

# Lecture slides for Learn-/Training Document TIA Portal

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### Learn-/Training Document TIA Portal Module overview

#### **Overview of the modules**

#### 000-000 General Module Overview of SCE Learn-/Training Documents



#### **SIEMENS**

# Learn-/Training Document TIA Portal Process description

#### 020-100 Process description of sorting station

- Automated sorting station for separating plastic and metal components
- A component is fed to the conveyor via a chute
  → The conveyor starts after detection of a component.
- Metallic component (gray): Transport to height of metal magazine, cylinder pushes it into the metal magazine
- Non-metallic component (orange): Transport to the end of the belt, where it falls into the plastic magazine.
- As soon as a component is sorted, the next component can be fed



#### SIEMENS

# Learn-/Training Document TIA Portal Reference list

# **020-100** Process description of sorting station – Reference list for digital inputs

DI	Туре	Identifier	Function	NC/NO
۱0.0	BOOL	-A1	Return signal emergency stop OK	NC
I 0.1	BOOL	-К0	Main switch "ON"	NO
I 0.2	BOOL	-S0	Mode selector manual / automatic	Manual = 0
I 0.3	BOOL	-S1	Pushbutton automatic start	NO
I 0.4	BOOL	-S2	Pushbutton automatic stop	NC
I 0.5	BOOL	-B1	Sensor cylinder M4 retracted	NO
I 0.6	BOOL	-B2	Sensor cylinder M4 extended	NC
I 0.7	BOOL	-B3	Sensor motor M1 active (pulse signal also suitable for positioning)	NO
l 1.0	BOOL	-B4	Sensor at chute occupied	NO

DI	Туре	Identifier	Function	NC/NO
l 1.0	BOOL	-B4	Sensor at chute occupied	NO
I 1.1	BOOL	-B5	Sensor metal part	NO
l 1.2	BOOL	-B6	Sensor part in front of cylinder M4	NO
l 1.3	BOOL	-B7	Sensor part at end of conveyor	NO
l 1.4	BOOL	-S3	Pushbutton manual mode conveyor M1 forwards	NO
l 1.5	BOOL	-S4	Pushbutton manual mode conveyor M1 backwards	NO
l 1.6	BOOL	-S5	Pushbutton manual mode cylinder M4 retract	NO
1.7	BOOL	-S6	Pushbutton manual mode cylinder M4 extend	NO



## Learn-/Training Document TIA Portal Reference list

## **020-100** Process description of sorting station – Reference list for digital outputs

DO	Туре	Identifier	Function
Q 0.0	BOOL	-Q1	Conveyor motor M1 forwards fixed speed
Q 0.1	BOOL	-Q2	Conveyor motor M1 backwards fixed speed
Q 0.2	BOOL	-Q3	Conveyor motor M1 variable speed
Q 0.3	BOOL	-M2	Cylinder M4 retract
Q 0.4	BOOL	-M3	Cylinder M4 extend
Q 0.5	BOOL	-P1	Display "main switch on"
Q 0.6	BOOL	-P2	Display "MANUAL" mode
Q 0.7	BOOL	-P3	Display "AUTOMATIC" mode
Q 1.0	BOOL	-P4	Display "emergency stop activated"

DO	Туре	Identifier	Function
Q 1.1	BOOL	-P5	Display "automatic mode started"
Q 1.2	BOOL	-P6	Display "cylinder M4 retracted"
Q 1.3	BOOL	-P7	Display "cylinder M4 extended"



# Learn-/Training Document TIA Portal Reference list

# 020-100 Process description of sorting station – Reference list for analog inputs and outputs

AI	Туре	Identifier	Function
IW 64	INT	-B8	Sensor actual value of motor speed +/- 10V
IW 66	INT	-B9	Setpoint specification via potentiometer +/- 10V

AO	Туре	Identifier	Function
QW 64	INT	-U1	Manipulated value speed of motor in 2 directions +/- 10V



# Learn-/Training Document TIA Portal Simulation

#### 020-100 Process description of sorting station – SIMIT simulation

- SIMIT Simulation together with PLCSIM or a controller via PRODAVE (currently for S7-300 only)
- SIMIT V8.1 Demo
- 01\_Operating screen
  - Violet area: Representation of the current state of the simulated station
  - Gray area: Additional values
  - Green area: Control panel of the simulated station



# Learn-/Training Document TIA Portal Simulation

#### **020-100** Process description of sorting station – SIMIT simulation

- 02\_SimControl serves some settings of the simulation
  - Upper areas: Create components
    - Automatic or manual creation of components
      - Automatic (default setting)
      - Manual
    - Type of created components:
      - Metal components only
      - Plastic components only
      - Random metal or plastic components (default setting)
  - Center area: Manual specification of setpoint B9
  - Lower area: Reset component position

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Automatisch Bauteile erzeugen/ Automatic creation of components	
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Metallbauteile/ Metal components	
Metal_comp	
nur Plastikbauteile erzeugen/ Produce only plastic cor	nponents
Plastikbauteile/ plastic components	
Plastic_comp	
zufällig Metall- oder Plastikbauteile erzeugen/ Rando	mly produce metal or plastic components
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5.0 > Zwecke v	viederverwendet werden.
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Manuelles Rücksetzen/ Manual reset	
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#### Thank you for your attention

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