Totally Integrated	
Automation Portal	

PLC_1 [CPU 1212C AC/DC/Rly]

PLC_1					
Project information					
Name	PLC_1	Author	stive	Comment	
Slot	1	Rack	0		
Catalog information					
Short designation	CPU 1212C AC/DC/Rly	Description	Work memory 100 KB; 120/240VAC power supply with DI8 x 24VDC SINK/SOURCE, DQ6 x relay and AI2 on board; 4 high-speed counters (expandable with digital signal board) and 4 pulse outputs on board; signal board expands on-board I/O; up to 3 communication modules for serial communication; up to 2 signal modules for I/O expansion; PROFINET IO controller, I-device, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, OPC UA: Server DA		6ES7 212-1BE40-0XB0
Firmware version	V4.6		False		
Connection resource	sl				

Connection resources\				
	Station resources - Reserved - Maximum	Station resources - Reserved - Configured	Station resources - Dynamic - Configured	Module resources - PLC_1 [CPU 1212C AC/DC/Rly] - Configured
Maximum number of resources:		34	34	68
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	12	2	0	2
S7 communication:	8	0	0	0
Open user communication:	8	0	0	0
Web communication:	2	-	-	-
OPC UA client/server communication:	0	-	-	-
Other communication:	-	-	0	0
Total resources used:		2	0	2
Available resources:		32	34	66

Overview of addresses\Overview of addresses\Overview of addresses

Inputs True Outputs True Address gaps False

Slot True

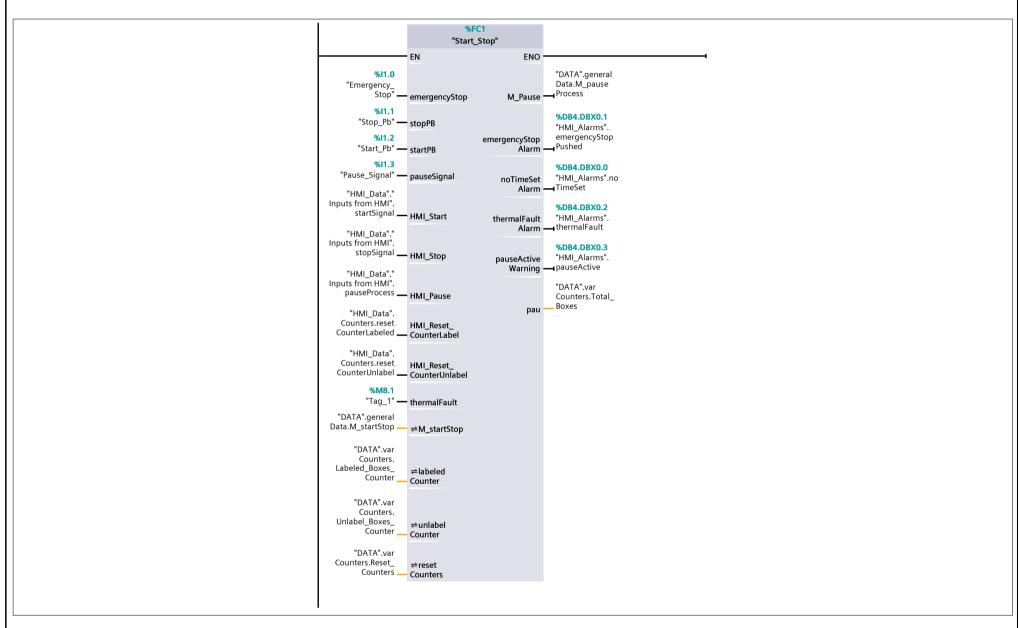
Type	Addr. from	Addr. to	Module	PIP	Device name	Device number	Size	Master / IO sys- tem	Rack	Slot
I	64	67	AI 2_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 2
I	1000	1003	HSC_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 16
I	1004	1007	HSC_2	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 17
I	1008	1011	HSC_3	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 18
I	1012	1015	HSC_4	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 19
I	1016	1019	HSC_5	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 20
	1020	1023	HSC_6	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 21
0	1000	1001	Pulse_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 32
0	1002	1003	Pulse_2	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 33
0	1004	1005	Pulse_3	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 34
0	1006	1007	Pulse_4	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 35
I	0	0	DI 8/DQ 6_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	1 Bytes	-	0	1 1
0	0	0	DI 8/DQ 6_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	1 Bytes	-	0	1 1

Main [OB1]

Main Properties							
General							
Name	Main	Number	1	Туре	ОВ	Language	LAD
Numbering	Automatic						
Information							
Title	"Main Program Sweep (Cy-	Author		Comment		Family	
	cle)"						
Version	0.1	User-defined ID					

	Data type	Default value
▼ Input		
Initial_Call	Bool	
Remanence	Bool	
Temp		
Constant		

Network 1: Start-stop for all process



Network 2: Box labeling process

Totally Integrated **Automation Portal** "Box_Labeling" "DATA".general Data.M_startStop = %Q0.0 conveyorM1 → "Conveyor M1" M_startStop %Q0.1 "DATA".general Data.M_pause conveyorM2 — "Conveyor M2" Process — M_pauseSignal "DATA".activate
Sorter.M1_
Sorter — Activate_Sorter %I1.5 "Position_Box" positionBox "HMI_Data"."Belt Control".Start_M1 — HMI_Start_M1 "HMI_Data"."Belt Control".Start_M2 — HMI_Start_M2 "HMI_Data". Counters.label Time . Label_Time "HMI_Data"." Sorter & Axis Control".activate HMI_Activate_ %Q0.5 "Axis_Label" ⇒axisControl "DATA".var Counters.
Labeled_Boxes_ ≓labeled Boxes_Counter "DATA".Belts_ Data.M_Activate_ M1 _ ≓M_Activate_ M1 "DATA".Belts_ Data.M_Activate_ M2_ ⇒M_Activate_ M2 Counters.Label_ TimeSec _ ≓Label_Time_ **Network 3: Unlabeled boxes process** "Unlabeled_Boxes" EN ENO "DATA".general %Q0.2 Data.M_startStop = conveyorM3 ─ "Conveyor M3" M_startStop "DATA".general Data.M_pause Process **_** %Q0.4 sorterLeft → "Sorter_Left" M_pauseSignal sorter ─ "Sorter" **%I1.4** "Heigh_Box" — heighBox "Unlabel_Box" — Unlabel_Box "HMI_Data"."Belt Control".Start_M3 — HMI_Start_M3 "HMI_Data"." Sorter & Axis Control".activate HMI_Activate_ SorterLeft SorterLeft __ "HMI_Data"." Sorter & Axis Control".activate Sorter HMI_Activate_ - Sorter "DATA".activate Sorter.M1_ Activate_Sorter ≓M1_activate Sorter "DATA".activate Sorter.M2_

≓M2_activate Sorter

⇔countUp_ Unlabel

≓unlabel - Boxes_Counter

Activate_Sorter

"DATA".var Counters.Count Up_Unlabel

"DATA".var Counters. Unlabel_Boxes_

Counter _

|--|

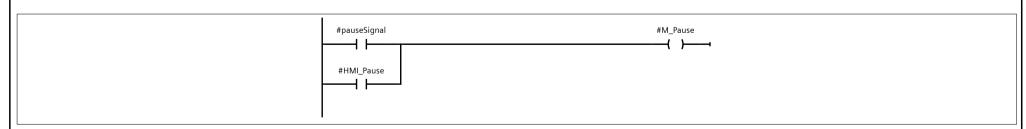
Start_Stop [FC1]

Start_Stop Pro	perties						
General							
Name	Start_Stop	Number	1	Туре	FC	Language	LAD
Numbering	Automatic						
Information							
Title	Start and Stop Block	Author	Stiven Perez	Comment	Start and stop conditions to all process	Family	
Version	0.1	User-defined ID			•		

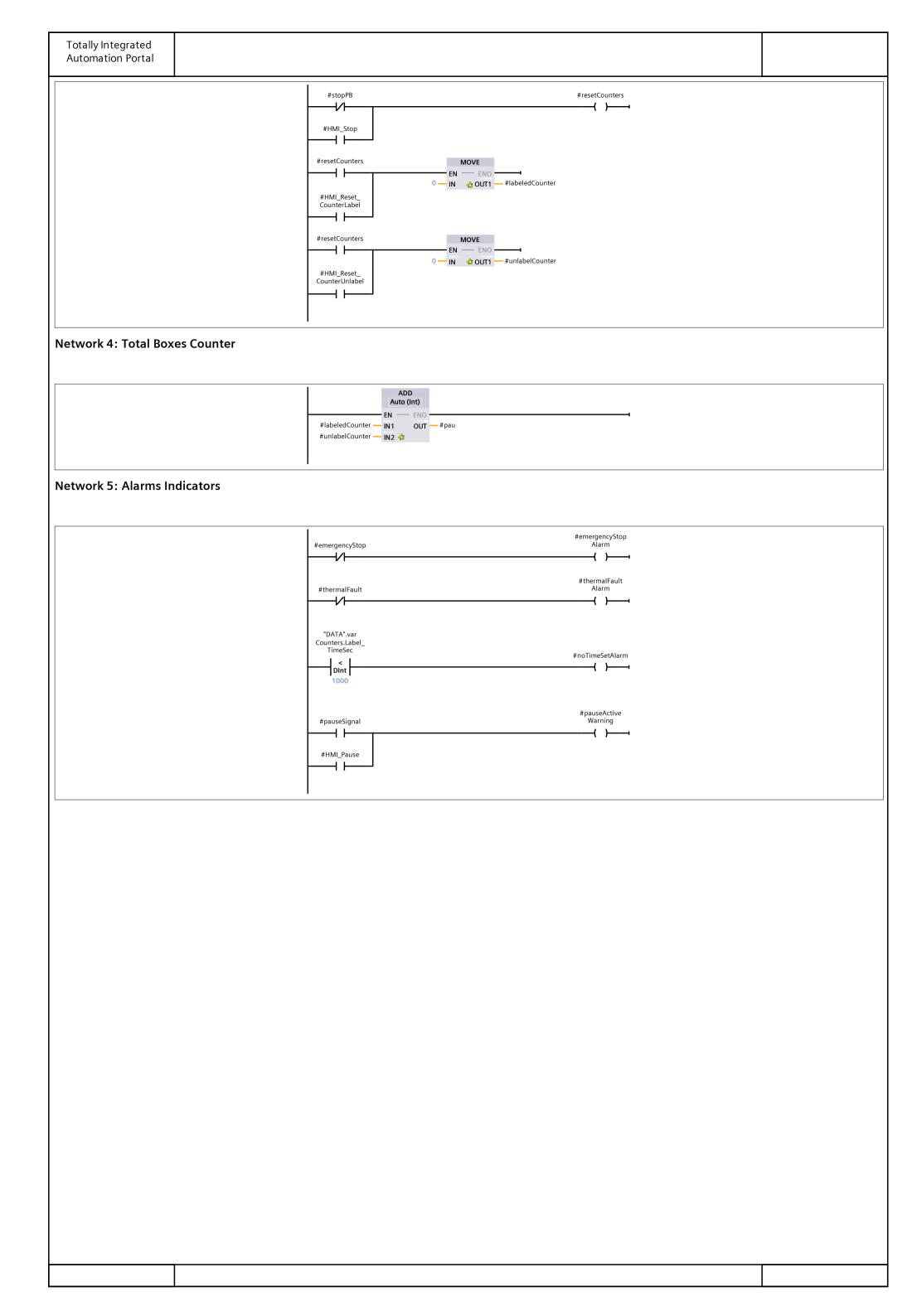
Name	Data type	Default value
✓ Input		
emergencyStop	Bool	
stopPB	Bool	
startPB	Bool	
pauseSignal	Bool	
HMI_Start	Bool	
HMI_Stop	Bool	
HMI_Pause	Bool	
HMI_Reset_CounterLabel	Bool	
HMI_Reset_CounterUnlabel	Bool	
thermalFault	Bool	
▼ Output		
M_Pause	Bool	
emergencyStopAlarm	Bool	
noTimeSetAlarm	Bool	
thermal Fault Alarm	Bool	
pauseActiveWarning	Bool	
pau	Int	
▼ InOut		
M_startStop	Bool	
labeledCounter	Int	
unlabelCounter	Int	
resetCounters	Bool	
Temp		
Constant		
→ Return		
Start_Stop	Void	

Network 1: Memory for Start Stop

Network 2: Memory for Pause process



Network 3: Reset Labeled and Unlabel Boxes Counter



Name							
	DATA	Number 1		Туре	DB	Language	DB
Numbering	Automatic						
nformation Title		Author		Comment		Family	
lue /ersion	0.1	User-defined ID		Comment		ramily	
	0.1	oser derined is					
lame			Data type	St	art value		Retain
▼ Static							
varCounte			Struct				False
activateSo			Struct				False
risingEgde			Struct				False
generalDa			Struct				False
Belts_Data	a		Struct				False
Belts_Data			Struct				

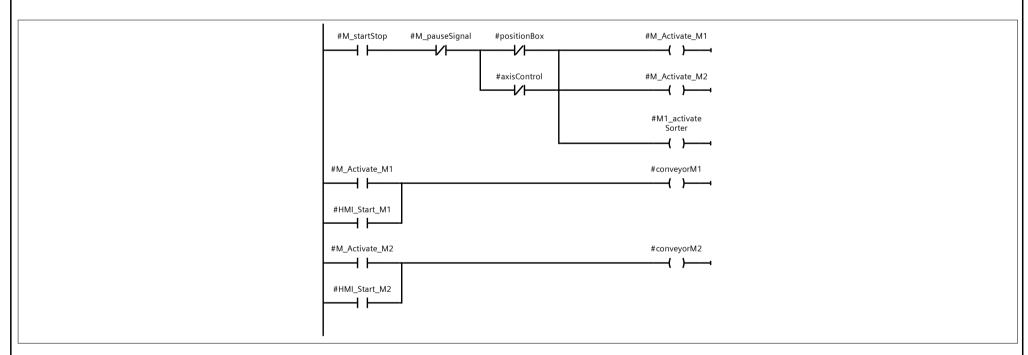
|--|

Box_Labeling [FC2]

Box_Labeling Properties									
General									
Name	Box_Labeling	Number	2	Туре	FC	Language	LAD		
Numbering	Automatic								
Information									
Title	Box Sorting Block	Author	Stiven Perez	Comment	Conditions to select the correct box to labeled	Family			
Version	0.1	User-defined ID							

Name	Data type	Default value	
▼ Input			
M_startStop	Bool		
M_pauseSignal	Bool		
positionBox	Bool		
HMI_Start_M1	Bool		
HMI_Start_M2	Bool		
Label_Time	DInt		
HMI_Activate_Axis	Bool		
▼ Output			
conveyorM1	Bool		
conveyorM2	Bool		
M1_activateSorter	Bool		
▼ InOut			
axisControl	Bool		
labeledBoxes_Counter	Int		
M_Activate_M1	Bool		
M_Activate_M2	Bool		
Label_Time_Sec	DInt		
Temp			
Constant			
▼ Return			
Box_Labeling	Void		

Network 1: Activate Conveyor Belts 1, 2 and Sorter



Network 2: Activate Axis

Activate axis and convert millisencods from hmi input to seconds

Totally Integrated **Automation Portal** %DB2 "axisTimer" #M_pauseSignal #M_startStop #axisControl \dashv \vdash \prec \succ - IN Q· #Label_Time_Sec — PT ET — T#0ms #HMI_Activate_ Axis Dint EN - ENO #Label_Time — IN1 OUT — #Label_Time_Sec 1000 — IN2 👍 %DB4.DBX0.0 "HMI_Alarms".no TimeSet #Label_Time_Sec < DInt **-** -1000 **Network 3: Box Labeled Counter** ADD Auto (Int) #positionBox **⊣**₽**⊢** EN - ENO "DATA".rising Egde.R_position Box #labeledBoxes_ #labeled Counter — IN1 OUT — Counter #labeledBoxes_ 1 — IN2 👍 **Network 4: Box Movemente Animation HMI** ADD Auto (Int) **%M10.5** "Clock_1Hz" #M_startStop #positionBox #M_pauseSignal **⊣**₽**├**─ "DATA".rising Egde.R_Move_ CountUP "HMI_Data".

Move_Animation — IN1 OUT — Move_Animation 1 — IN2 👍 "HMI_Data". Move_Animation MOVE == Int EN - ENO 0 — IN "HMI_Data".

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Unlabeled_Boxes [FC3]

Unlabeled_Boxes Properties								
General								
Name	Unlabeled_Boxes	Number	3	Type	FC	Language	LAD	
Numbering	Automatic				·			
Information								
Title	Unlabeled Boxes Block	Author	Stiven Perez	Comment	Conditions to activate left sorter and unlabeled counter, this function will be activate when the heigh box is out of range	Family		
Version	0.1	User-defined ID						

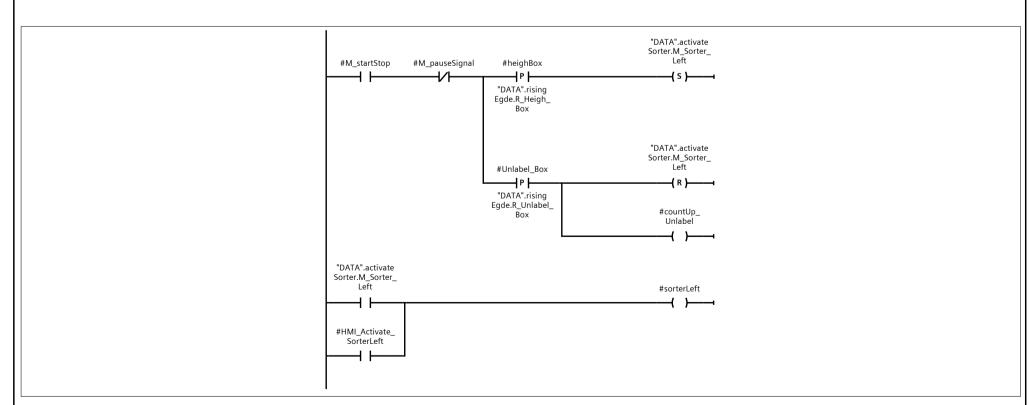
Name	Data type	Default value	
▼ Input			
M_startStop	Bool		
M_pauseSignal	Bool		
heighBox	Bool		
Unlabel_Box	Bool		
HMI_Start_M3	Bool		
HMI_Activate_SorterLeft	Bool		
HMI_Activate_Sorter	Bool		
▼ Output			
conveyorM3	Bool		
sorterLeft	Bool		
sorter	Bool		
▼ InOut			
M1_activateSorter	Bool		
M2_activateSorter	Bool		
countUp_Unlabel	Bool		
unlabelBoxes_Counter	Int		
Temp			
Constant			
▼ Return			
Unlabeled_Boxes	Void		

Network 1: Activate Belt Conveyor 3

```
#M_startStop #M_pauseSignal #M1_activate
Sorter

#HMI_Start_M3 #conveyorM3
```

Network 2: Activate and Deactivate Sorter Left



Network 3: Box Unlabel Counter

Totally Integrated Automation Portal		
	#countUp_ ADD Unlabel Auto (Int)	
	P EN ENO	
	"DATA" rising #unlabelBoxes_ Egde.R_CountUP_ Unlabel 1— IN2 - Counter	
Network 4: Activate	Sorter	
	#M1_activate Sorter #sorter	
	#M2_activate Sorter	
	#HMI_Activate_ Sorter	
		4

ral e HMI_Data Number 3 Type DB Language DB pering Automatic mation Author Comment Family	HMI_Data Number 3 Type DB Language DB Pering Automatic Automatic Author Comment Family Pering O.1 Data type Start value Retain Pering Automatic Struct False Move_Animation Int Struct False Belt Control Struct Struct False Sorter & Axis Control Struct False Struct False Struct False False False False False False	HMI_Data Number 3	/II_Data Pro	nerties						
Mumber 3 Type DB	HMI_Data Number 3	HMI_Data Number 3	n_bata 110 neral	perties						
Automatic Automatic Automatic Author Comment Family	Automatic Automatic Automatic Author Comment Family	Author User-defined ID Data type Start value Inputs from HMI Move_Animation Struct Sorter & Axis Control Author User-defined ID Comment Comment Family Fami	me	HMI_Data	Number	3	Type	DB	Language	DB
Matton Author Comment Family con 0.1 User-defined ID con Data type Start value Retain atic Inputs from HMI Struct False Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False	Matton Author User-defined ID Comment Family In 0.1 User-defined ID Start value Retain Atic Inputs from HMI Struct False Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False	Author Comment Family	nbering				- 31-			
Author User-defined ID Start value Family Famil	Author Comment Family Comment Commen	Author User-defined ID Data type Start value Retain Inputs from HMI Struct False Move_Animation Int Struct Struct False Sorter & Axis Control Struct False	rmation							
Data type Start value Retain atic Struct O O O O O O O O O O O O O O O O O O O	Data type Start value Retain Inputs from HMI Struct O O False Belt Control Struct Struct False Sorter & Axis Control Struct False	Data type Start value Retain tic Struct Data type Start value Retain Inputs from HMI Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False					Comment		Family	
Inputs from HMI Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False	Inputs from HMI Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False	tic Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False	on	0.1	User-defined I	ID		'		
Inputs from HMI Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False	Inputs from HMI Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False	tic Struct False Move_Animation Int O False Belt Control Struct False Sorter & Axis Control Struct False	•			Data tyne		Start value		Retain
Inputs from HMI Struct False Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False	Inputs from HMI Struct False Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False	Inputs from HMI Struct False Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False				Data type		Start value		Ketaiii
Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False	Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False	Move_Animation Int 0 False Belt Control Struct False Sorter & Axis Control Struct False				<u> </u>				E 1
Belt ControlStructFalseSorter & Axis ControlStructFalse	Belt ControlStructFalseSorter & Axis ControlStructFalse	Belt Control Struct False Sorter & Axis Control Struct False								
Sorter & Axis Control Struct False	Sorter & Axis Control Struct False	Sorter & Axis Control Struct False						0		
Counters Struct False	Counters Struct False	Counters Struct False	Sorter 8	Axis Control						

Totally Inte Automation								
PLC_1 [C		C/DC/Rly] / Progr	am blocks					
HMI_Alarms P	roperties							
General								
Name	HMI_Alarms	Number	4	Туре	DB	Language	DB	
Numbering	Automatic			1 2 2				
Information								
Titlo		Author		Commont		Eamily		

Name	Data type	Start value	Retain
▼ Static	2 a.a. 19 p.c	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1000
Static			
noTimeSet	Bool	false	False
emergencyStopPushed	Bool	false	False
thermalFault	Bool	false	False
pauseActive	Bool	false	False

User-defined ID

Version

0.1

	perties							
eral		lla.			-	D.D.	II .	
e bering	axisTimer Automatic	Number	2		Туре	DB	Language	DB
rmation		Author	Simatic		Comment		Family	IEC
on	1.0	User-defined I					[1
•				Data type		Start value		Retain
tatic								
PT				Time		T#0ms		False
ET				Time		T#0ms		False
IN Q				Bool Bool		false false		False False

Totally Integrated Automation Portal		
PLC_1 [CPU 121	2C AC/DC/Rly]	
Technology objec		
This folder is empty.		
i	·	

PLC_1 [CPU 1212C AC/DC/Rly] / PLC tags / Inputs_FactoryIO [48]

PLC tags

PLC ta	Name	Data type	Address	Retain
101	Emergency_Stop	Bool	%l1.0	False
90	Stop_Pb	Bool	%I1.1	False
(IDI)	Start_Pb	Bool	%I1.2	False
1	Pause_Signal	Bool	%I1.3	False
901	Heigh_Box	Bool	%I1.4	False
	Position_Box	Bool	%I1.5	False
	Unlabel_Box	Bool	%I1.6	False
(10)	Thermal_Fault	Bool	%I1.7	False
(10)	Clock_Byte	Byte	%MB10	False
(FIDE)	Clock_10Hz	Bool	%M10.0	False
-	Clock_5Hz	Bool	%M10.1	False
qui l	Clock_2.5Hz	Bool	%M10.2	False
(IIII)	Clock_2Hz	Bool	%M10.3	False
(10)	Clock_1.25Hz	Bool	%M10.4	False
90	Clock_1Hz	Bool	%M10.5	False
(III)	Clock_0.625Hz	Bool	%M10.6	False
T	Clock_0.5Hz	Bool	%M10.7	False
900	Tag_1	Bool	%M8.1	False
(10)	Tag_2	Bool	%M1.1	False
			I and the second se	

Totally Integrated Automation Portal						
PLC_1 [CPU 1212C AC/DC/Rly] / PLC tags / Inputs_FactoryIO [48] User constants						
User constants Name		Data type	Value			

Totally Integrated Automation Portal

PLC_1 [CPU 1212C AC/DC/Rly] / PLC tags / Outputs [6]

PLC tags

PLC tags					
Name	Data type	Address	Retain		
Conveyor M1	Bool	%Q0.0	False		
Conveyor M2	Bool	%Q0.1	False		
Conveyor M3	Bool	%Q0.2	False		
Sorter	Bool	%Q0.3	False		
Sorter_Left	Bool	%Q0.4	False		
Axis_Label	Bool	%Q0.5	False		

Totally Integrated Automation Portal			
PLC_1 [CPU 1212C AC/DC/Rly] / PL	C tags / Outputs [6]	•	
User constants			
User constants Name	Data type	Value	

Totally Integrated Automation Portal		
PLC_1 [CPU 121	2C AC/DC/Rly] / PLC data types	
System data type:	.	
This folder is empty.		

	OC/Rly] / Watch and force ta	bles		
orce table		Di La	-	
me	Address	Display format	Force value	

Totally Integrated Automation Portal		
PLC_1 [CPU 121	2C AC/DC/Rly]	
Traces		
Name		
	T	

Totally Integrated Automation Portal		
PLC_1 [CPU 121	2C AC/DC/Rly] / Traces	
Measurements		
This folder is empty.		

Totally Integrated Automation Portal	
PLC_1 [CPU 1212C AC/DC/Rly] / Traces	
Combined measurements	
Name	

Totally Integrated Automation Portal		
PLC_1 [CPU 121	2C AC/DC/Rly] / OPC UA communication	
Server interfaces		
This folder is empty.		

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Totally Integrated Automation Portal		
PLC_1 [CPU 121	2C AC/DC/Rly]	
PLC alarm text list	s	
This folder is empty.		

Totally Integrated	
Automation Portal	

PLC_1 [CPU 1212C AC/DC/Rly] / Local modules

PLC_1 [CPU 1212C AC/DC/Rly]

PLC_1					
Project information					
Name	PLC_1	Author	stive	Comment	
Slot	1	Rack	0		
Catalog information					
Short designation	CPU 1212C AC/DC/Rly	Description	Work memory 100 KB; 120/240VAC power supply with DI8 x 24VDC SINK/SOURCE, DQ6 x relay and AI2 on board; 4 high-speed counters (expandable with digital signal board) and 4 pulse outputs on board; signal board expands on-board I/O; up to 3 communication modules for serial communication; up to 2 signal modules for I/O expansion; PROFINET IO controller, I-device, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, OPC UA: Server DA		6ES7 212-1BE40-0XB0
Firmware version	V4.6		False		
Connection resource	es\				

Connection resources\				
		Station resources - Reserved - Configured	Station resources - Dynamic - Configured	Module resources - PLC_1 [CPU 1212C AC/DC/Rly] - Configured
Maximum number of resources:		34	34	68
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	12	2	0	2
S7 communication:	8	0	0	0
Open user communication:	8	0	0	0
Web communication:	2	-	-	-
OPC UA client/server communica-	0	-	-	-
tion:				
Other communication:	-	-	0	0
Total resources used:		2	0	2
Available resources:		32	34	66

Overview of addresses\Overview of addresses\Uniter addresses

Inputs True Outputs True Address gaps False

Slot True Device name Device number Size Master / IO sys- Back Slot

Гуре	Addr. from	Addr. to	Module	PIP	Device name	Device number	Size	Master / IO sys- tem	Rack	Slot
	64	67	AI 2_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 2
	1000	1003	HSC_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 16
	1004	1007	HSC_2	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 17
	1008	1011	HSC_3	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 18
	1012	1015	HSC_4	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 19
	1016	1019	HSC_5	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 20
	1020	1023	HSC_6	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	4 Bytes	-	0	1 21
	1000	1001	Pulse_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 32
	1002	1003	Pulse_2	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 33
	1004	1005	Pulse_3	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 34
	1006	1007	Pulse_4	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	2 Bytes	-	0	1 35
	0	0	DI 8/DQ 6_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	1 Bytes	-	0	1 1
	0	0	DI 8/DQ 6_1	Automatic up- date	PLC_1 [CPU 1212C AC/DC/ Rly]	-	1 Bytes	-	0	1 1