUE HY10 Indicator

SOFTWARE MANUAL

ITKP-05-02-07-21-EN



RADWAG® RADWAG BALANCES AND SCALES
ADVANCED WEIGHING TECHNOLOGIES

JULY 2021

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1. DATA STRUCTURE

1.1. Input Address

Input variables list:

Variable	Offset	Length [WORD]	Data type
Platform 1 mass	0	2	float
Platform 1 tare	4	2	float
Platform 1 unit	8	1	word
Platform 1 status	10	1	word
Platform 1 LO threshold	12	2	float
Platform 2 mass	16	2	float
Platform 2 tare	20	2	float
Platform 2 unit	24	1	word
Platform 2 status	26	1	word
Platform 2 LO threshold	28	2	float
Platform 3 mass	32	2	float
Platform 3 tare	36	2	float
Platform 3 unit	40	1	word
Platform 3 status	42	1	word
Platform 3 LO threshold	44	2	float
Platform 4 mass	48	2	float
Platform 4 tare	52	2	float
Platform 4 unit	56	1	word
Platform 4 status	58	1	word
Platform 4 LO threshold	60	2	float
Process status (Stop, Start)	64	1	word
Inputs status	66	1	word
Min	68	2	float
Max	72	2	float
Min2	76	2	float
Max2	80	2	float
Lot number	84	2	dword
Operator	88	1	word

Product	90	1	word
Customer	92	1	word
Packaging	94	1	word
Source warehouse	96	1	word
Target warehouse	98	1	word
Formulation/Dosing	100	1	word

Platform mass – response: platform mass in current unit.

Platform tare – response: platform tare in adjustment unit.

Platform unit – determines currently displayed mass unit of a platform.

Unit bits	
0	Gram [g]
1	Kilogram [kg]
2	Carat [ct]
3	Pound [lb]
4	Ounce [oz]
5	Newton [N]

Example:

bit No.	B5	B4	B3	B2	B1	B0
value	0	0	0	0	1	0

The unit of the weighing instrument is kilogram [kg].

Platform status – determines status of a weighing platform.

Status bits	
0	measurement correct (weighing instrument does not report an error)
1	stable measurement
2	weighing instrument indicates zero
3	weighing instrument is tared
4	weighing instrument is in II weighing range
5	weighing instrument is in III weighing range
6	weighing instrument reports NULL error
7	weighing instrument reports LH error
8	weighing instrument reports FULL error

Example:

bit No.	B8	B7	B6	B5	B4	B3	B2	B1	B0
value	0	0	0	0	1	0	0	1	1

The weighing instrument does not report error, stable measurement in II weighing range.

LO threshold – response: **LO** threshold value of a platform in adjustment unit.

Process status – determines process status:

Decimal value	Process status	bit No.	
		B1	B0
0	process disabled	0	0
1	Process start	0	1
2	process stop	1	0
3	process completed	1	1

Inputs status – response: status of set inputs:

Input No.	12	11	10	9	8	7	6	5	4	3	2	1
OFF	0	0	0	0	0	0	0	0	0	0	0	0
ON	1	1	1	1	1	1	1	1	1	1	1	1

Example:

Mask of set 2 and 4 inputs: 0000 0000 0000 1010

MIN – response: **MIN** threshold value (in the current unit selected for active working mode).

MAX – response: **MAX** threshold value (in the current unit selected for active working mode).

Lot number – response: lot number.

Operator – response: code of logged in operator.

Product – response: code of selected product.

Customer – response: code of selected customer.

Packaging – response: code of selected packaging.

1.2. Output Address

Input variables list:

Variable	Offset	Length [WORD]	Data type
Command	0	1	word
Command with parameter	2	1	word
Platform	4	1	word
Tare	6	2	float
Lo threshold	10	2	float
Outputs status	14	1	word
Min	16	2	float
Max	20	2	float
Min2	24	2	float
Max2	28	2	float
Lot number	32	2	dword
Operator	36	1	word
Product	38	1	word
Customer	40	1	word
Packaging	42	1	word
Source warehouse	-	-	-
Target warehouse	-	-	-
Formulation/Dosing	48	1	word

Basic command – setting respective value performs the task in accordance with the table:


Decimal value	Command
1	Zero the platform
2	Tare the platform
8	Delete statistics
16	Save/Print
32	Start
64	Stop (error)

Example:

16# 0020 – command carried out, response: process start.

Complex command – setting respective value performs the task in accordance with the table:

Decimal value	Command
1	Setting the tare value for a given platform
2	Setting LO threshold value for a given platform
4	Setting outputs status
8	Setting MIN threshold value
16	Setting MAX threshold value
32	Setting user value 1
64	Zero given platform
128	Tare given platform
256	Setting active platform
512	Setting MIN2 threshold value
1024	Setting MAX2 threshold value

	<p>Complex command requires setting address of respective parameter (from 2 to 24 – refer to: 'Complex command parameters' table).</p>
---	---

Example:

16#0002 – command sets LO threshold to the value set in LO parameter (address 5 – refer to: 'Complex command parameters' table).

Platform – complex command parameter: weighing platform number.

Tare – complex command parameter: tare value (in adjustment unit).

LO threshold – complex command parameter: LO threshold value (in adjustment unit).

Outputs status – complex command parameter: determines status of weighing indicator outputs.

Output No.	12	11	10	9	8	7	6	5	4	3	2	1
OFF	0	0	0	0	0	0	0	0	0	0	0	0
ON	1	1	1	1	1	1	1	1	1	1	1	1


Example:

Mask of active 2 and 4 outputs: 0000 0000 0000 1010

MIN – complex command parameter: MIN threshold value (in the current unit selected for active working mode).

MAX – complex command parameter: MAX threshold value (in the current unit selected for active working mode).

Lot number – complex command parameter: lot number.

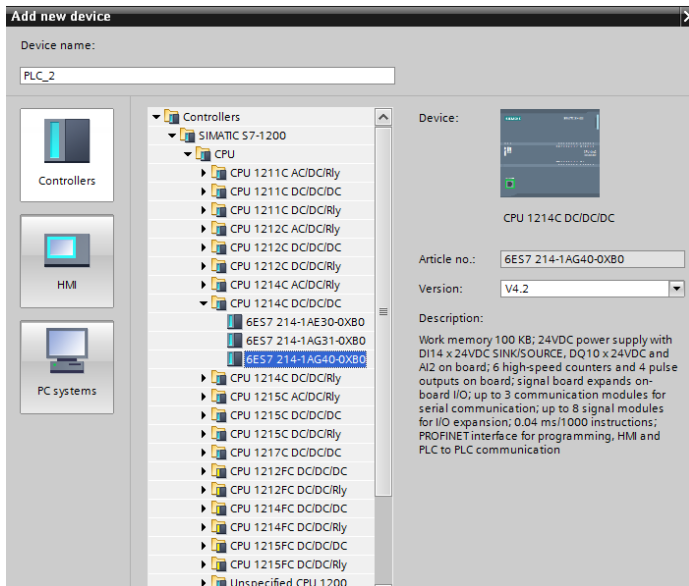
	<i>A command or a command with parameter is executed once when its bit setting is detected. If the command with the same bit is to be executed again, zero the bit.</i>
---	--

Example:

Command	
Taring	0000 0000 0000 0010
Command bits zeroing	0000 0000 0000 0000
Taring	0000 0000 0000 0010

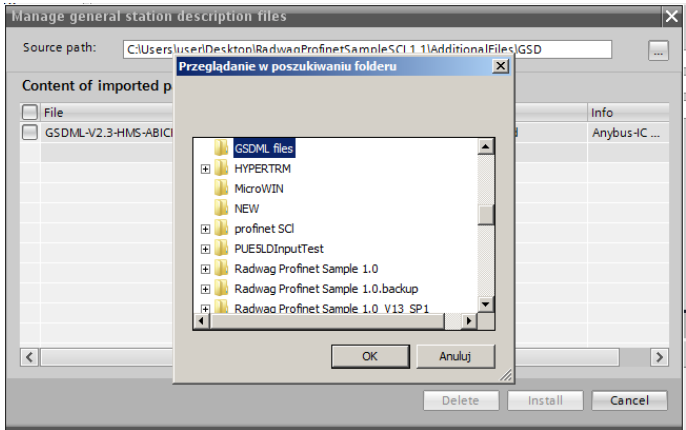
2. CONFIGURATION OF PROFINET MODULE IN TIA PORTAL V14

Operating the environment has to be preceded with creating a new project in which the topology of the PROFINET network with MASTER device is determined (in this example: SIEMENS S7-1200).

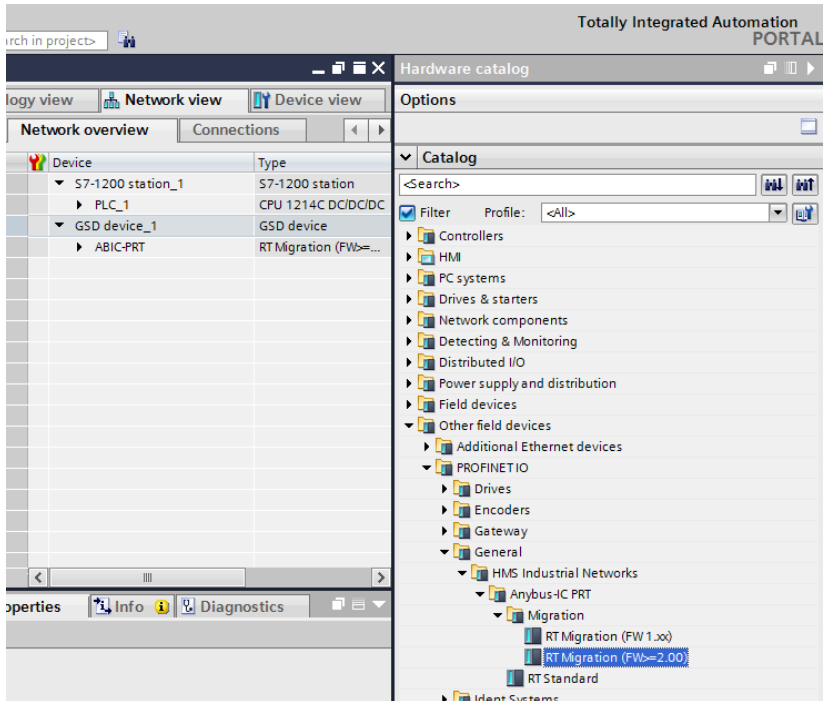


2.1. GSD Import

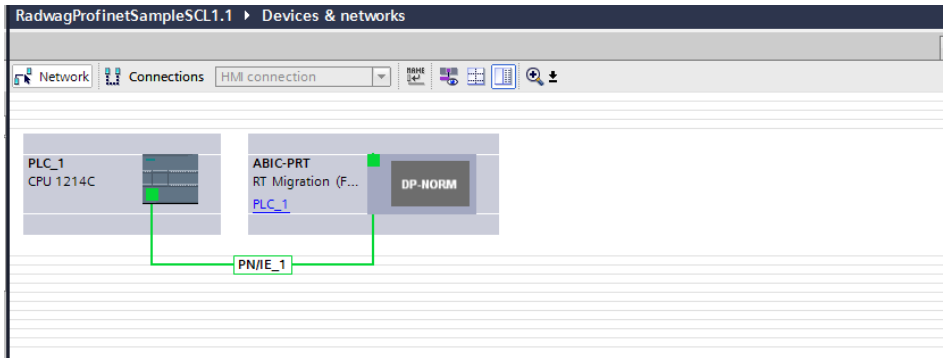
Using the included GSD configuration file add new device to the environment. Use **OPTIONS** tab first, **MANAGE GENERAL STATION DESCRIPTION FILES** (GSD) next and indicate the path to GSD file.



Upon successful adding of the file using list of devices, find ABIC-PRT module:



You can now create a network consisting of one MASTER PLC and added SLAVE module:



2.2. Module Configuration

At this stage, create a network consisting of MASTER device and SLAVE device (weighing instrument). Upon connecting the power supply, search for device using ACCESSIBLE DEVICES function. The list should contain MASTER and SLAVE devices:

The 'Accessible devices' window shows the following configuration:

- Type of the PG/PC interface: PN/IE
- PG/PC interface: Realtek PCIe GBE Family Controller

Accessible nodes of the selected interface:

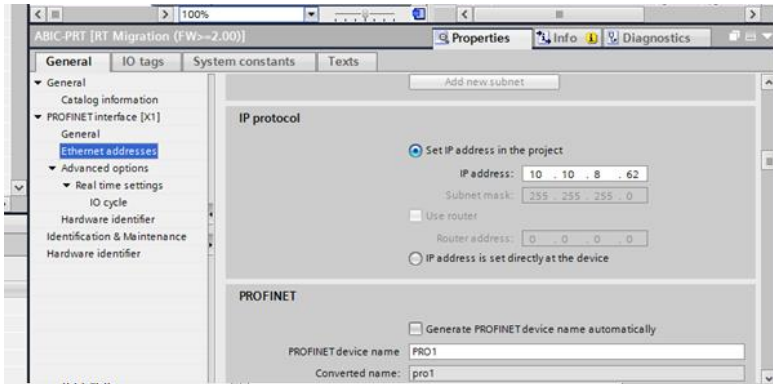
Device	Device type	Interface type	Address	MAC address
Accessible device	S7-PC	ISO	---	00-16-76-25-13-51
pro2	RT Migration (FW 1.00)	PN/IE	10.10.8.64	00-30-11-0D-EE-17
plc_1	CPU 1214C DC/DC/DC	PN/IE	10.10.8.244	28-63-36-9C-D1-12

Online status information:

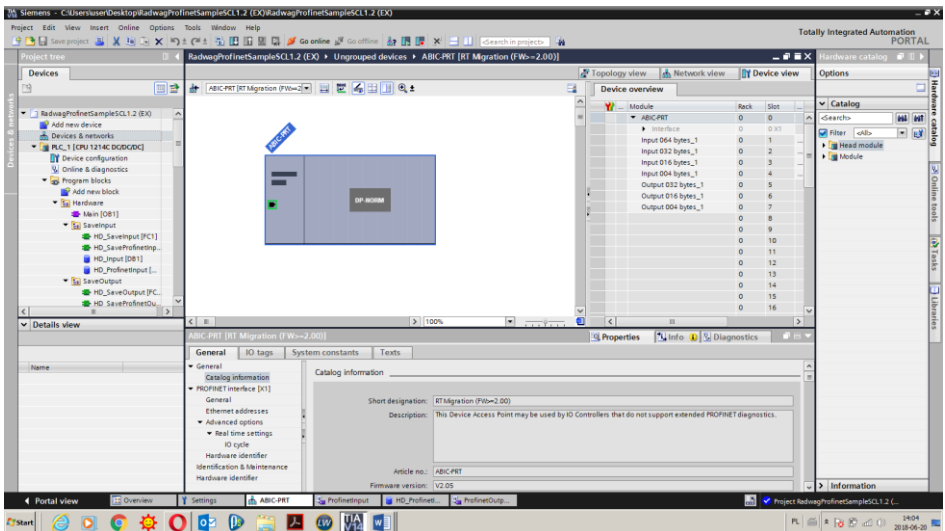
- Found accessible device Accessible device [00-16-76-25-13-51]
- Scan completed. 3 devices found.
- Retrieving device information...
- Scan and information retrieval completed.

Buttons: Start search, Display only error messages, Show, Cancel

Next, specify the IP address of the module and its name in PROFINET network. Upon selecting the module in PROPERTIES tab, find PROFINET INTERFACE and enter IP address and name. Those settings have to be the same as the ones set in the weighing instrument menu. IP SLAVE address has to be part of the same subnet as the MASTER address.



Proceed to module configuration. Start by determining the size and the starting address of input and output registers. To do this, select modules from the list of INPUT and OUTPUT modules as in the picture below. The maximum size of the input and output data is 116 bytes each. Default starting addresses were used in the project - 68 for INPUT module and 64 for OUTPUT module:



Project: Edit View Insert Online Options Tools Window Help

Project tree: RadwegProfinetSampleSCL1.2 (EX) > Ungrouped devices > ABC-PR1 [RT Migration (FW=2.00)]

Devices & networks: RadwegProfinetSampleSCL1.2 (EX) > Devices & networks > PLC_1 [CPU 1214C-DC(DIGDC)] > Program blocks > Add new block > Hardware > Main [DB1] > SaveOutput > HD_SaveProfinet [PC1] > HD_ProfnetInput [L...]

Device overview:

Module	Rack	Slot
ABC-PR1	0	0
Interface	0	0 (3)
Input 064 bytes_1	0	1
Input 032 bytes_1	0	2
Input 016 bytes_1	0	3
Input 008 bytes_1	0	4
Output 032 bytes_1	0	5
Output 016 bytes_1	0	6
Output 008 bytes_1	0	7

IO addresses:

Input addresses

Start address: 68
 End address: 131
 Organization block: --- (Automatic update)
 Process image: Automatic update

Project: Edit View Insert Online Options Tools Window Help

Project tree: RadwegProfinetSampleSCL1.2 (EX) > Ungrouped devices > ABC-PR1 [RT Migration (FW=2.00)]

Devices & networks: RadwegProfinetSampleSCL1.2 (EX) > Devices & networks > PLC_1 [CPU 1214C-DC(DIGDC)] > Program blocks > Add new block > Hardware > Main [DB1] > SaveOutput > HD_SaveProfinet [PC1] > HD_ProfnetInput [L...]

Device overview:

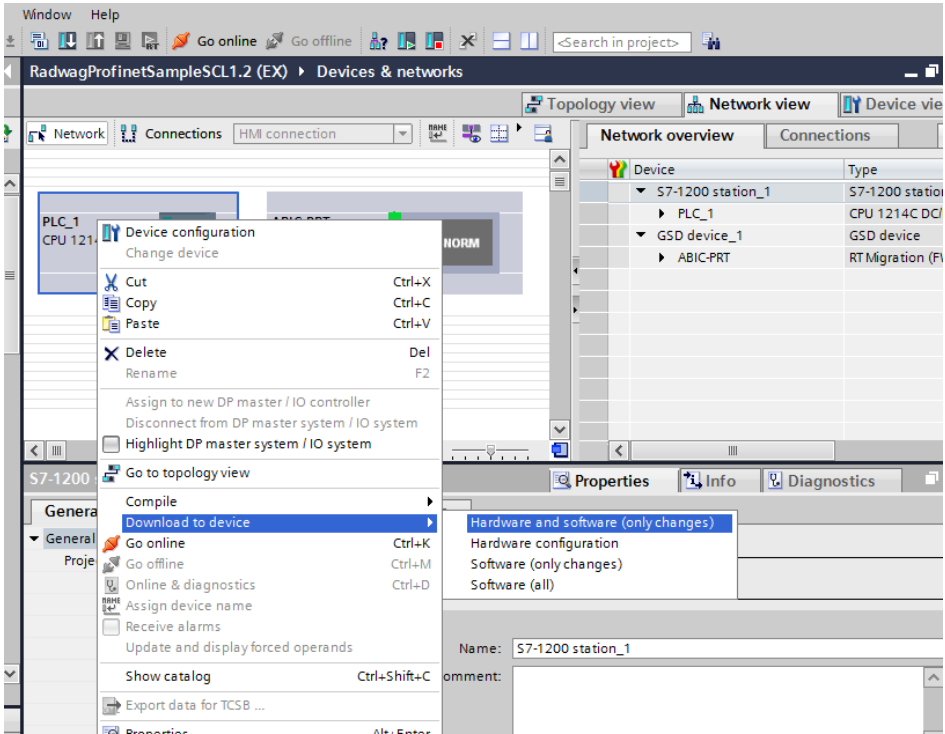
Module	Rack	Slot
ABC-PR1	0	0
Interface	0	0 (3)
Input 064 bytes_1	0	1
Input 032 bytes_1	0	2
Input 016 bytes_1	0	3
Input 008 bytes_1	0	4
Output 032 bytes_1	0	5
Output 016 bytes_1	0	6
Output 008 bytes_1	0	7

IO addresses:

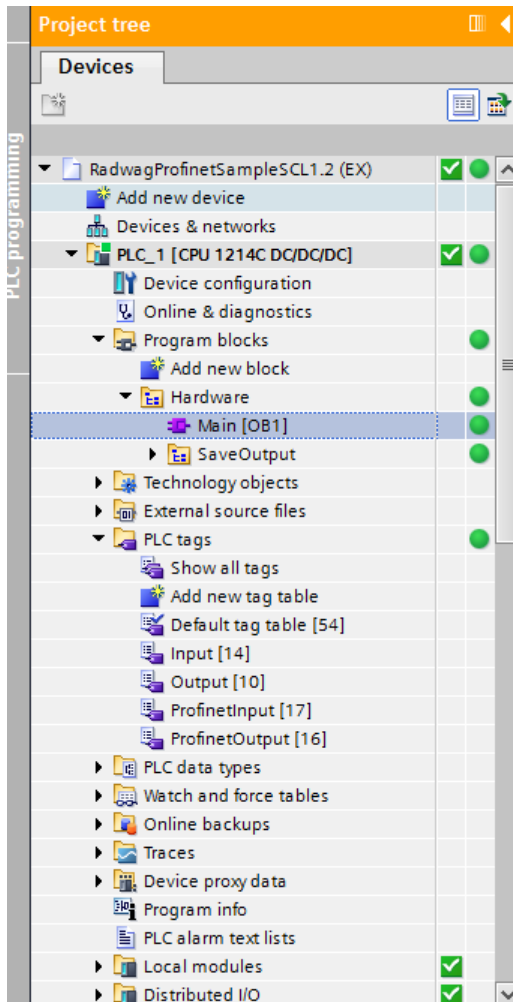
Output addresses

Start address: 64
 End address: 95
 Organization block: --- (Automatic update)
 Process image: Automatic update

On this stage you can download hardware and software configuration to the device and download data to the device.



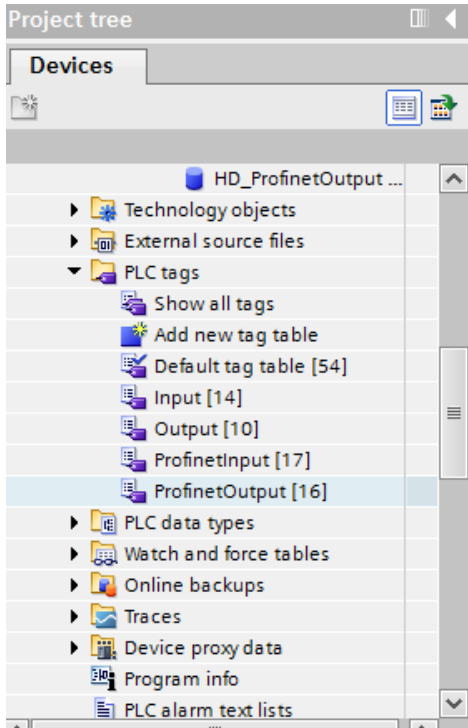
Upon successful compilation and loading of the code, MASTER and SLAVE modules should establish communication. You can check this by pressing GO ONLINE field. The result has to be similar to the result presented below.



The next step will be to create program code.

3. PLC SOFTWARE SAMPLE

Start creating the application by determining symbolic names of input and output registers. For this purpose, use the branch of the project tree: PLC TAGS. For the purpose of this example, the figure below contains exemplary tags tables:



INPUT and OUTPUT tables refer to the physical inputs/outputs of the MASTER device and are not relevant in terms of this application. The PROFINET module input and output registers are specified in ProfinetInput and ProfinetOutput tables. The pictures below present determined symbolic names and addresses:

RadwagProfinetHY10 1.0 ang > PLC_1 [CPU 1214C DO/DC] > PLC tags > ProfinetInput [32]

ProfinetInput									
	Name	Data type	Address	Retain	Acces...	Write...	Visibl...	Comment	
1	mass	Real	%ID68	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
2	tare	Real	%ID72	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
3	unit	Word	%W76	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
4	status	Word	%W78	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
5	LO	Real	%ID80	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
6	mass_2	Real	%ID84	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
7	tare_2	Real	%ID88	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
8	unit_2	Word	%W92	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
9	status_2	Word	%W94	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
10	LO_2	Real	%ID96	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
11	mass_3	Real	%ID100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
12	tare_3	Real	%ID104	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
13	unit_3	Word	%W108	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
14	status_3	Word	%W110	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
15	LO_3	Real	%ID112	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
16	mass_4	Real	%ID116	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
17	tare_4	Real	%ID120	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
18	unit_4	Word	%W124	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
19	status_4	Word	%W126	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
20	LO_4	Real	%ID128	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

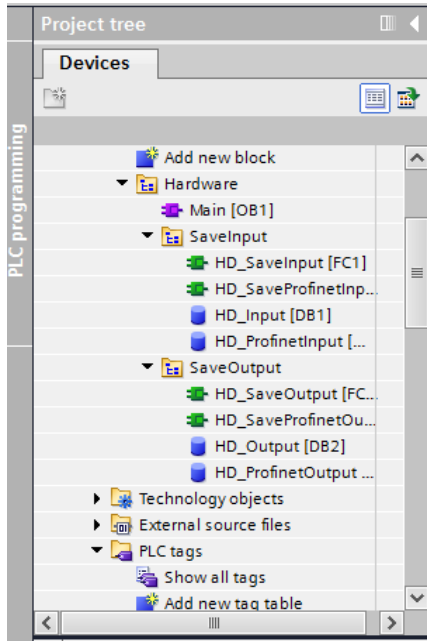
RadwagProfinetHY10 1.0.ang > PLC_1 [CPU 1214C DC/DC/DC] > PLC tags > ProfinetInput [32]

Tags User constants

ProfinetInput

	Name	Data type	Address	Retain	Acces...	Writa...	Visibl...	Comment
21	process_status	Word	%IW132	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
22	inputs	Word	%IW134	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
23	min	Real	%ID136	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
24	max	Real	%ID140	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
25	lot_number	DWord	%ID152	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
26	operator	Word	%IW156	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
27	article	Word	%IW158	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
28	customer	Word	%IW160	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
29	packaging	Word	%IW162	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
30	source_warehouse	Word	%IW164	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
31	target_warehouse	Word	%IW166	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
32	formulationdosing_process	Word	%IW168	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

In order to avoid working directly on module physical inputs/outputs, create data blocks containing the representations of those registers and create function 'rewriting' the values between them. Create HARDWARE group in PROGRAM BLOCKS branch and determine data blocks in the same way as presented below:



HD_OUTPUT and HD_INPUT blocks refer to physical MASTER inputs/outputs and are not relevant in terms of this project. HD_ProfinetOutput and HD_ProfinetInput blocks refer to the PROFINET module input/output registers on a weighing instrument. They look as follows:

RadwagProfinetHY10 1.0 ang > PLC_1 [CPU 1214C DC/DC] > Program blocks > Hardware > SaveInput > HD_ProfinetInput [DB3]

Keep actual values Snapshot Copy snapshots to start values Load start values as actual values

Name	Data type	Start value	Monitor value	Retain	Accessible f...	Writa...	Visible in ...	Setpoint	Com...
Static									
mass	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
tare	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
unit	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
status	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
lo	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
mass_2	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
tare_2	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
unit_2	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
status_2	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
lo_2	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
mass_3	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
tare_3	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
unit_3	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
status_3	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
lo_3	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
mass_4	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
tare_4	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
unit_4	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
status_4	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
lo_4	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

RadwagProfinetHY10 1.0 ang > PLC_1 [CPU 1214C DC/DC] > Program blocks > Hardware > SaveInput > HD_ProfinetInput [DB3]

Keep actual values Snapshot Copy snapshots to start values Load start values as actual values

Name	Data type	Start value	Monitor value	Retain	Accessible f...	Writa...	Visible in ...	Setpoint	Com...
process_status	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
inputs	Word	16#0	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
min	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
max	Real	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
lot_number	DWord	16#0	16#FFFF_FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
operator	Word	16#0	16#FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
article	Word	16#0	16#0001	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
customer	Word	16#0	16#FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
packaging	Word	16#0	16#FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
source_warehouse	Word	16#0	16#FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
target_warehouse	Word	16#0	16#FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
formulation/dosing_process	Word	16#0	16#FFFF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

RadwagProfinetSampleSCL1.2 (EX) > PLC_1 [CPU 1214C DC/DC] > Program blocks > Hardware > SaveOutput > HD_ProfinetOutput [DB4]

Keep actual values Snapshot Copy snapshots to start values Load start values as actual values

Name	Data type	Start value	Retain	Accessible f...	Writa...	Visible in ...	Setpoint	Comment
Static								
komenda	Word	16#02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
komenda z parametr...	Word	16#0008	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
platforma	Word	16#0001	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
tara ustaw	Real	2.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
próg LO zapis	Real	1.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
stan wyjść	Word	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
min ustaw	Real	2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
max ustaw	Real	2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
numer serii ustaw	DWord	16#0000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
operator wybierz	Word	16#0004	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
towar wybierz	Word	16#0001	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
kontrahtent wybierz	Word	16#01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
opakowanie wybierz	Word	16#0004	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
magazyn źródłowy wy...	Word	16#0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
magazyn docelowy w...	Word	16#0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
receptura/proces dozo...	Word	16#0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

The functions that rewrite values between physical inputs/outputs of the module may look like this:

The screenshot shows the HW Config window for a PLC_1 (CPU 1214C-2 DP). The main area displays a list of modules and their connections to physical inputs and outputs. The connections are as follows:

Module	Connection	Address
1 "HD_ProfinetInput".mess_1 := "mess_1";	"HD_ProfinetInput"	120B3
2 "HD_ProfinetInput".taste := "taste";	"HD_ProfinetInput"	120B3
3 "HD_ProfinetInput".mit := "mit";	"HD_ProfinetInput"	120B3
4 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
5 "HD_ProfinetInput".lo := "lo";	"HD_ProfinetInput"	120B3
6 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
7 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
8 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
9 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
10 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
11 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
12 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
13 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
14 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
15 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
16 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
17 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
18 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
19 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
20 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
21 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
22 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
23 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
24 "HD_ProfinetInput".mess_2 := "mess_2";	"HD_ProfinetInput"	120B3
25 "HD_ProfinetInput".operator := "operator";	"HD_ProfinetInput".operator	120A50
26 "HD_ProfinetInput".article := "article";	"HD_ProfinetInput".operator	
27 "HD_ProfinetInput".customer := "customer";	"operator"	120A50
28 "HD_ProfinetInput".packaging := "packaging";	"HD_ProfinetInput"	120B3
29 "HD_ProfinetInput".source_warehouse := "source_warehouse";	"HD_ProfinetInput"	120B3
30 "HD_ProfinetInput".target_warehouse := "target_warehouse";	"HD_ProfinetInput"	120B3
31 "HD_ProfinetInput".formulation_shipping_process := "formulation_shipping";	"HD_ProfinetInput"	120B3
32 "HD_ProfinetInput".formulation_shipping_process := "formulation_shipping";	"HD_ProfinetInput"	120B3

The screenshot shows the 'SaveOutput' block configuration. It contains a table with the following data:

Name	Data type	Default value	Comment
1 Input			
2 <Add new>			
3 Output			

Below the table, there is a list of assignments for the 'Output' block:

```

IF... CASE... FOR... WHILE... (*...) REGION
1 "komenda" := "HD_ProfinetOutput".komenda;
2 "komenda z parametrem" := "HD_ProfinetOutput"."komenda z parametrem";
3 "platforma" := "HD_ProfinetOutput".platforma;
4 "casa ustaw" := "HD_ProfinetOutput"."casa ustaw";
5 "próg LO zapis" := "HD_ProfinetOutput"."próg LO zapis";
6 "stan wyjść" := "HD_ProfinetOutput"."stan wyjść";
7 "min ustaw" := "HD_ProfinetOutput"."min ustaw";
8 "max ustaw" := "HD_ProfinetOutput"."max ustaw";
9 "numer serii ustaw" := "HD_ProfinetOutput"."numer serii ustaw";
10 "operator wybierz" := "HD_ProfinetOutput"."operator wybierz";
11 "towa wybierz" := "HD_ProfinetOutput"."towa wybierz";
12 "kontrahent wybierz" := "HD_ProfinetOutput"."kontrahent wybierz";
13 "opakowanie wybierz" := "HD_ProfinetOutput"."opakowanie wybierz";
14 "magazyn źródłowy wybierz" := "HD_ProfinetOutput"."magazyn źródłowy wybierz";
15 "magazyn docelowy wybierz" := "HD_ProfinetOutput"."magazyn docelowy wybierz";
16 "receptura/proces dozowania wybierz" := "HD_ProfinetOutput"."receptura/proces dozowania wybierz";
17
18

```

Invoke the functions in the main program loop.

The screenshot shows the SIMATIC Manager interface for a PLC program. The title bar indicates the project is 'RadwagProfinetSampleSCL1.2 (EX)' on a 'PLC_1 [CPU 1214C DC/DC]' in the 'Main [OB1]' program block. The 'Main' block is configured with the following variables:

Name	Data type	Default value	Comment
Input			
Initial_Call	Bool		Initial call of this OB
Remanence	Bool		=True, if remanent data are available
Temp			
<Add new>			
Constant			

Below the variable declaration, the code for the main program loop is shown:

```
1 "HD_SaveInput" ();
2 "HD_SaveOutput" ();
3 "HD_SaveProfinetInput" ();
4 "HD_SaveProfinetOutput" ();
5
```

On the right side of the code editor, a variable declaration table is visible:

"HD_SaveInput"	%FC1
"HD_SaveOutput"	%FC2
"HD_SaveProfinetInput"	%FC3
"HD_SaveProfinetOutput"	%FC4

Upon compiling and loading the program to the device in the data block, you can read interesting output registers (MONITOR ALL) and save output registers (e.g. by changing START VALUE and LOAD START VALUES AS ACTUAL) of the SLAVE mode.



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