

Industry Online Support

NEWS

21

Library Product register (LProdReg)

Changelog

https://support.industry.siemens.com/cs/ww/en/view/109755891

Siemens Industry Online Support



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1 Introduction

This document tracks the innovations of the current Library Product register (LProdReg) version compared to its previous versions.

2 Library Product register V2.0

The library Product register V2.0 can be utilized with TIA Portal V16

2.1 Changelog V2.0

2.1.1 New Features:

- Additional flow object FO-Station and FO-SourceStation.
 Operation in a station based static mode possible shifting of objects through processing stations (FIFO)
- Added modes to FO-Actuator
 - -Container picking possible (mode 1-3)
 - -Pocket picking possible (mode 4-6)
 - -Placing of objects in stations possible (mode 3, 6)
- HMI faceplate for categorized visualization of the product data base content, including delete and filtering functions
- Cross PLC operation for conveyor belts and actuators (TO-Kinematic)
- Provision of interface FBs for communication with camera systems -SIMATIC MV500

2.1.2 Changes:

- Restructured product data base (DB LProdReg_ProductDataBase)
 Product storage divided into
 - -Array for products on conveyors ("productOnConveyor")
 - -Array for products in pockets ("productInPocket")
 - -Array for products in stations ("productInStation")
 - Container storage divided into
 - -Array for containers on conveyors ("containerOnConveyor")
 - -Array for containers in pockets ("containerInPocket")
 - -Array for containers in stations ("containerInStation")
- Updated product and container storage type
 - LProdReg_typeProduct
 - LProdReg_typeContainer
- Changed default characteristics for the user definable object characteristics type LProdReg_typeUserDefinedObjectProperties
- Updated/Restructured user functions (based on new default characteristics)
 FC LProdReg_UserDefinedObjectConveyorPrioritization
 FC LProdReg_UserDefinedActuatorPrioritization
- Remake of flow object FO-Actuator
 - LProdReg V1.0 \rightarrow FB LProdReg_FoActuatorKinematicProduct LProdReg V2.0 \rightarrow FB LProdReg_FoActuatorKinematic
- Restructured/Optimized internal processes of main FB and flow objects

- Enabling sequence for the main FB and the flow object is not time based anymore.
- Object prioritization is updated when conveyor belt is newly homed during standstill (Only if the prioritization is based on the X-position →Prio. mode 1,2)
- The minimum gap is checked for objects that are placed on another conveyor by the FO-Actuator. (Only if the functionality is activated for the target conveyor)
- Configuration types at the Input-interface of the main FB and all flow objects have been switched to the InOut-interface
- Connection of an external encoder possible at the FO-ConveyorBelt
- Restructured/Optimized helper FB TrackConv from example project scenario 2

2.1.3 Fixes:

- Re-check in of disabled flow object during runtime fixed
- Bugs fixed in FO-SensorLightSwitch
- Bugs fixed in main FB
- Incorrect prioritization of objects placed on a target conveyor fixed

2.1.4 Update guideline V1.0 to V2.0

In the following a step-by-step instruction on how to update a project with LProdReg library version V1.0 to V2.0 is given.

1. Library tags

a. Make notes of the current configuration of the user tags (LProdReg_UserTags) in your project with LProdReg V1.0

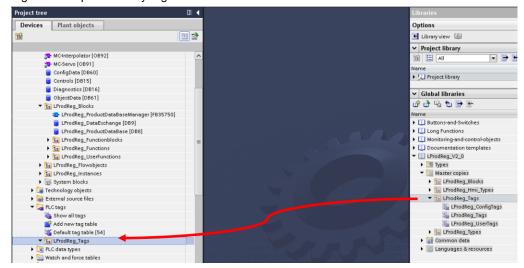
Figure 2-1: Note user tag configuration (marked ones are relevant)

		3g_E	xampleProject_V1.0_to_V2.0 → LProdReg_Scenario_1 [CPU 1517T-3 P	N/DP] ▶ P	LC tage
Devices Plant objects					
¥	III) 🔂	1			
		LPr	odReg_UserTags		
🔻 🔁 PLC tags	^		Name 👻	Data type	Value
🗞 Show all tags		1 (LPRODREG_NO_OF_REQUEST_RESPONSE_BUFFER_ELEMENTS	Dint	5
📑 Add new tag table		2 (LPRODREG_NO_OF_PRODUCT_CONVEYORS	Dint	1
iii Default tag table [54]		3 (LPRODREG_NO_OF_MAX_PRODUCTS_PER_CONVEYOR	DInt	30
▼ 🔚 LProdReg_Tags		4 (LPRODREG_NO_OF_MAX_POCKETS_PER_CONTAINER	DInt	1
LProdReg Tags (92)	-	5 (LPRODREG_NO_OF_MAX_CONTAINERS_PER_CONVEYOR	DInt	1
堤 LProdReg_UserTags [2	3]	6 (LPRODREG_NO_OF_DIFFERENT_CONTAINERS	DInt	1
PLC data types	_	7 (IPRODREG_NO_OF_COORD_SYSTEMS	DInt	2
Watch and force tables		8 (LPRODREG_NO_OF_CONTAINER_CONVEYORS	DInt	1
🕨 🙀 Online backups		9 (LPRODREG_NO_OF_ACTIVE_FLOW_OBJECTS	DInt	5
🕨 🔄 Traces		10 0	LPRODREG_MAXIMUM_PRODUCT_CONVEYOR_PRIORITY_INDEX	Dint	8
OPC UA communication		11 (LPRODREG_MAXIMUM_CONTAINER_CONVEYOR_PRIORITY_INDEX	DInt	8
🕨 📴 Device proxy data		12 (LPRODREG_MAXIMUM_ACTUATOR_PRIORITY_INDEX	DInt	8
📴 Program info		13 (LPRODREG_EXAMPLE_USER_DEFINED_CONVEYOR_PRODUCT_PRIORITY_CASE_2	DInt	8
🖙 PLC supervisions & alarms		14 (LPRODREG_EXAMPLE_USER_DEFINED_CONVEYOR_PRODUCT_PRIORITY_CASE_1	DInt	7
🛅 PLC alarm text lists		15 (LPRODREG_EXAMPLE_USER_DEFINED_CONVEYOR_CONTAINER_PRIORITY_CASE_2	DInt	8
🕨 🛅 Local modules		16 (LPRODREG_EXAMPLE_USER_DEFINED_CONVEYOR_CONTAINER_PRIORITY_CASE_1	DInt	7
🕨 🫅 Distributed I/O	-	17 (LPRODREG_EXAMPLE_USER_DEFINED_ACTUATOR_PRIORITY_CASE_2	DInt	8
IProdReg_Scenario_2 [CPU 151		18 (LPRODREG_EXAMPLE_USER_DEFINED_ACTUATOR_PRIORITY_CASE_1	DInt	7
🕨 🖳 Ungrouped devices		19 (IPRODREG_CHECK_IN_TIME_MANAGER	Time	T#2s
🕨 🚟 Security settings		20 0	IPRODREG CHECK IN TIME FLOWOBJECTS	Time	T#2.1
Cross-device functions		21 (LPRODREG_CAMERA_SIZE_OF_REF_DATA_BUFFER	DInt	1
🕨 🙀 Common data		22 (LPRODREG_CAMERA_SIZE_OF_OBJECT_DATA_BUFFER	DInt	1
Documentation settings		23 (LPRODREG_CAMERA_MAX_NO_OF_DETECTABLE_OBJECTS	DInt	1

Figure 2-2: Delete LProdReg tags V1.0 ▼ 🔚 LProdReg_Flowobjects 💁 LProdReg_FoActua ----- LProdReg_FoConv
 LProdReg_FoConv
 LProdReg_FoConv
 Paste Ctrl+X Ctrl+C Ctrl+V LProdReg_FoSens 🔹 LProdReg_FoSens 🗙 Delete Del Rename F2 LProdReg_FoSens LProdReg_FoSinkQ Download to device . 📲 LProdReg_FoSinkF 💋 Go online Ctrl+K 🟩 LProdReg_FoSoure 🔊 Go offline Ctrl+M LProdReg_Instances
 Quick compare . 🕨 😹 System blocks 🏰 Search in project Ctrl+F 🕨 🚂 Technology objects X Cross-references ▶ 🔙 External source files F11 E Call structure 🕶 🌄 PLC tags 📕 Assignment list 🗞 Show all tags 📑 Add new tag table 昌 Print... Ctrl+P 🝯 Default tag table [54] 鹶 Print preview.. ▼ 🔚 LProdReg_Tags Alt+Enter 👆 LProdReg_UserTags [23]

b. Delete existing tags from the project (V1.0)

c. Insert the tags from library V2.0 (replace existing and move to this location) Figure 2-3: Update library tags V2.0



 Reconfigure the user tag table as before based on the notes you made (Also, configure following new constants of V2.0 which are used for dimensioning the database based on your application requirements: LPRODREG_LENGTH_OF_PRODUCT_POCKET_ARRAY LPRODREG_LENGTH_OF_CONTAINER_POCKET_ARRAY)

2. Update types

a. Make notes of your individual user defined object characteristics in library type LProdReg_typeUserDefinedObjectProperties since they will be replaced by the defaults. (The default user defined properties of V2.0 are used in the user functions as program example!)

Figure 2-4: Make notes of your individual user defined object properties in the project

Project tree		Ту	ype	s ► LProdReg_typeObj	jectU serDe finedPrope	rties 💶 🖬 🖬
Devices Plant objects						
			=8°			1
		ι	LPro	odReg_typeObjectUser	DefinedProperties	
IProdReg_UserTags [22]	^			Name	Data type	Default value
💌 💽 PLC data types		1	-	containerColour	String	
📑 Add new data type		2 -	-	containerShape	String	
LProdReg_Types		3 -	-	productColour	String	
LProdReg_typeActuatorCounters		4 -	-	productShape	String	
LProdReg_typeCameraRefData		5 .	a	identifier	Int	a 0
LProdReg_typeConfigActuator						
LProdReg_typeConfigCamera						
LProdReg_typeConfigConveyor						
LProdReg_typeConfigFO						
LProdReg_typeConfigLightSwitch						
LProdReg_typeConfigSinkContainer						
LProdReg_typeConfigSinkProduct						
LProdReg_typeConfigSource						
LProdReg_typeConfigZone						
LProdReg_typeContainer	=					
LProdReg_typeConveyorPriority						
LProdReg_typeDataExchange						
LProdReg_typeDiagnostics						
LProdReg_typeFlowObject						
LProdReg_typeFrame						
LProdReg_typeObjectCharacteristics						
LProdReg_typeObjectDataEntry						
LProdReg typeObjectPositionActual	_					
LProdReg_typeObjectUserDefinedProperties						
LProdReg_typeOutputActuatorPosition						
E LProdReg typeProduct						

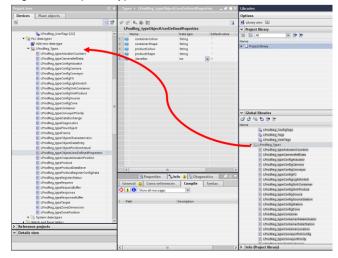
b. Make notes of all your current FO-Actuator configurations, since the FB FO-Actuator has been remade in V2.0 and the configuration interface has been restructured. (The previous configuration parameters are still existing though)

Figure 2-5: Remember	configurations o	of all FO-Actuators in th	e project with LProdReg	V1.0

i 💷	🖻 🗉	₿ ₫	۰.	🕹 🖹 😤 Keep actual value	s 逼 Snapshot 👫 🖏 Copy:	snapshots to start values 🛛 🕵 🛛 Load start values as actual values 🕯
		Cor	nfig[Jata		
🔻 🔙 Program blocks	^		Nam	e	Data type	Start value
📑 Add new block	31) 🕣	• •	configData_Actuator_Kinematic	"LProdReg_typeConfigActuator"	
💶 Main [OB1]	31	-		mode	Int	"LPRODREG_ACTUATOR_MODE_PRODUCT_IN_CONTAINER"
MC-Interpolator [OB92]	33	2 💶		activeMinProductGap	Bool	TRUE
The MC-LookAhead [OB97]	33	3 🕣		activeMinContainerGap	Bool	TRUE
🚰 MC-Servo [OB91]	34	: 🕣		waitForContainer	Bool	FALSE
📒 ConfigData [DB60]	3	5 🕣		containerGroup	DInt	1
Controls [DB15]	31	6 🕣		pickZoneID	Dint	17
Diagnostics [DB16]	33	7 🕣		pickZoneExtension	LReal	200.0
🥃 ObjectData [DB61]	31	3 🕣		placeContainerZoneID	DInt	18
LAxisCtrl_Blocks	35	9 🕣		placeContainerZoneExtension	LReal	100.0
LKinCtrl_Blocks	41	0		productPickPriority	DInt	"LPRODREG_EXAMPLE_USER_DEFINED_ACTUATOR_PRIORITY_CASE_2"
LProdReg_Blocks	4	-		outputPositionCoordSystemI	DInt	0
LProdReg_Flowobjects	43	2 🕣	-)	configFO_Zone_PickProduct	"LProdReg_typeConfigFO"	
LProdReg_Instances	43	3 🕣		configData_Zone_PickProduct	"LProdReg_typeConfigZone"	
TrackConv	44	: 🕣	-)	configFO_Zone_PlaceContainer	"LProdReg_typeConfigFO"	
System blocks	43	5 🕣		configData Zone_PlaceContainer	"LProdReg_typeConfigZone"	

c. Update all library types (replace existing and move to this location) and configure the user defined object properties as before.

Figure 2-6: Update types



3. Update library blocks

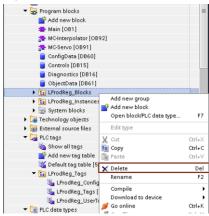
- a. Save the programming of
 - -user defined prioritization algorithms
 - (In FB LProdReg_UserdefinedObjectConveyorPrioritization)
 - -user defined picking strategies
 - (In FB LProdReg_UserDefinedActuatorPrioritization)
 - -user defined deletion of objects by characteristics
 - (In FC LProdReg_UserDefinedDeleteContainerByCharacteristics
 - and LProdReg_UserDefinedDeleteProductsByCharacteristics)

since these functions will be replaced.

(The interface and the programming of the mentioned user functions have been optimized and have therefore changed slightly with library V2.0 but the code used so far can be easily adapted. Check out the comments and the programming examples in the FCs/FBs)

b. Delete all library blocks from the project (V1.0)

Figure 2-7

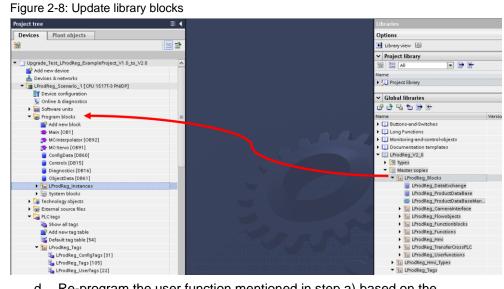


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 Insert all required library blocks from V2.0 (replace existing and move to this location)

HMI-blocks, camera interface blocks, transfer cross-PLC blocks are optional!



d. Re-program the user function mentioned in step a) based on the programming you have saved

4. Update interface in DB ConfigData or in the corresponding DB where the configuration of all FOs and the main FB is stored

Figure 2-9:Update interface of configuration types

w	Co	nfi	gDa	ita					
		Na	me		Data type		Start value	Retain	Ac
1	-00	•	Sta	itic					
2		•	•	configData_ProductDataBaseManager	"LProdReg_typeProductRegisterConfigD	ata"			
3		•	•	configFO_ProductConveyor	"LProdReg_typeConfigFO"	1			_
4		•	•	configData_ProductConveyor	"LProdReg_typeConfigConveyor"	-	sert row		+Enter
5		•	•	configFO_ContainerConveyor	"LProdReg_typeConfigFO"	₹ Ac	dd row	/	Alt+Ins
6		•	•	configData_ContainerConveyor	"LProdReg_typeConfigConveyor"	X CL	Jt		Ctrl+X
7	-00	•	•	configFO_Source_Pr_1	"LProdReg_typeConfigFO"	Co 🗐			Ctrl+C
8	-00	•	•	configData_Source_Pr_1	"LProdReg_typeConfigSource"	Pa Pa	aste		Ctrl+∖
9	-00	•	•	configFO_Source_Pr_2	"LProdReg_typeConfigFO"	X De	elete		De
10		•	•	configData_Source_Pr_2	"LProdReg_typeConfigSource"	Re	ename		F2
11	-00	•	•	configFO_Source_Pr_3	"LProdReg_typeConfigFO"	(T) AC	dd new supervision		
12	-00	•	•	configData_Source_Pr_3	"LProdReg_typeConfigSource"	-			
13		•	•	configFO_Source_Pr_4	"LProdReg_typeConfigFO"	L UF	pdate interface		
14		•	•	configData_Source_Pr_4	"LProdReg_typeConfigSource"	G	o to next point of us	e Ctrl+S	8hift+G
15		•	•	configFO_Source_Container	"LProdReg_typeConfigFO"	G	o to definition	Ctrl+S	ihift+D
16		•	•	configData_Source_Container	"LProdReg_typeConfigSource"	-	oss-references		F11
17		•	•	configFO_Sink_Product	"LProdReg_typeConfigFO"	🛃 🔀 Cr	oss-reference infor	mation Shi	ft+F11
18		•	•	configData_Sink_Product	"LProdReg_typeConfigSinkProduct"				
19		•	•	configFO_Sink_Container	"LProdReg_typeConfigFO"				
20	-00	•	•	configData_Sink_Container	"LProdReg_typeConfigSinkContainer"				
21	-00	•	•	configFO_Zone_ProductDeletion	"LProdReg_typeConfigFO"				
22	-00		•	confiaData Zone ProduktDeletion	"LProdRea typeConfiaZone"				

After updating, check the parameterizations of the configuration interfaces of all flow object and the main FB in DB ConfigData

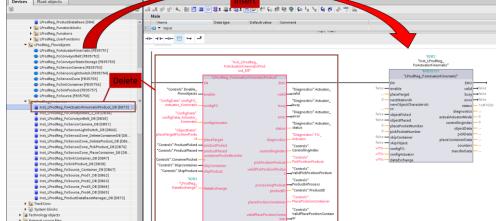
(Find not existing tags used for configuration in \rightarrow LProdReg_ConfigTags)

5. Replace all remaining instances of the FO-Actuator from library V1.0 with the remade one from library V2.0

LProdReg_FoActuatorKinematicProduct \rightarrow LProdReg_FoActuatorKinematic Assign the In/Out interfaces of the new inserted FO-Actuator blocks.

Also check the configuration interface type of the new FO-Actuator since it has also been updated and re-parameterize it based on the notes you made in 2.b).

Figure 2-10: Delete old instances of FO-Actuator and insert new block



6. Compile the project

3 Appendix

3.1 Service and support

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3.2 Application support

Siemens AG Digital Factory Division Factory Automation Production Machines DF FA PMA APC Frauenauracher Str. 80 91056 Erlangen, Germany mailto: tech.team.motioncontrol@siemens.com

3.3 Links and literature

Table 3-1

No.	Торіс
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to this entry page of this application example https://support.industry.siemens.com/cs/ww/en/view/109782462
\3\	

3.4 Change documentation

Table 3-2

V	ersion	Date	Modifications
	V1.0	09/2021	First version