


This drawing is the property of Festo Didactic SE Diese Zeichnung ist Eigentum der Festo Didactic SE



### Circuit diagrams Schaltungsunterlagen

designation: CP Lab  
 Bezeichnung: CP Lab  
 Customer:  
 Kunde:  
 Plant identifier S7M0T7CP Lab S7-1512SP, HMI TP700 V6  
 Anlagenkennzeichen CP Lab S7-1512SP, HMI TP700 V6  
 remark: V6 (HMI V2)  
 Bemerkung:  
 last Modification: 2022-05-31  
 letzte Änderung:  
 Print date: 2022-05-31  
 Druckdatum:  
 Path: \\festo.net\DFS01\INT\Data\EPLAN\DATA\_xx\DE\Projects\Didactic\Products\24 CP-L\V6  
 Pfad: \CP Lab V6 2022-05-31.elk

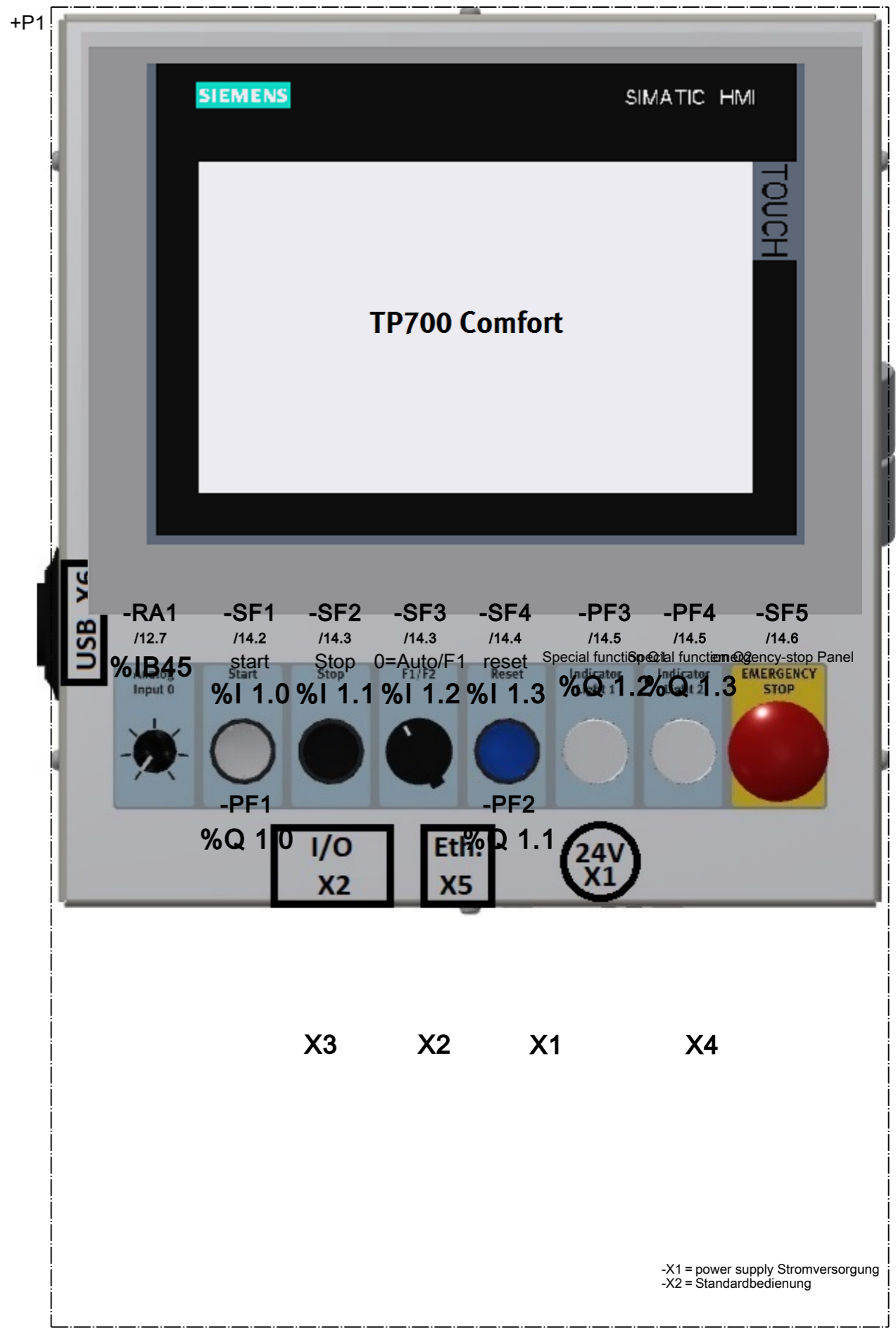
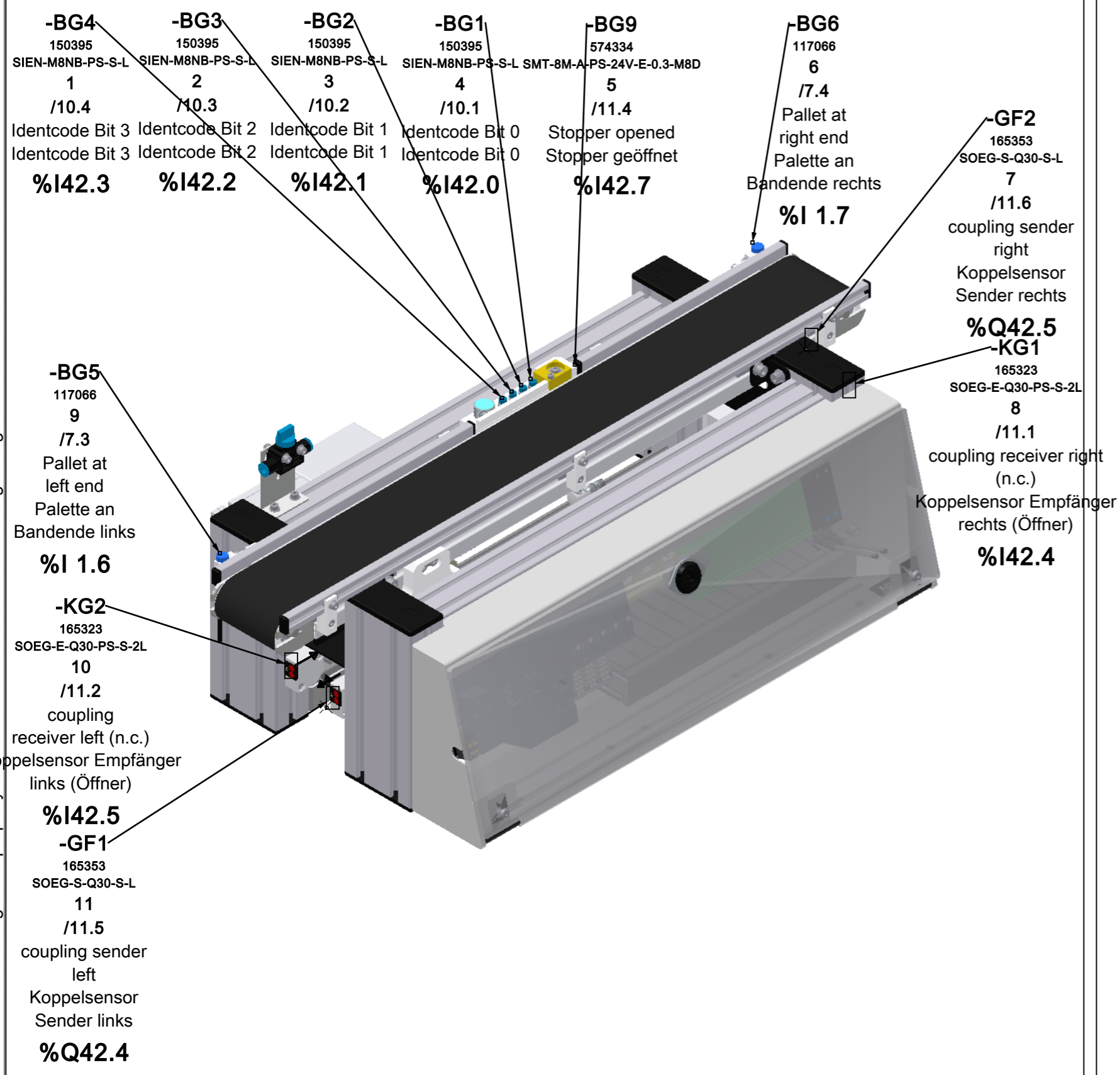
Date	2020-12-03	Festo Didactic SE Reichbergstraße 3 D-73770 Denkendorf		Title page/cover sheet Titel- / Deckblatt	S-Nr.			
Ed. by.	espe				PSP / DPJ	VN	= S7M0T7 CP Lab S7-1512SP, HMI TP700 V6	Page 1
Drw.No.	N:				FFDMD06DE	EPL0VZFG7M	\\festo.net\DFS01\INT\Data\EPLAN\DATA_xx\DE\Projects\Didactic\Products\24 CP-L\V6\CP Lab V6 2022-05-31.elk	+ G1 Conveyor

# Table of contents Inhaltsverzeichnis

Plant Anlage	Location Ort	Page Seite	Page description Seitenbeschreibung	supplementary field Zusatzfeld	Date Datum	Edited by Bearbeit.	x
=S7M0T7	+G1	1	Title page/cover sheet Titel- / Deckblatt		2020-12-03	espe	X
=S7M0T7	+G1	2	Table of contents Inhaltsverzeichnis		2022-05-31	espe	
=S7M0T7	+G1	3	Assembly Aufbau		2020-12-03	espe	
=S7M0T7	+G1	4	Platinen Rev 2019		2020-12-03	espe	
=S7M0T7	+G1	5	assembly PLC Aufbauplan SPS		2020-12-03	espe	
=S7M0T7	+G1	6	application - Byte 0 Applikation - Byte 0		2020-12-03	espe	
=S7M0T7	+G1	7	PCB - Byte 1 Platine - Byte 1		2020-12-03	espe	
=S7M0T7	+G1	8	PCB - Byte 2 Platine - Byte 2		2020-12-03	espe	
=S7M0T7	+G1	9	PCB - IO-Link & Ethernet Platine - IO-Link & Ethernet		2020-12-03	espe	
=S7M0T7	+G1	10	PCB - IO-Link A Platine - IO-Link A		2020-12-03	espe	
=S7M0T7	+G1	11	PCB - IO-Link B Platine - IO-Link B		2020-12-03	espe	
=S7M0T7	+G1	12	PCB - IO-Link analog Platine - IO-Link Analog		2020-12-03	espe	
=S7M0T7	+G1	13	PCB - motor + encoder Platine - Motor + Inkrementalgeber		2022-05-31	espe	
=S7M0T7	+G1	14	controlpanel basic functions & touchpanel Bedienfeld Grundfunktionen & Touchpanel		2020-12-03	espe	
=S7M0T7	+G1	15	controlpanel options Bedienfeld Optionen		2020-12-03	espe	
=S7M0T7	+G1	16	pneumatic schematic Pneumatikplan		2020-12-03	espe	

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.



Date	2020-12-03
Ed. by.	espe
Creat.	espe
Drw.Nr.	

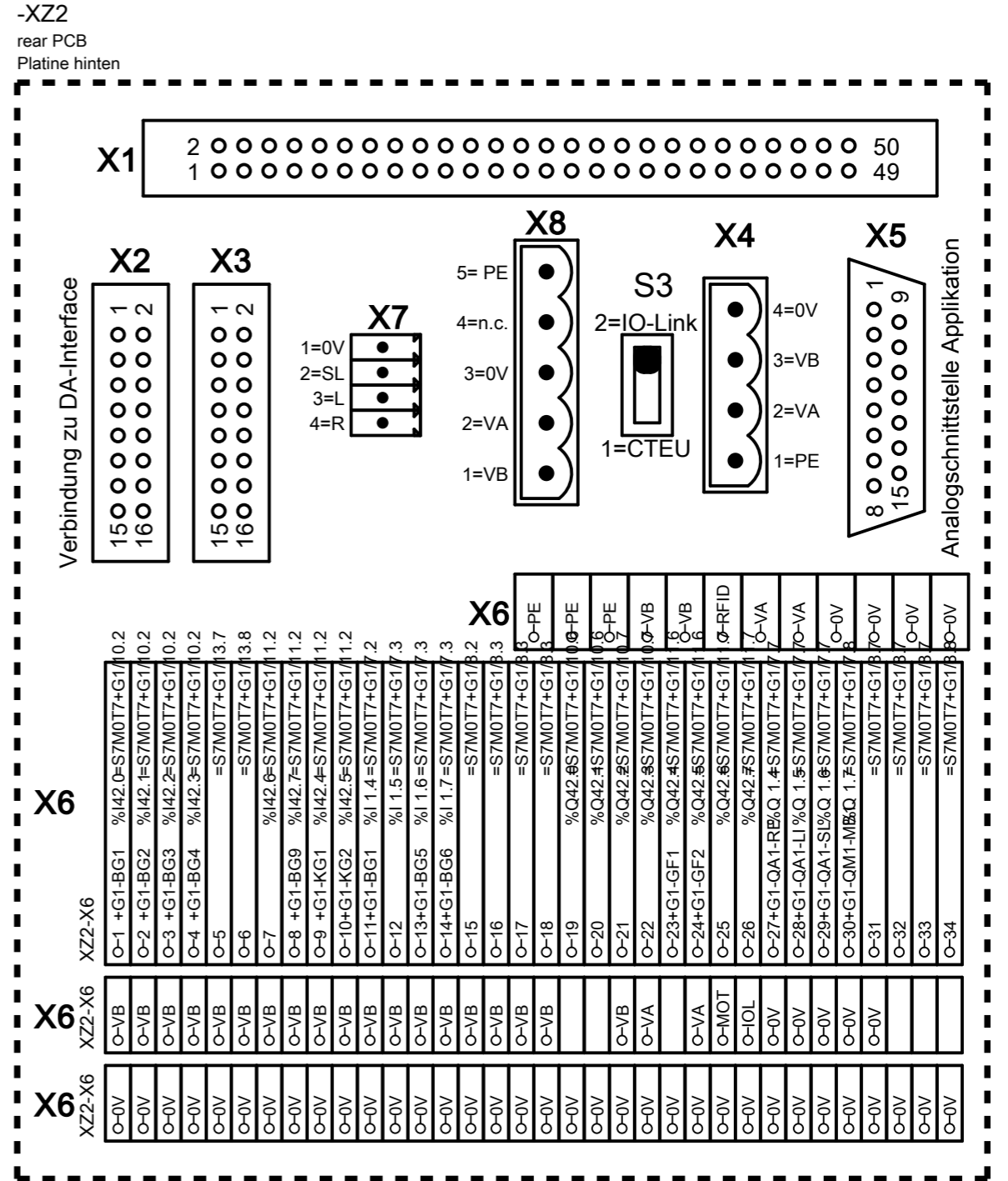
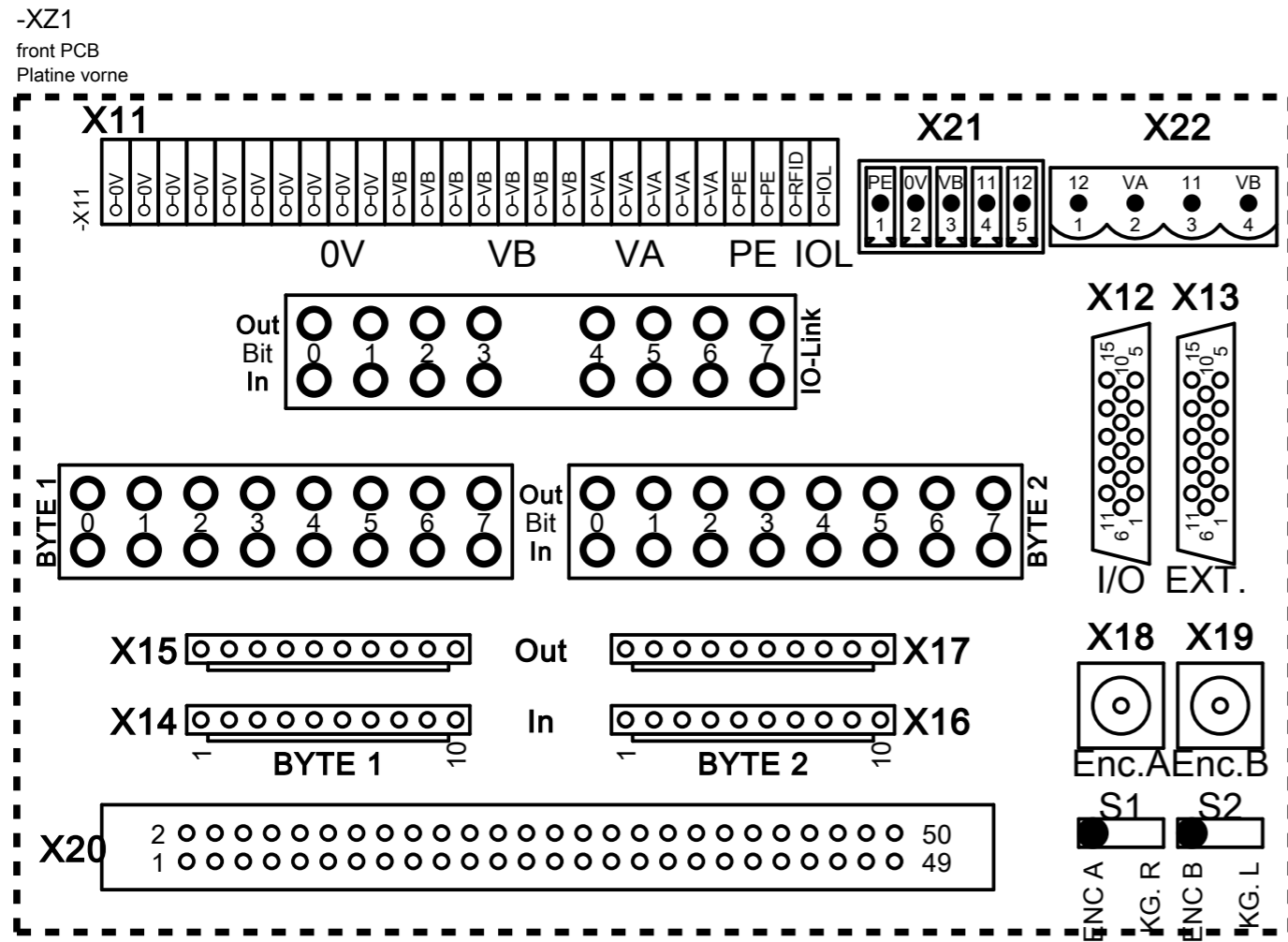
Festo Didactic SE  
Rechbergstraße 3  
D-73770 Denkendorf

**FESTO** Assembly Aufbau

EPL0VZFG7M | \Festo.net\DFS01\INTData\EPLAN\DATA\_xx\DE\Projects\Didactic\Products\24 CP Lab V6 2022-05-31.elk

S-Nr.			
PSP / DPJ	VN	= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6
		+ G1	Conveyor
			Page 3 of 16

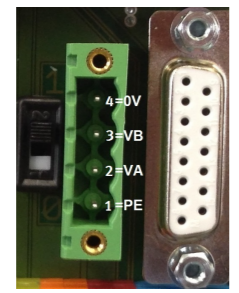
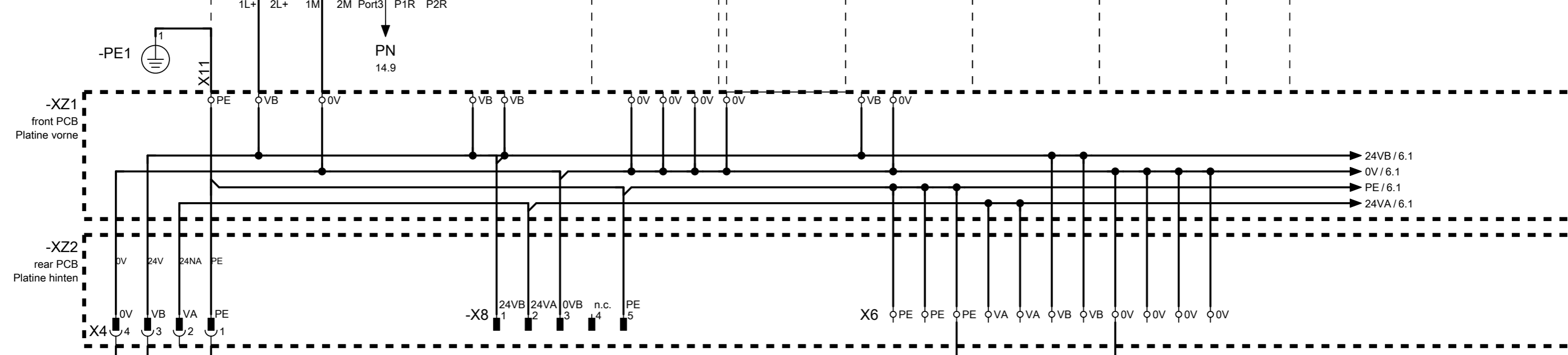
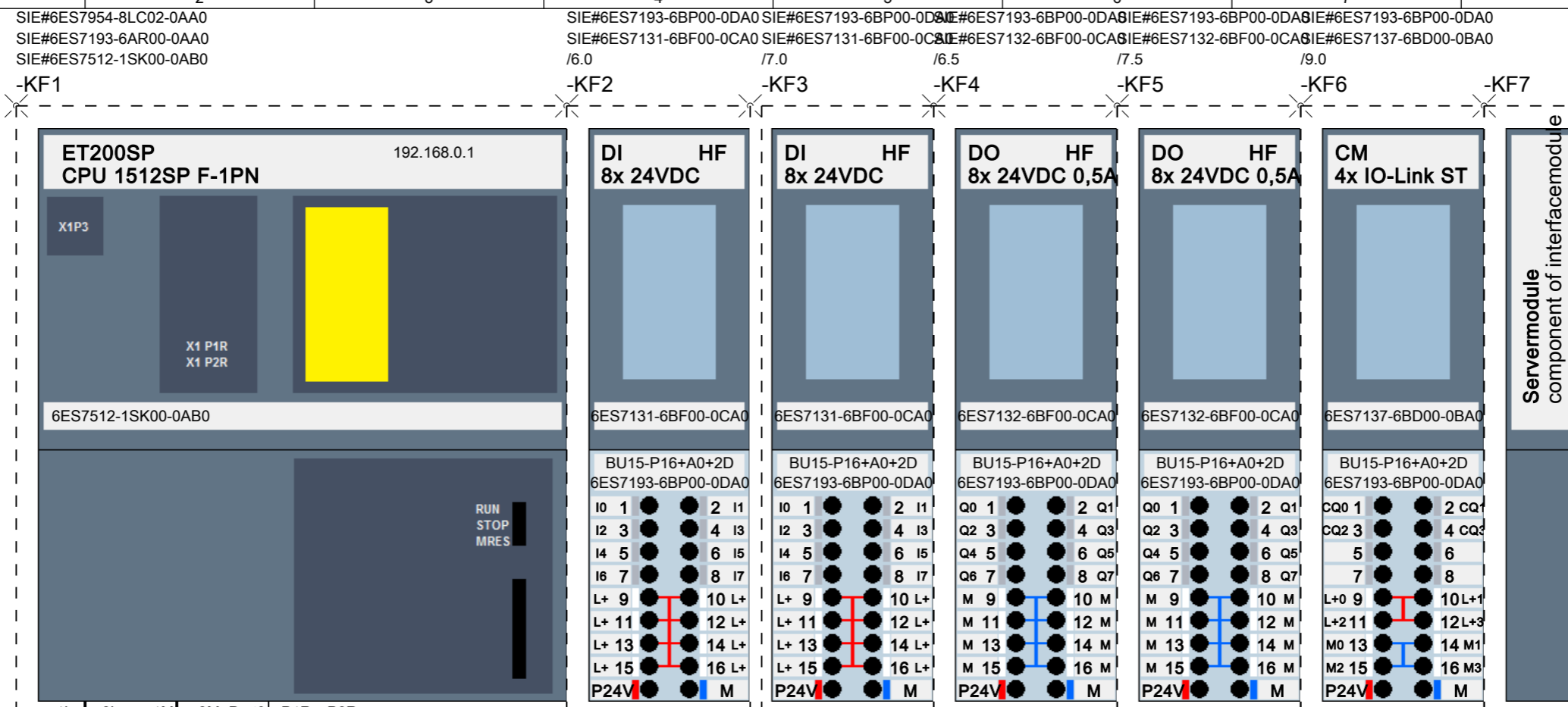
V3  
PCB's Rev 2019-01  
Platinen Rev 2019-01



- XZ1-X11 = terminals PCB front side Klemmen Platine vorne
- XZ1-X12 = controlpanel basic functions Bedienfeld Grundfunktionen
- XZ1-X13 = controlpanel additional buttons Bedienfeld Zusatztasten
- XZ1-X14 = Input-Byte 1 Eingangs-Byte 1
- XZ1-X15 = Output-Byte 1 Ausgangs-Byte 1
- XZ1-X16 = Input-Byte 2 Eingangs-Byte 2
- XZ1-X17 = Output-Byte 2 Ausgangs-Byte 2
- XZ1-X18 = incremental encoder BNC-Connector 1 Inkrementalgeber BNC-Anschluss 1
- XZ1-X19 = incremental encoder BNC-Connector 2 Inkrementalgeber BNC-Anschluss 2
- XZ1-X20 = connection to opposite PCB Verbindung zu gegenüberliegender Platine
- XZ1-X21 = Powersupply HMI HMI Stromversorgung
- XZ1-X22 = external Emergency-Stop Connector Not-Halt-Anschluss extern

- XZ1-X1 = connection to opposite PCB Verbindung zu gegenüberliegender Platine
- XZ2-X2 = connection 1 to DA-Interface Verbindung 1 zu DA-Interface
- XZ2-X3 = connection 2 to DA-Interface Verbindung 2 zu DA-Interface
- XZ2-X4 = power supply Stromversorgung
- XZ2-X5 = analog signals for application Analogsignale Applikationsmodul
- XZ2-X6 = terminals PCB rear side Klemmen Platine hinten
- XZ2-X7 = connection to external Motorcontroller Ansteuerung externer Motorregler
- XZ2-X8 = 24V application modules 24V Applikationsmodule

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.



-X0 0V 24V PE  
 supply 24V DC / 2A  
 Versorgung 24V DC / 2A

Date	2020-12-03	Festo Didactic SE Rechbergstraße 3 D-73770 Denkendorf
Ed. by.	espe	
Creat.	espe	
Drw.Nr.	N:	F:

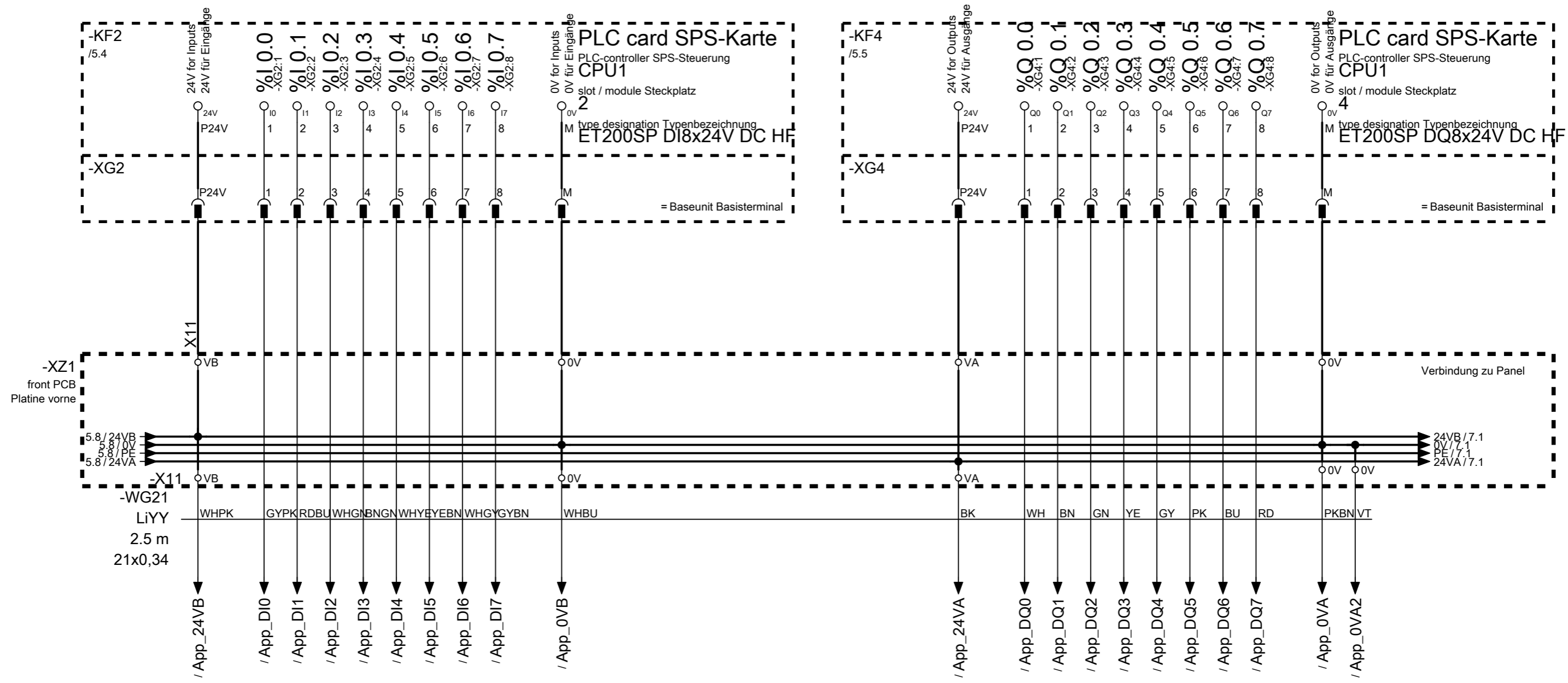
**FESTO** assembly PLC  
 Aufbauplan SPS

S-Nr.			
PSP / DPJ	VN	= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6
		+ G1	Conveyor
			Page 5 of 16

EPL0VZFG7M | festo.net\DFS01\INTData\EPLAN\DATA\_xx\DE\Projects\Didactic\Products\24 CP Lab V6 2022-05-31.elk

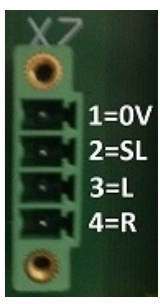
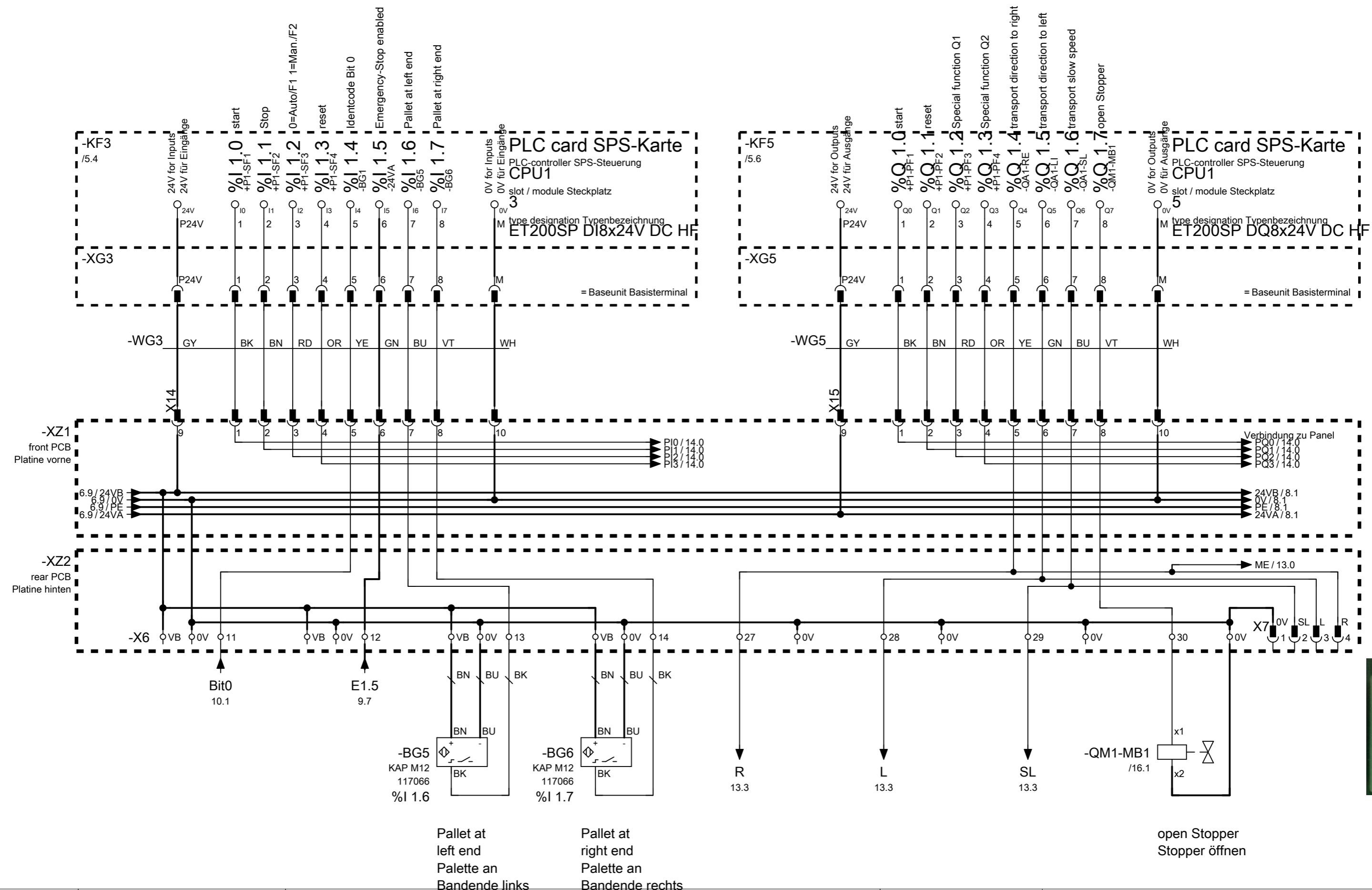
This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.

0 1 2 3 4 5 6 7 8 9



Date	2020-12-03	<b>FESTO</b> application - Byte 0 Applikation - Byte 0	S-Nr.			
Ed. by.	espe		PSP / DPJ	VN		
Creat.	espe		= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 6	
Drw.Nr.	N:	F:	EPL0VZFG7M \\Festo.net\DFS01\INTData\EPLAN\DATA_xx\DE\Projects\Didactic\Products\24 CP Lab V6 2022-05-31.elk	+ G1	Conveyor	of 16

This drawing is the property of Festo Didactic SE Diese Zeichnung ist Eigentum der Festo Didactic SE



<6

Date	2020-12-03	Festo Didactic SE Rechbergstraße 3 D-73770 Denkendorf
Ed. by.	espe	
Creat.	espe	
Drw.Nr.		



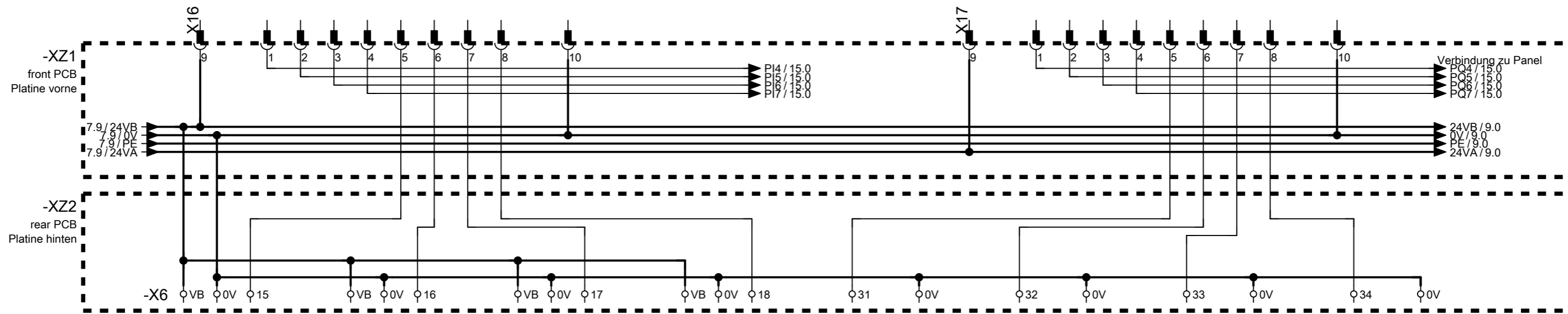
PCB - Byte 1  
Platine - Byte 1

S-Nr.	
PSP / DPJ	VN

= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 7
+ G1	Conveyor	of 16

8 >>

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE



Date	2020-12-03
Ed. by.	espe
Creat.	espe
Drw.Nr.	

Festo Didactic SE	
Rechbergstraße 3	
D-73770 Denkendorf	

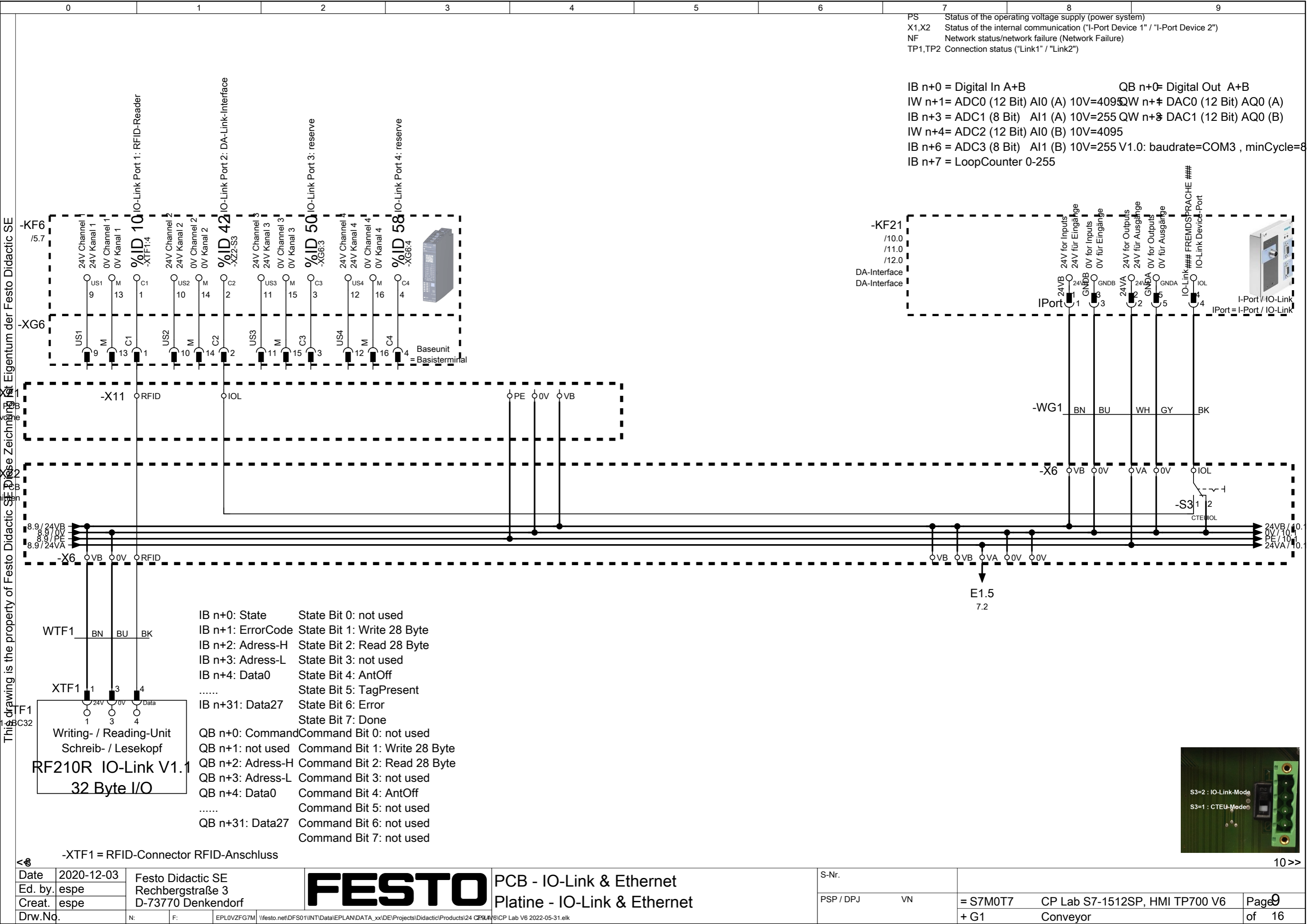


PCB - Byte 2  
Platine - Byte 2

S-Nr.	
PSP / DPJ	VN

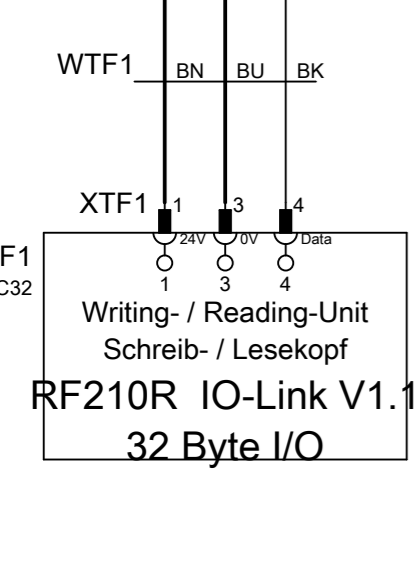
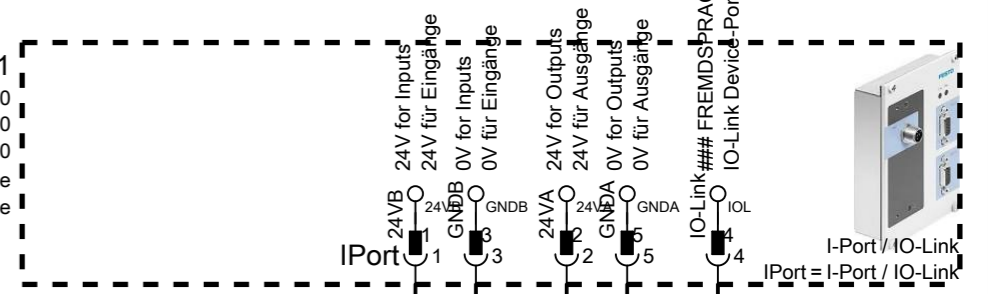
= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6
+ G1	Conveyor





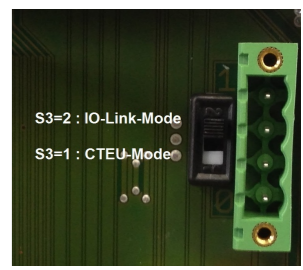
PS Status of the operating voltage supply (power system)  
 X1,X2 Status of the internal communication ("I-Port Device 1" / "I-Port Device 2")  
 NF Network status/network failure (Network Failure)  
 TP1,TP2 Connection status ("Link1" / "Link2")

IB n+0 = Digital In A+B  
 IW n+1= ADC0 (12 Bit) AI0 (A) 10V=4095  
 IB n+3 = ADC1 (8 Bit) AI1 (A) 10V=255  
 IW n+4= ADC2 (12 Bit) AI0 (B) 10V=4095  
 IB n+6 = ADC3 (8 Bit) AI1 (B) 10V=255  
 IB n+7 = LoopCounter 0-255

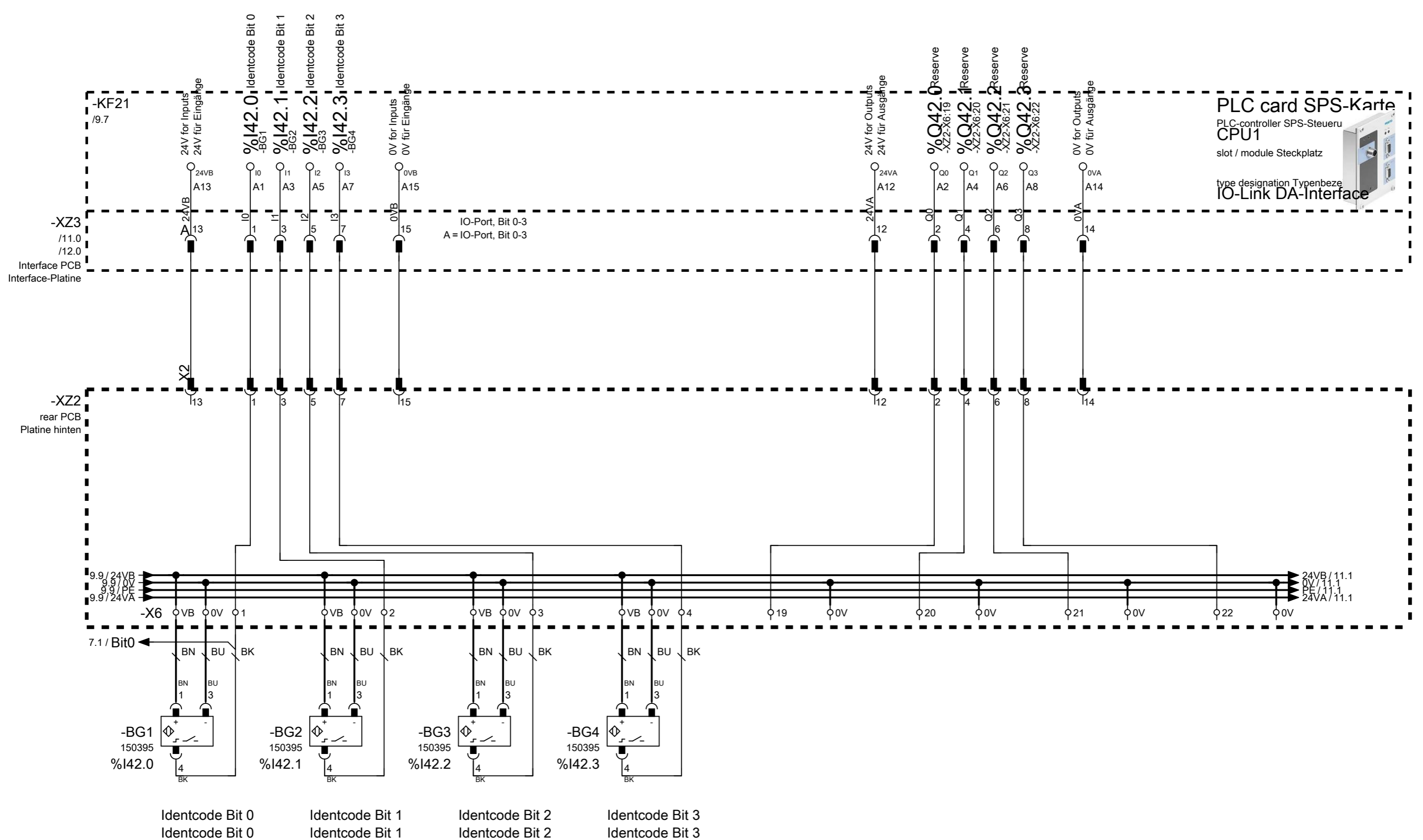


IB n+0: State State Bit 0: not used  
 IB n+1: ErrorCode State Bit 1: Write 28 Byte  
 IB n+2: Adress-H State Bit 2: Read 28 Byte  
 IB n+3: Adress-L State Bit 3: not used  
 IB n+4: Data0 State Bit 4: AntOff  
 ..... State Bit 5: TagPresent  
 IB n+31: Data27 State Bit 6: Error  
 State Bit 7: Done  
 QB n+0: Command Command Bit 0: not used  
 QB n+1: not used Command Bit 1: Write 28 Byte  
 QB n+2: Adress-H Command Bit 2: Read 28 Byte  
 QB n+3: Adress-L Command Bit 3: not used  
 QB n+4: Data0 Command Bit 4: AntOff  
 ..... Command Bit 5: not used  
 QB n+31: Data27 Command Bit 6: not used  
 Command Bit 7: not used

-XTF1 = RFID-Connector RFID-Anschluss



This drawing is the property of Festo Didactic SE Diese Zeichnung ist Eigentum der Festo Didactic SE



Date	2020-12-03
Ed. by.	espe
Creat.	espe
Drw.Nd.	

Festo Didactic SE  
 Rechbergstraße 3  
 D-73770 Denkendorf

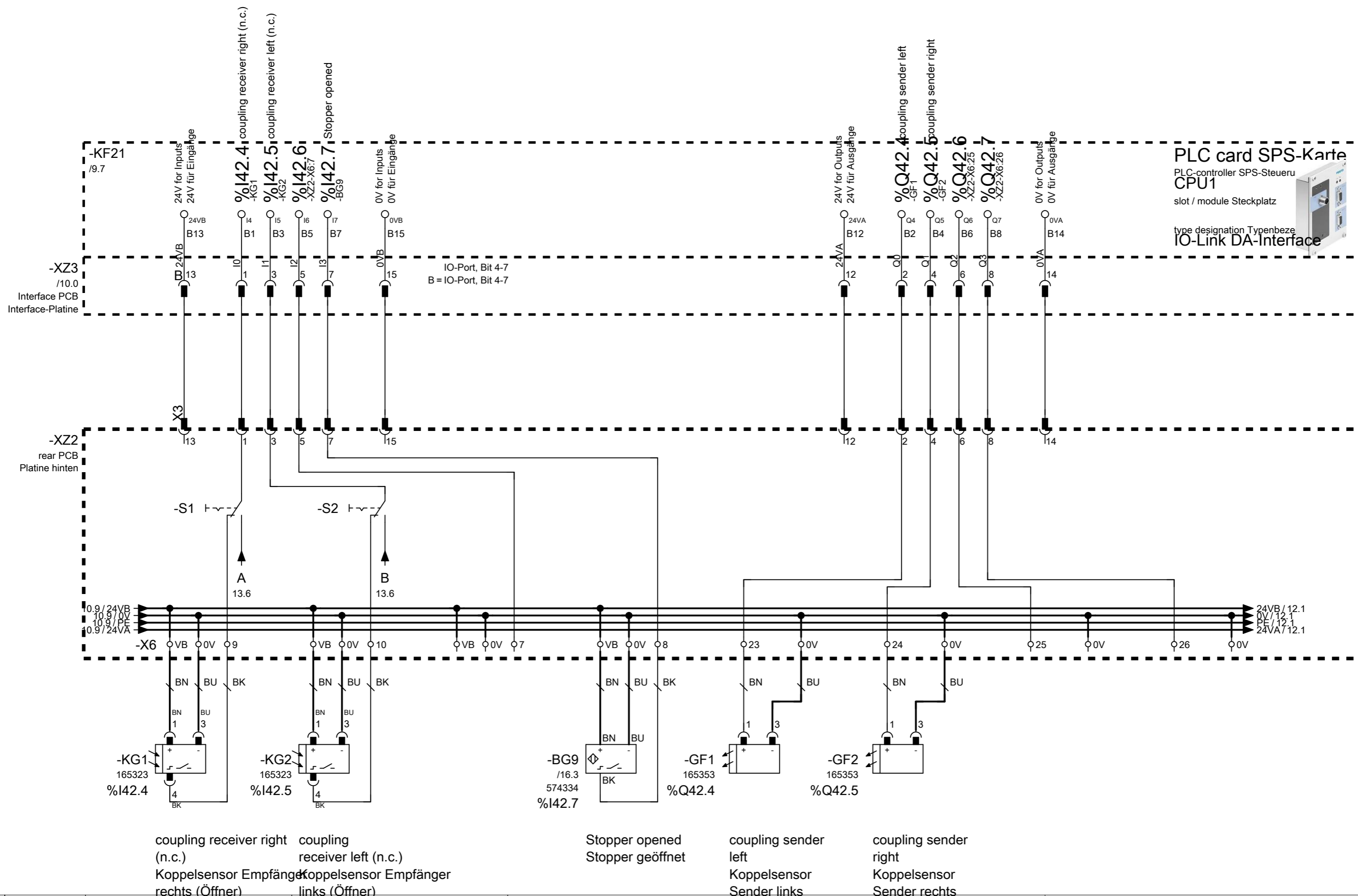


PCB - IO-Link A  
 Platine - IO-Link A

S-Nr.	
PSP / DPJ	VN

= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 10
+ G1	Conveyor	of 16

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.



<<40

12>>

Date	2020-12-03
Ed. by.	espe
Creat.	espe
Drw.Nr.	

Festo Didactic SE  
 Rechbergstraße 3  
 D-73770 Denkendorf

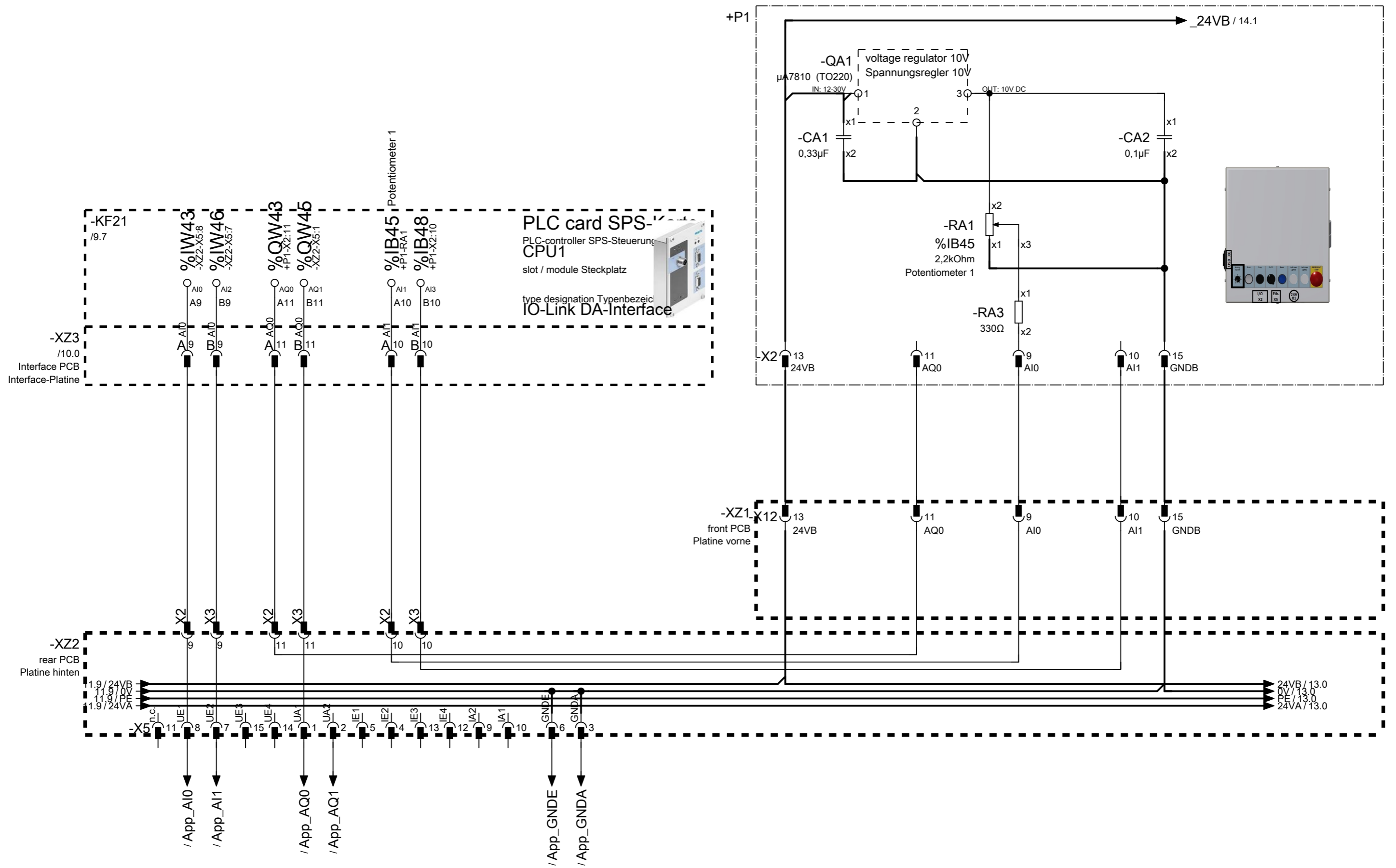


PCB - IO-Link B  
 Platine - IO-Link B

S-Nr.	
PSP / DPJ	VN

= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 11
+ G1	Conveyor	of 16

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.



Date	2020-12-03
Ed. by.	espe
Creat.	espe
Drw.Nr.	

Festo Didactic SE  
 Reichbergstraße 3  
 D-73770 Denkendorf

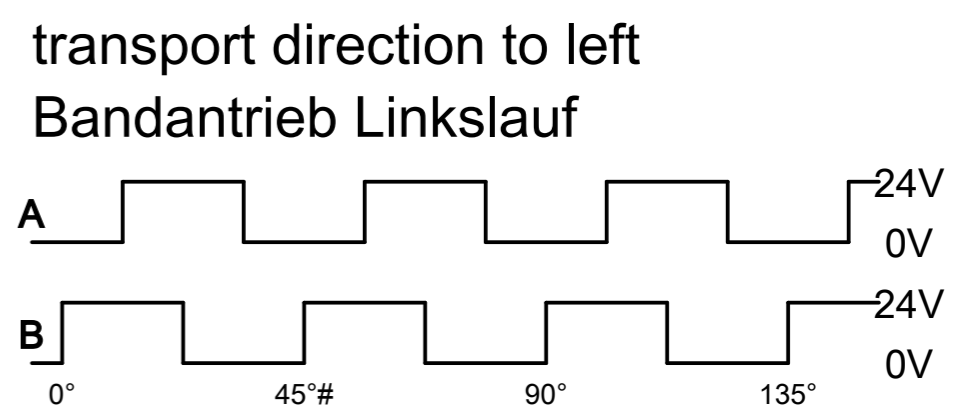
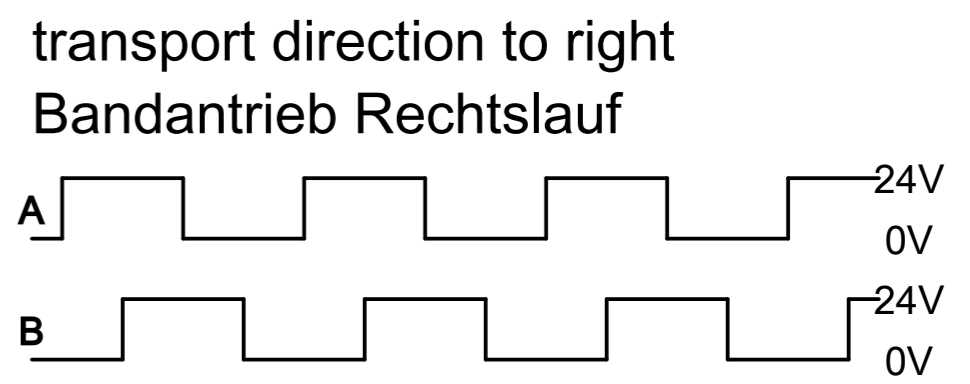
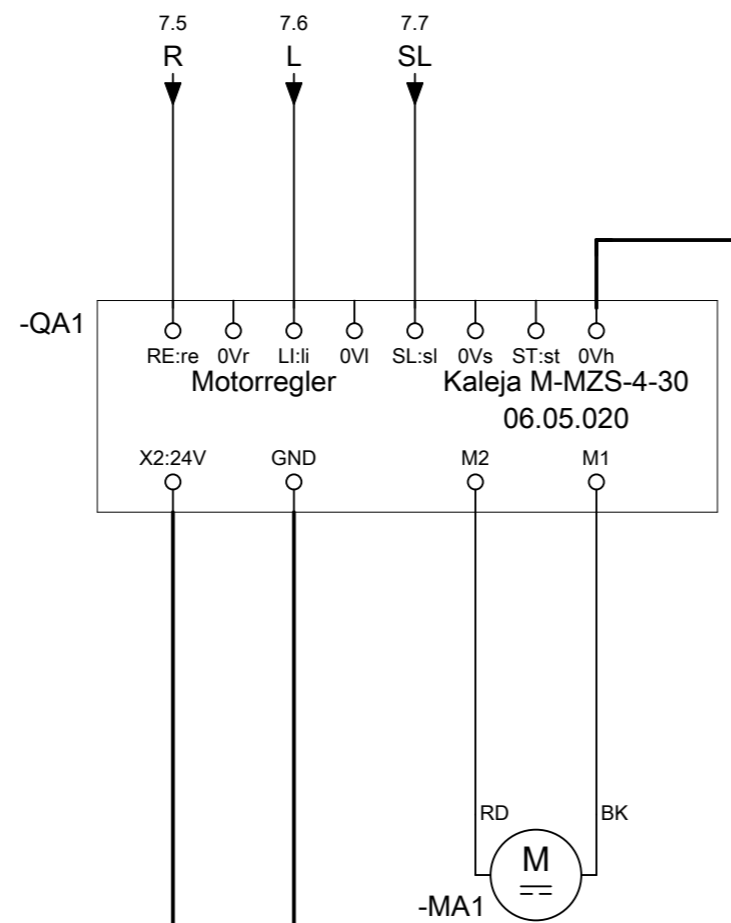


PCB - IO-Link analog  
 Platine - IO-Link Analog

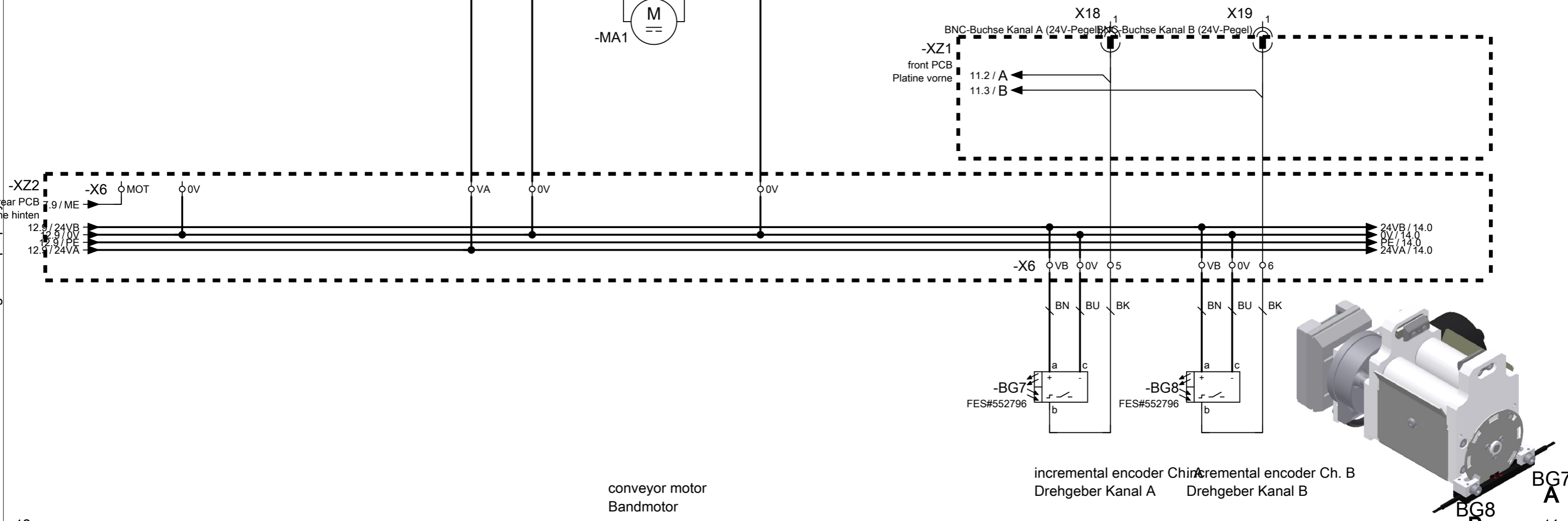
S-Nr.	
PSP / DPJ	VN

= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 12
+ G1	Conveyor	of 16

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.



1 rotation = 8 pulses/channel =  $30\text{mm} * \pi = 94,2 \text{ mm}$   
 1 Umdrehung = 8 Impulse je Kanal =  $30\text{mm} * \pi = 94,2 \text{ mm}$



conveyor motor  
Bandmotor

incremental encoder Ch. A  
Drehgeber Kanal A

incremental encoder Ch. B  
Drehgeber Kanal B

BG7  
A

BG8  
B

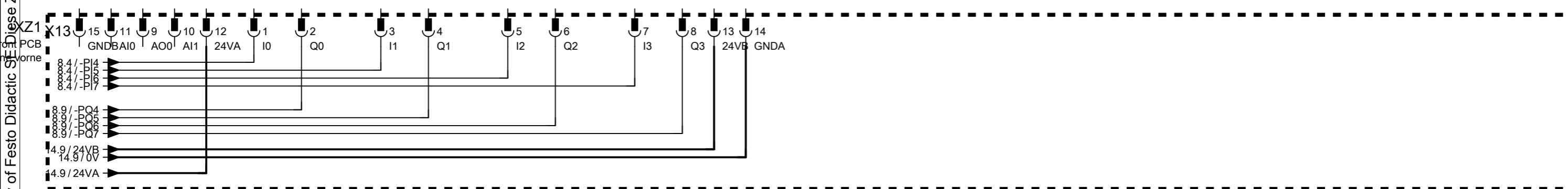
<<42

Date	2022-05-31	Festo Didactic SE Rechbergstraße 3 D-73770 Denkendorf	<b>FESTO</b>	PCB - motor + encoder Platine - Motor + Inkrementalgeber	S-Nr.			
Ed. by.	espe					PSP / DPJ	VN	= S7M0T7 + G1
Drw.Nr.		N:	F:	EPL0VZFG7M	\\vesto.net\DFS01\INTData\EPLAN\DATA_xx\DE\Projects\Didactic\Products\24 CP Lab V6 2022-05-31.elk			Page 13 of 16

14 >>

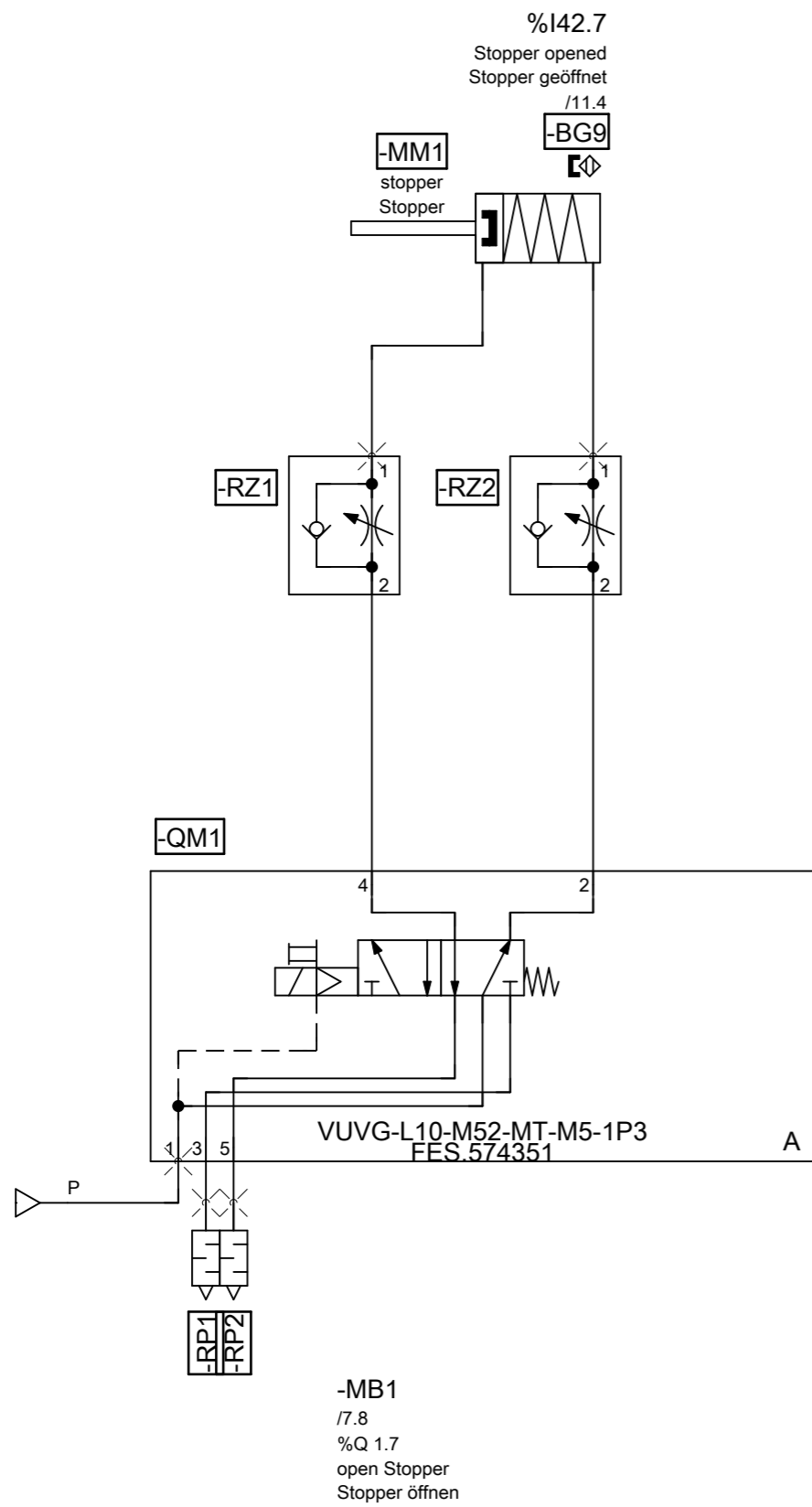


This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE



Date	2020-12-03	Festo Didactic SE Rechbergstraße 3 D-73770 Denkendorf	<b>FESTO</b>	controlpanel options Bedienfeld Optionen	S-Nr.				
Ed. by.	espe				PSP / DPJ	VN	= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 15
Drw.Nr.	N:				F:	EPL0VZFG7M	\\vesto.net\DFS01\INTData\EPLAN\DATA_xx\DE\Projects\Didactic\Products\24 CP Lab V6 2022-05-31.elk	+ G1	Conveyor

This drawing is the property of Festo Didactic SE. Diese Zeichnung ist Eigentum der Festo Didactic SE.



%I42.7

Stopper opened  
Stopper geöffnet

/11.4

-BG9

-MM1

stopper  
Stopper

-RZ1

-RZ2

-QM1

VUVG-L10-M52-MT-M5-1P3  
FES.574351

A

-MB1

/7.8


%Q 1.7

open Stopper

Stopper öffnen

<45

=S7M0T7X2/1 >>

Date	2020-12-03	Festo Didactic SE Rechbergstraße 3 D-73770 Denkendorf		pneumatic schematic Pneumatikplan	S-Nr.				
Ed. by.	espe				PSP / DPJ	VN	= S7M0T7	CP Lab S7-1512SP, HMI TP700 V6	Page 16
Drw.Nr.	N:				F:	EPL0VZFG7M	\\vesto.net\DFS01\INTData\EPLAN\DATA_xx\DE\Projects\Didactic\Products\24 CP Lab V6 2022-05-31.elk	+ G1	Conveyor