Library Product register (LProdReg)

Changelog

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Table of contents

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 → FB LProdReg_FoActuatorKinematicProduct
  LProdReg V2.0 → 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:

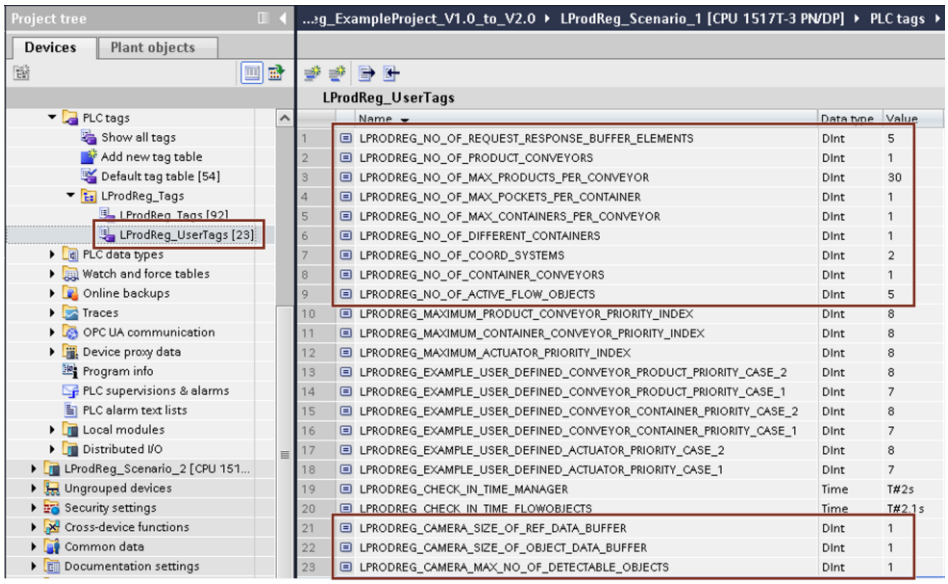
- Re-check in of disabled flow object during runtime fixed
- Bugs fixed in FO-SensorLightSwitch
- Bugs fixed in main FB
- Incorrect prioritization of objects placed on a target conveyor fixed

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.

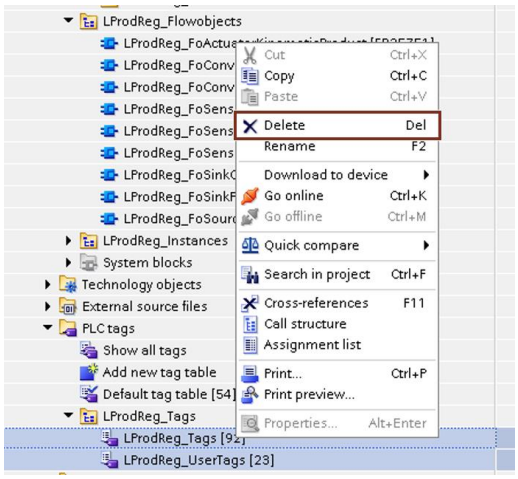
1. **Library tags**
   a. Make notes of the current configuration of the user tags (LProdReg_UserTags) in your project with LProdReg V1.0

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



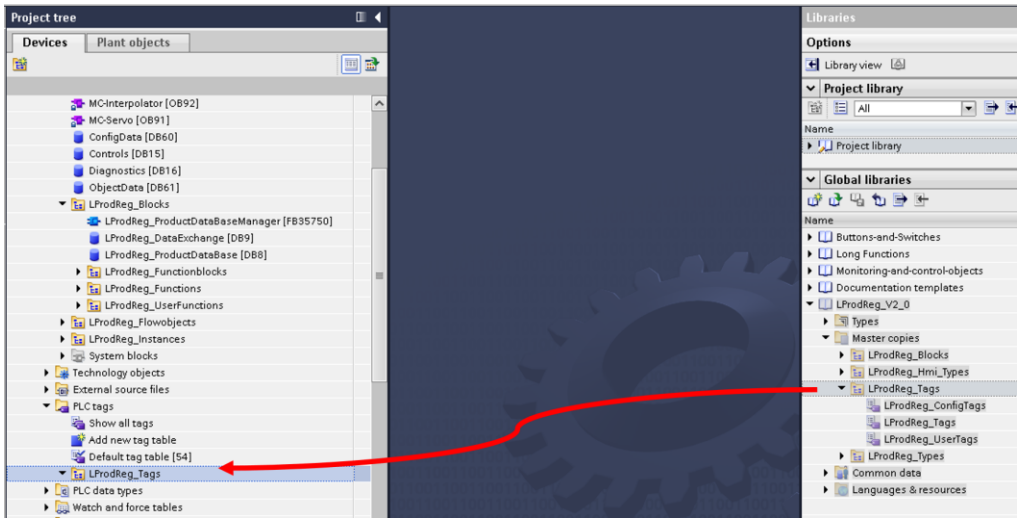
b. Delete existing tags from the project (V1.0)

Figure 2-2: Delete LProdReg tags 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



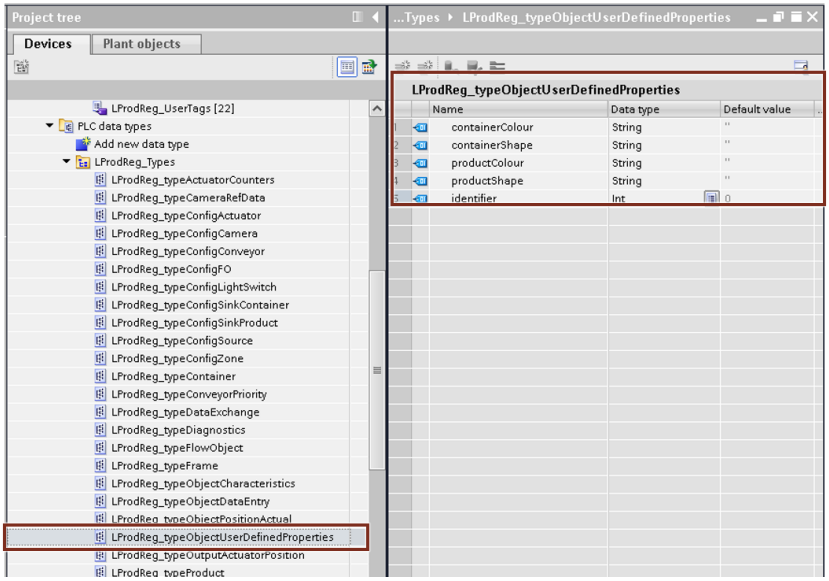
d. Reconfigure the user tag table as before based on the notes you made

(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

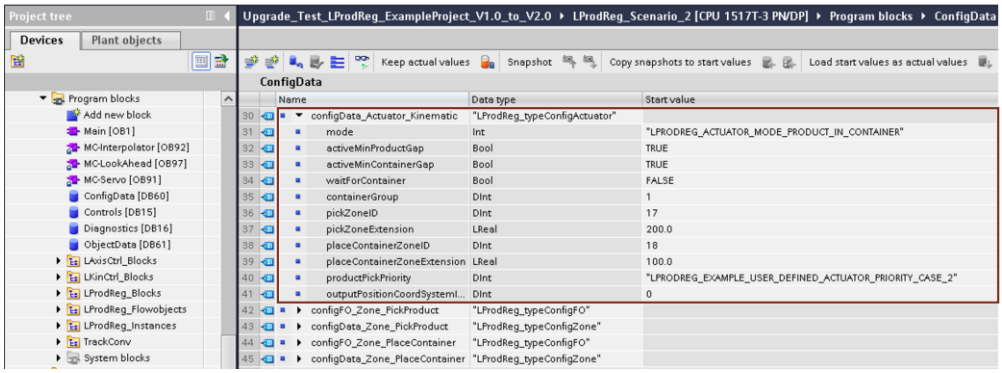
a. Make notes of your individual user defined object characteristics in library type LProdReg_typeUserDefinedObjectProperties since they will be replaced by the defaults. (The default user defined properties of V2.0 are used in the user functions as program example!)

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



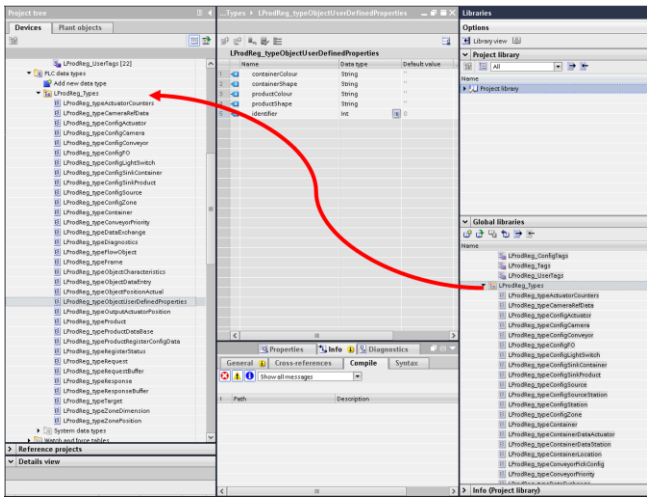
b. Make notes of all your current FO-Actuator configurations, since the FB FO-Actuator has been remade in V2.0 and the configuration interface has been restructured. (The previous configuration parameters are still existing though)

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



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

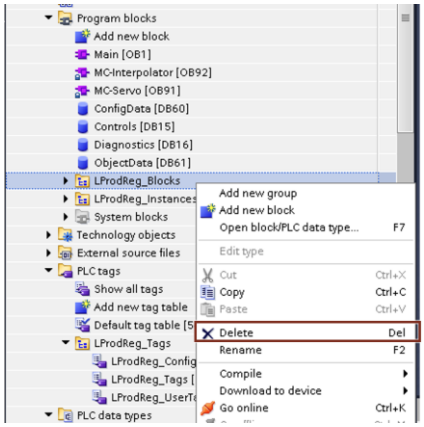
(In FC LProdReg_UserDefinedDeleteContainerByCharacteristics
and LProdReg_UserDefinedDeleteProductsByCharacteristics)

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)

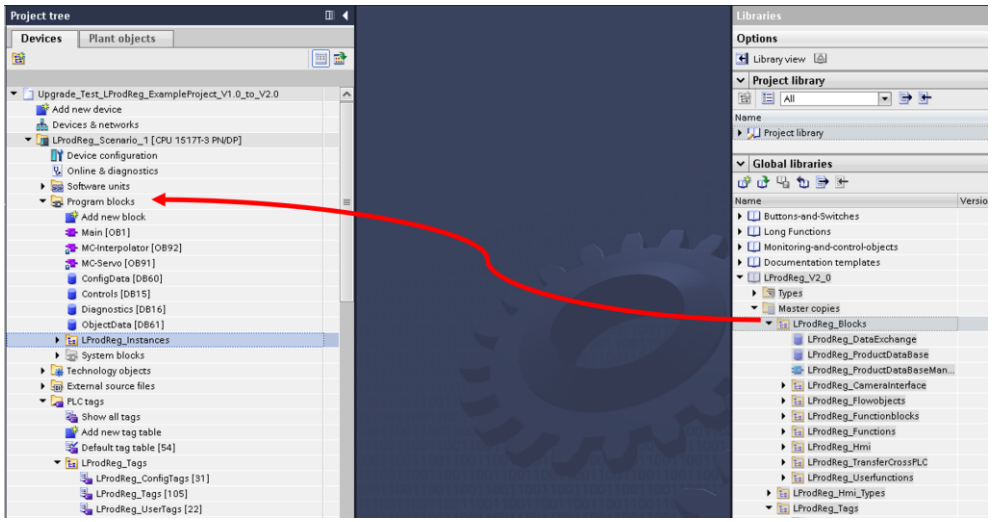
Figure 2-7



c. 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!

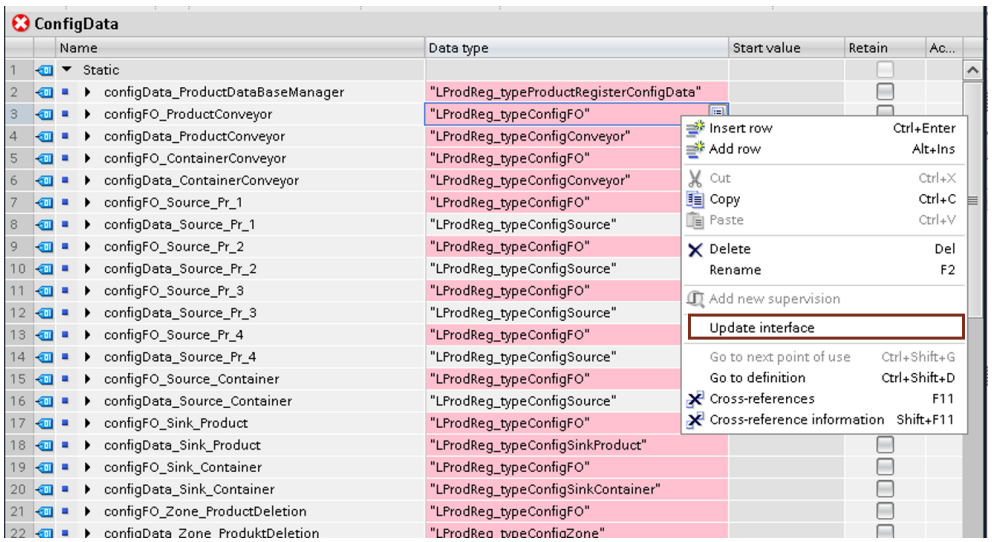
Figure 2-8: Update library blocks



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



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 →LProdReg_ConfigTags)

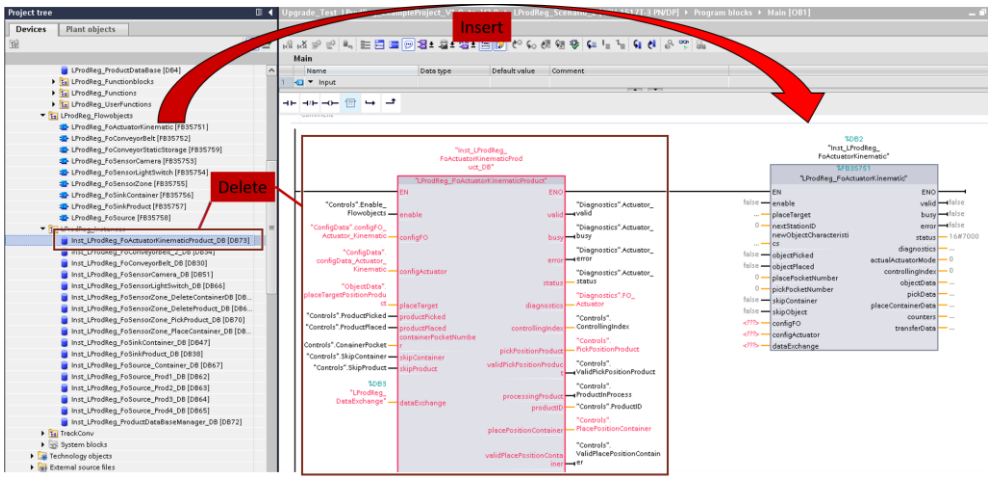
5. **Replace all remaining instances of the FO-Actuator from library V1.0 with the remade one from library V2.0**

   LProdReg_FoActuatorKinematicProduct → 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

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3.3 Links and literature

Table 3-1

No.	Topic
\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

Version	Date	Modifications
V1.0	09/2021	First version