



Customer

Manufacturer

System name (long) : Test Bench

System name (short) :

Systemtype : Testanlage

:

Place of installation :

: 05 / 2018

Enclosure :

Job number : Test Bench-U1-05-2018

:

Power supply :

:

Created on 09.05.2018

Edit date 24.05.2018

by (short name) M.Glum

Number of pages 31

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			Date	22.05.2018	Test Bench		Title page / cover sheet	Drawing number Test Bench-U1-05-2018	=U1.AD	Page	1
			Ed.	M.Glum					<a href="#">Plant documentation</a>		
Modification	Date	Name							+	Page	1 of 31

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U1.AD Plant documentation		1	Title page / cover sheet		22.05.2018
		2	Table of contents		22.05.2018
		2.a	Table of contents		22.05.2018
		3	Safety instructions		21.05.2018
U1.2 Power supply	U1	1	Power supply		22.05.2018
	U1	2	cabinet ventilation		21.05.2018
	U1	3	24VDC Power supply 48VDC Power supply		22.05.2018
	U1	4	24VDC Powersupply (Distribution)		21.05.2018
	U1	5	Control On-off		20.05.2018
	U1	6	Notice of mailfunction		20.05.2018
U1.3 Emergency off circuit	U1	1	Emergency stop circuit		21.05.2018
U1.4 Ethernet Network	U1	1	PLC Overview		20.05.2018
	U1	2	PLC Power supply		21.05.2018
	U1	3	Overview Gantner Q.bloxx A106		22.05.2018
U1.5 Motor Control	U1	1	Control servo drive Beckhoff with Motor Option 1 (HIWIN)		22.05.2018
	U1	2	Control servo drive Beckhoff with Motor Option 2 (LinMot)		20.05.2018
	U1	3	Control servo drive Beckhoff with Motor Option 3 (Tecnotion)		22.05.2018
	U1	4	Control servo drive Jenny Science with Motor Option 4 (Jenny Science)		21.05.2018
	U1	5	Motor Option 5 (H2W Technologies)		17.05.2018
	U1	6	Motor Option 6 (SmarAct)		18.05.2018
U1.6 Encoder systems	U1	1	BSSI-Interfacecard Servo drive Encoder Option 1 (Renishaw RL36B) Encoder Option 2 (AMO LMKA)		22.05.2018
	U1	2	BSSI-Interfacecard Servo drive Encoder Option 3 (Numerik Jena LAK14)		21.05.2018
U1.7 Length measuring system	U1	1	Length measuring system Option 1 (Turck LI700P)		22.05.2018
	U1	2	Length measuring system Option 2 (Attocube systems IDS 3010)		22.05.2018

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2.a

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Higher-level function	Mounting location	Page	Page description	supplementary page field	Date
U1.7 Length measuring system	U1	3	Length measuring system Option 3 (LVDTwith TWK Elektronik)		22.05.2018
	U1	4	Length measuring system Option 4 (LVDT with Gantner Q.bloxx))		22.05.2018
U1.REP Reports	ART	1	Summarized parts list		22.05.2018
	ART	1.a	Summarized parts list		22.05.2018
	ART	1.b	Summarized parts list		22.05.2018

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			Date	22.05.2018	Test Bench		Table of contents	Drawing number Test Bench-U1-05-2018	=U1.AD	Page	2.a
			Ed.	M.Glum					<a href="#">Plant documentation</a>		
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# SAFETY REGULATIONS



## GENERAL SAFETY REGULATIONS



**DANGER!**

During plant operation certain items are under dangerous voltage!  
Non-observance of safety instructions can result in death, serious injuries or material damage.

Only specialist personnel may carry out transport, installation and commissioning work.

The applicable valid standards as well as the national and / or company-specific accident prevention regulations are to be observed.

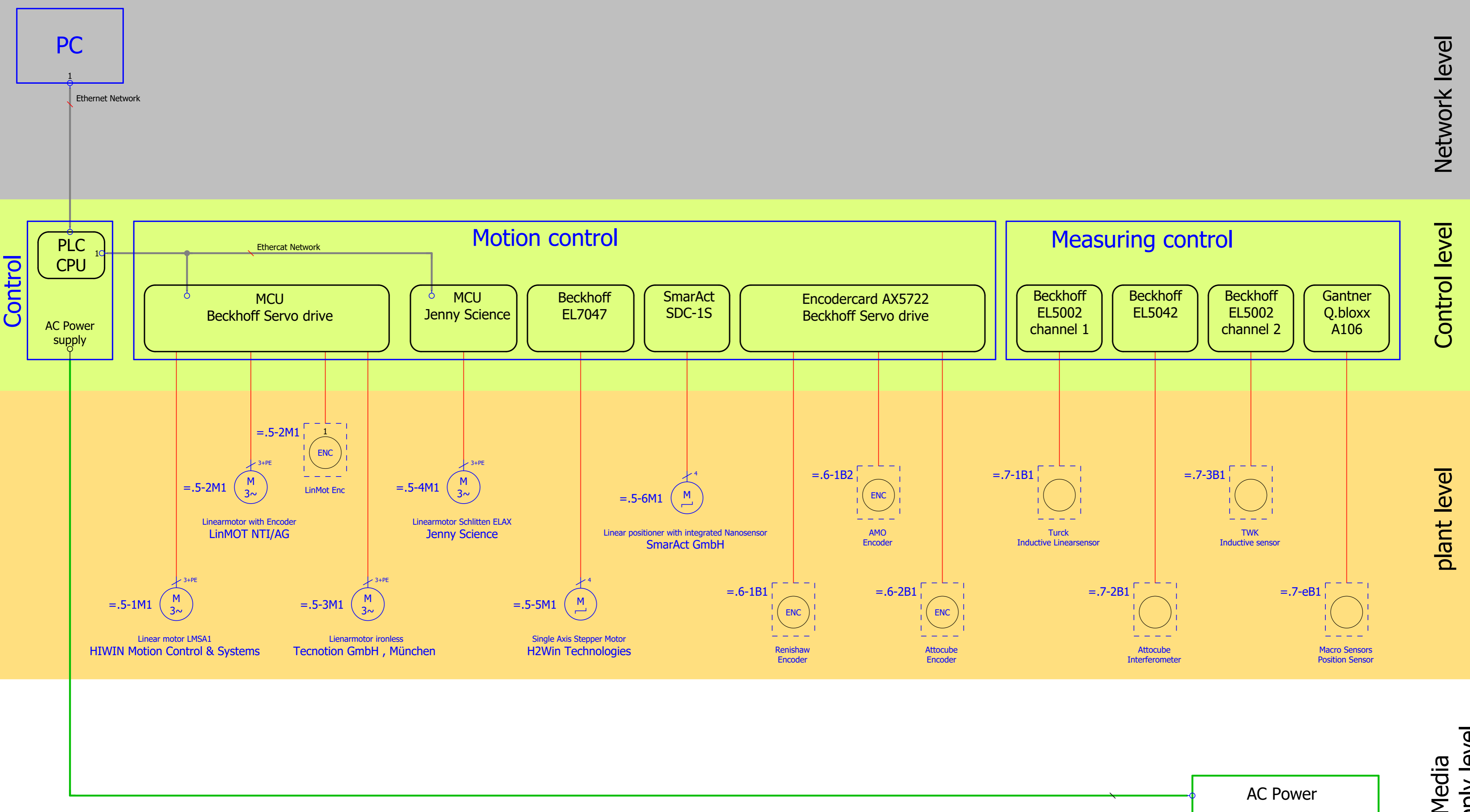
### The following safety instructions are to be observed:

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2.a

=.1+U1/1

			Date	21.05.2018	Test Bench		Safety instructions	Drawing number Test Bench-U1-05-2018	=U1.AD	Page	3
			Ed.	M.Glum					<a href="#">Plant documentation</a>		
Modification	Date	Name							+		Page 4 of 31



Network level

Control level

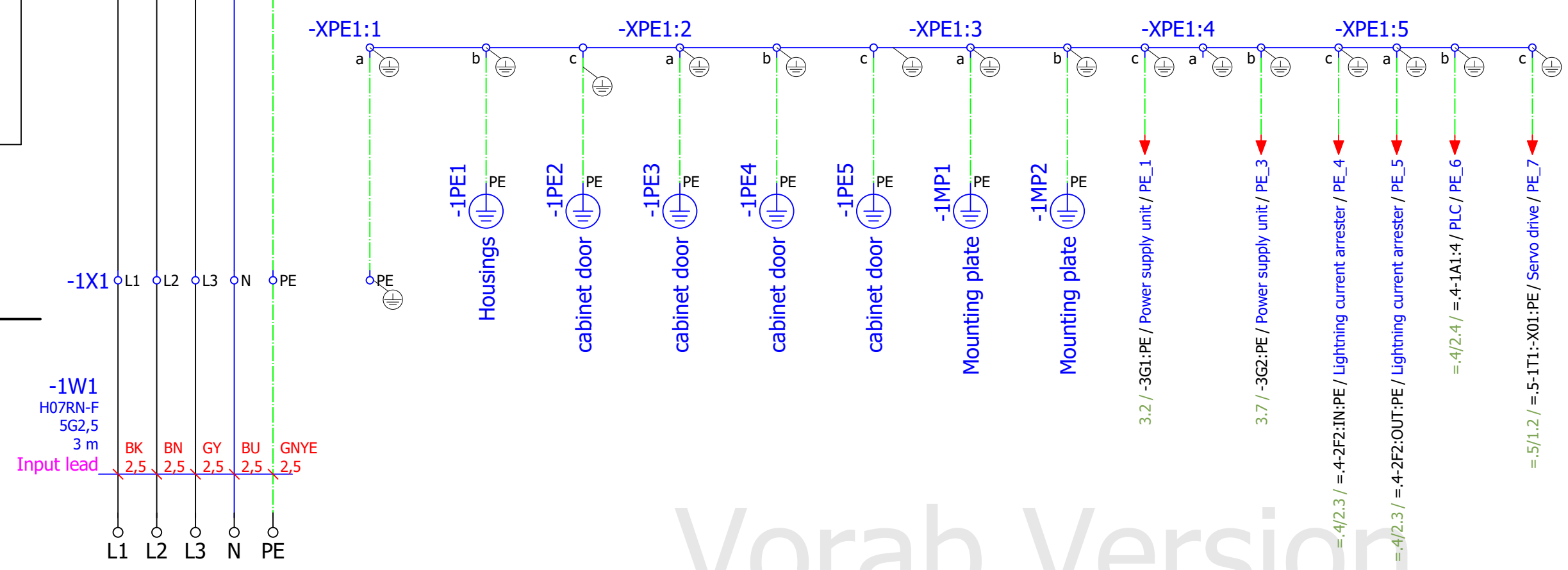
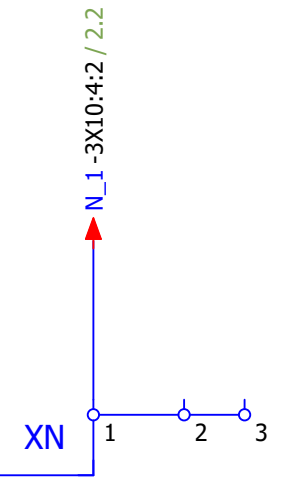
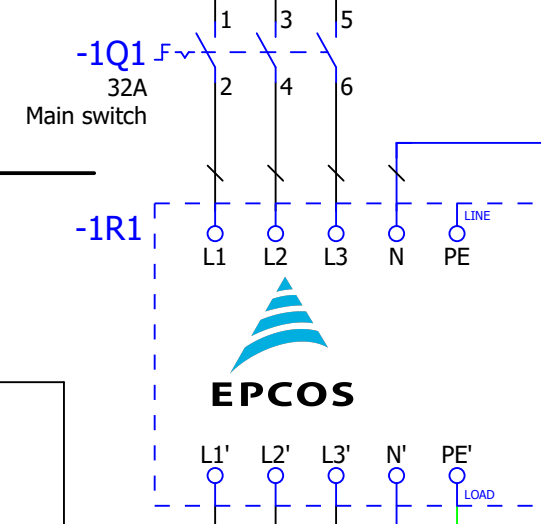
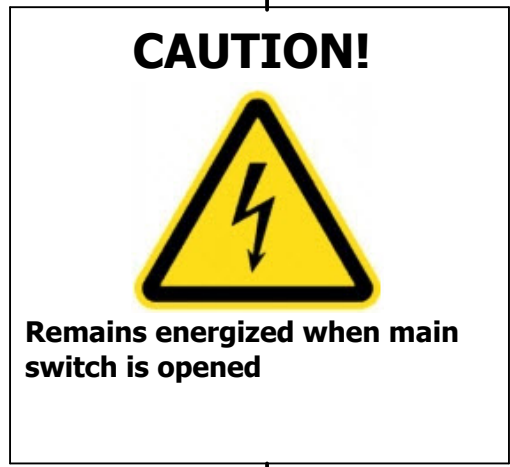
plant level

Media supply level

Plant designation <b>Test Bench</b>					Job number	
					Customer number	
Modification	Date	Name		Date	Name	Customer
				Ed.	20.03.2017	
				Appr.	24.05.2018	glum
					P&ID	
Original					Higher-level function	
Replacement of					= U1.1	
Replaced by					City	
Commission					+ U1	
Previous page =.AD+/3					Page 1	
Total no. of pages 31					Page group 1	
					Next page =.2/1	

3/PE+N,50Hz,400V/230V

-L1.1 / -2F1:1 / 2.0  
 -L2.1 / -3Q1:L2 / 3.1  
 -L3.1 / -3Q1:L3 / 3.1

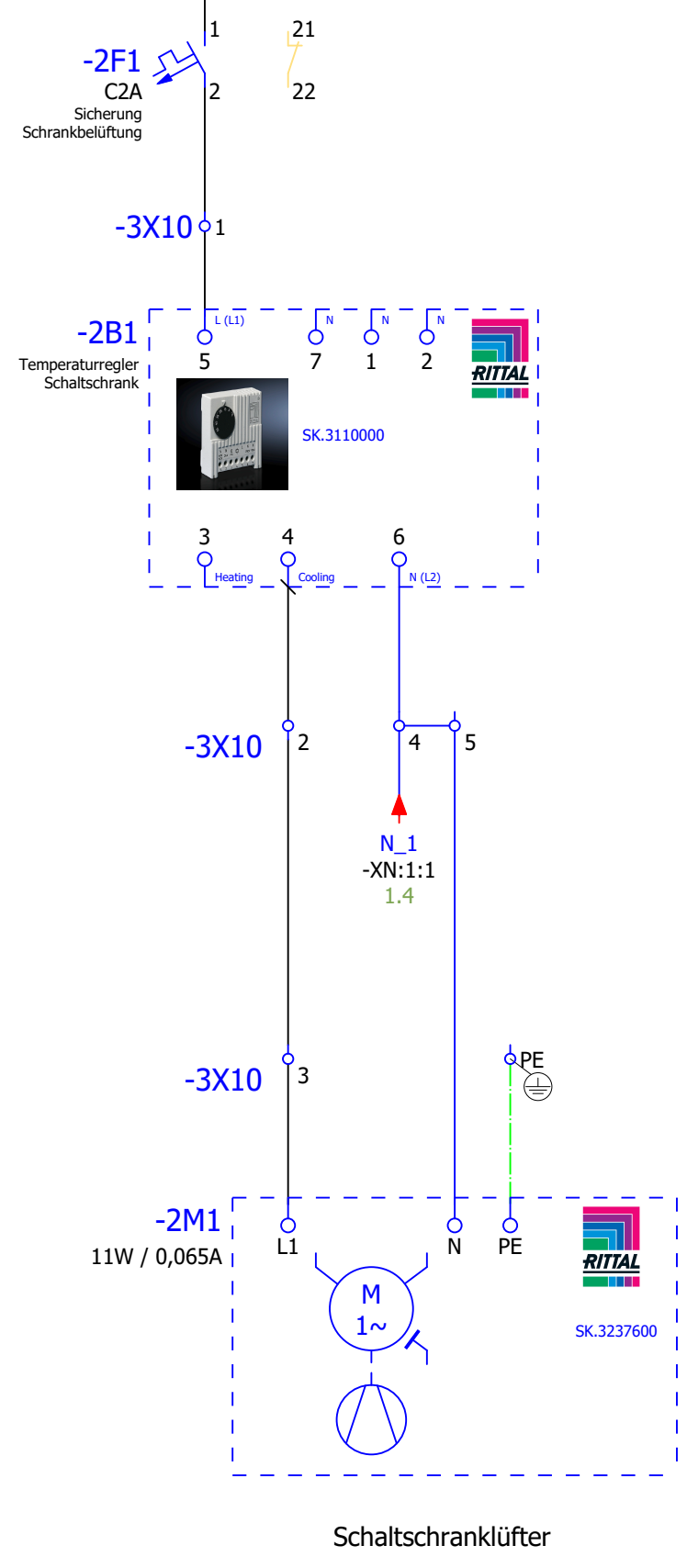


-1W1  
 H07RN-F  
 5G2,5  
 3 m  
 Input lead

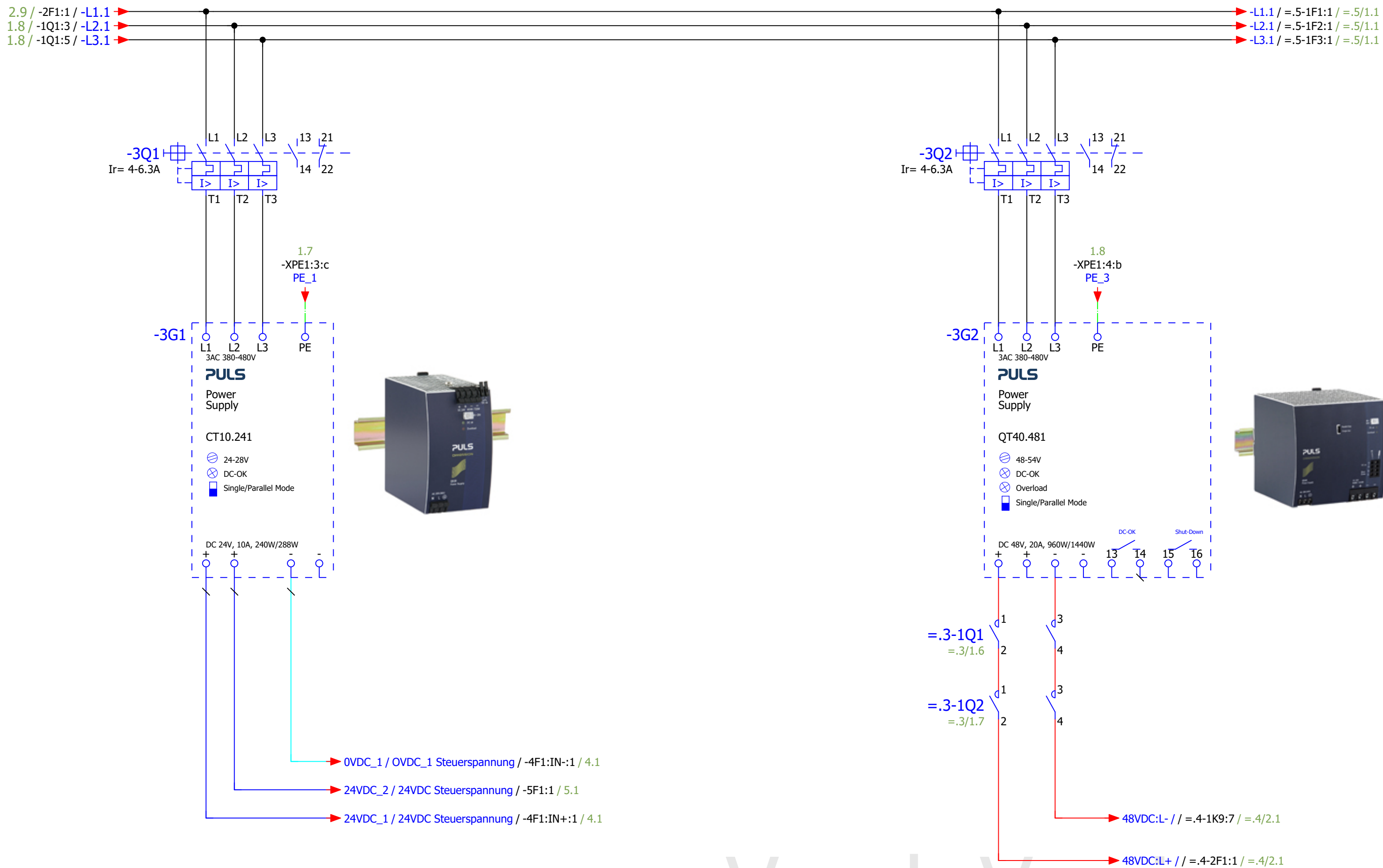
Vorab Version

Date		22.05.2018		Test Bench		Power supply		Drawing number		=U1.2		Page		1	
Ed.		M.Glum						Test Bench-U1-05-2018		+U1					
Modification		Date		Name						Test Bench				Page 6 of 31	



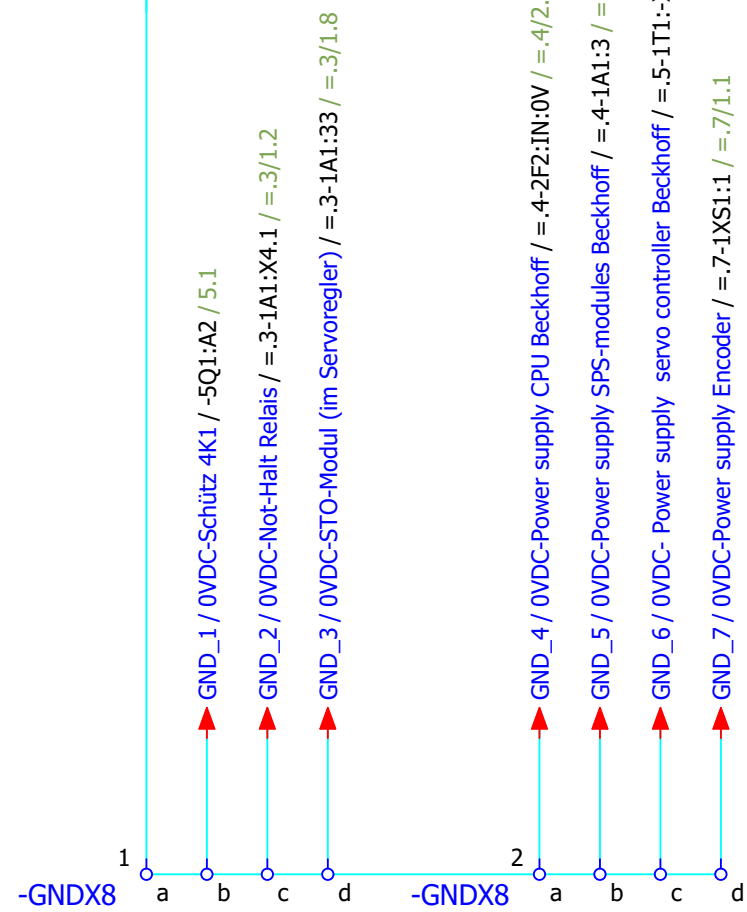
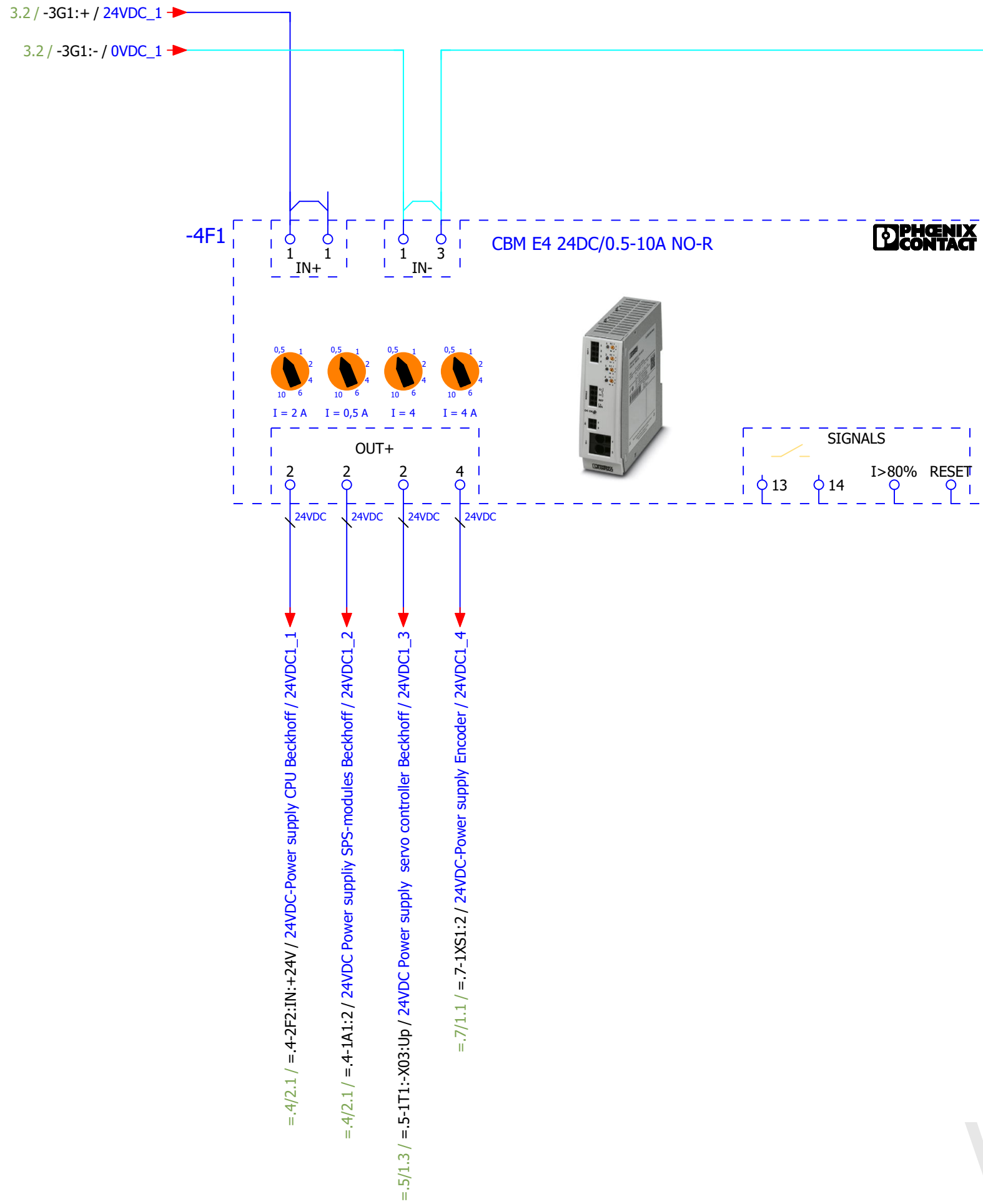


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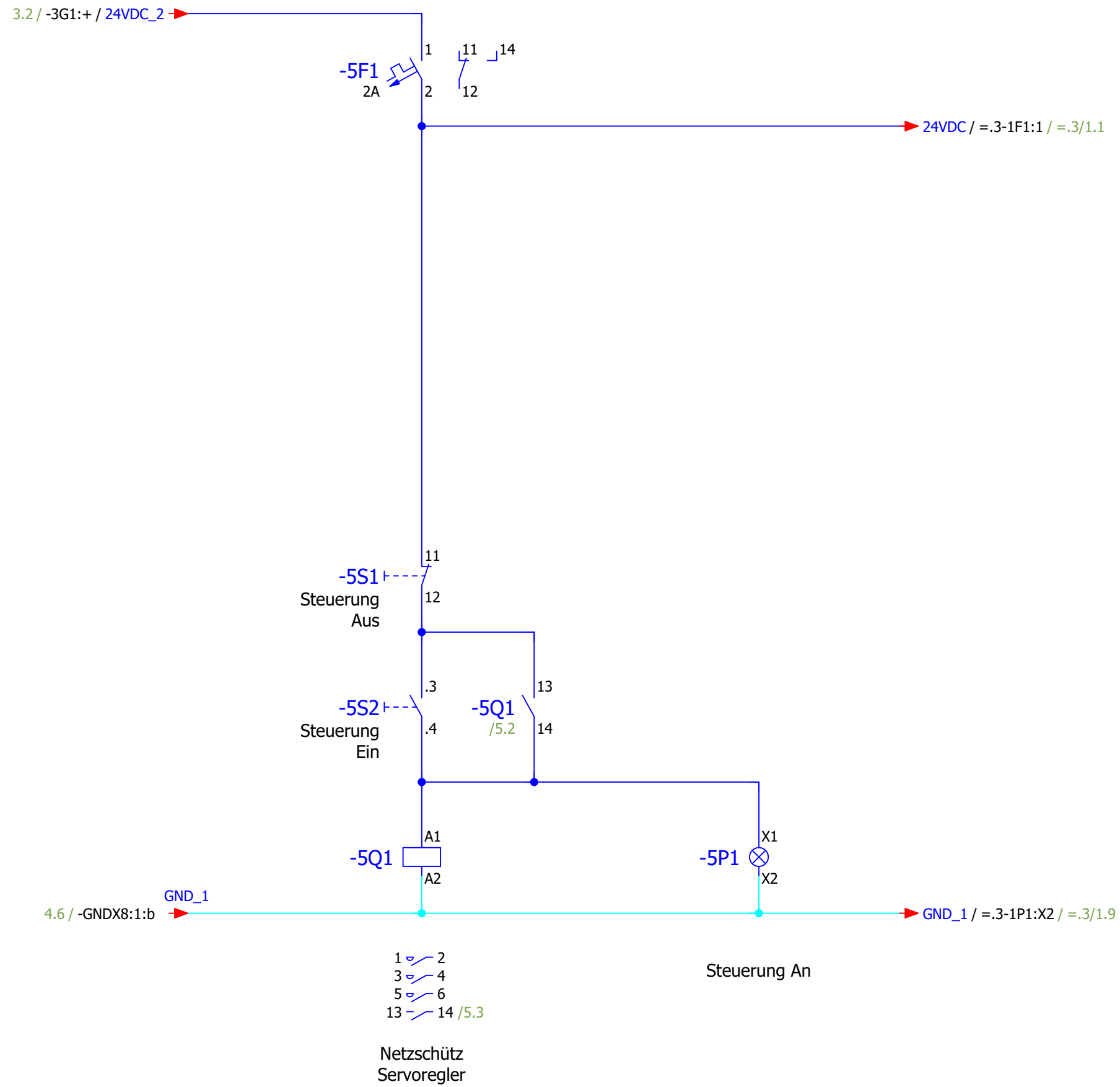


Vorab Version





Vorab Version



Vorab Version

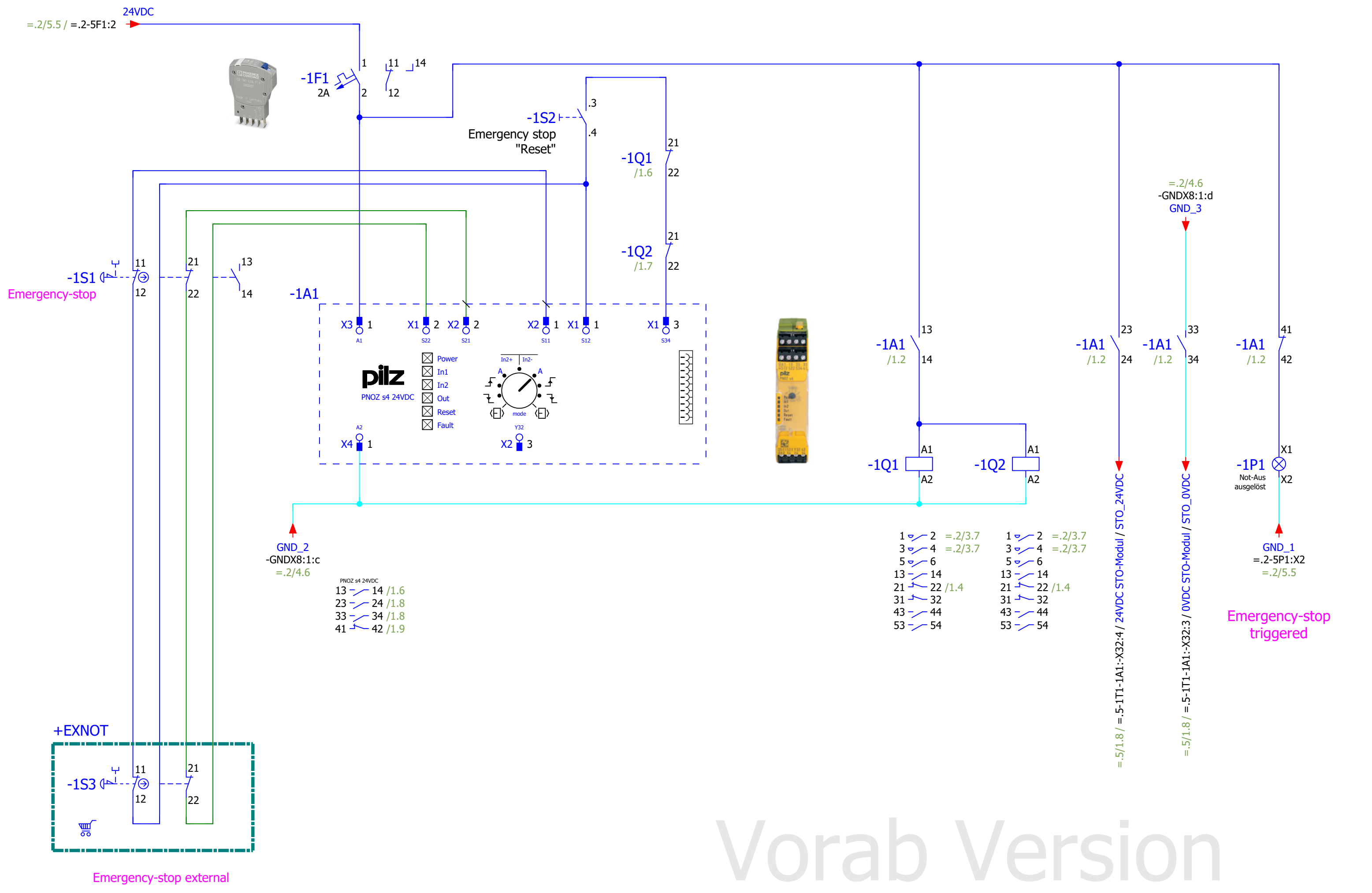
			Date	20.05.2018	Test Bench		Control On-off	Drawing number	=U1.2	Page	5
			Ed.	M.Glum				Test Bench-U1-05-2018	+U1		
Modification	Date	Name						Test Bench		Page 10 of 31	

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=.3/1

			Date	20.05.2018	Test Bench		Notice of mailfunction	Drawing number Test Bench-U1-05-2018	=U1.2	Page	6
			Ed.	M.Glum					+U1		
Modification	Date	Name							Test Bench	Page 11 of 31	



Vorab Version

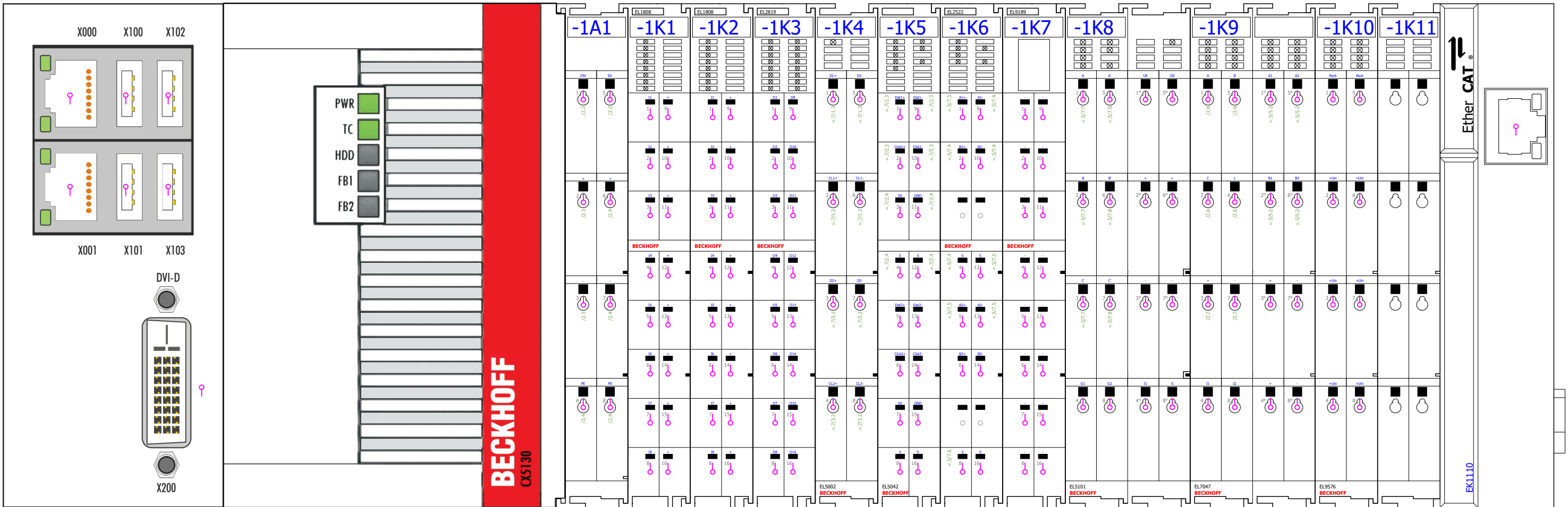
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Ed.		M.Glum				Test Bench-U1-05-2018		Emergency off circuit					
Modification		Date		Name				Test Bench				Page 12 of 31	



Emergency stop circuit

Test Bench-U1-05-2018

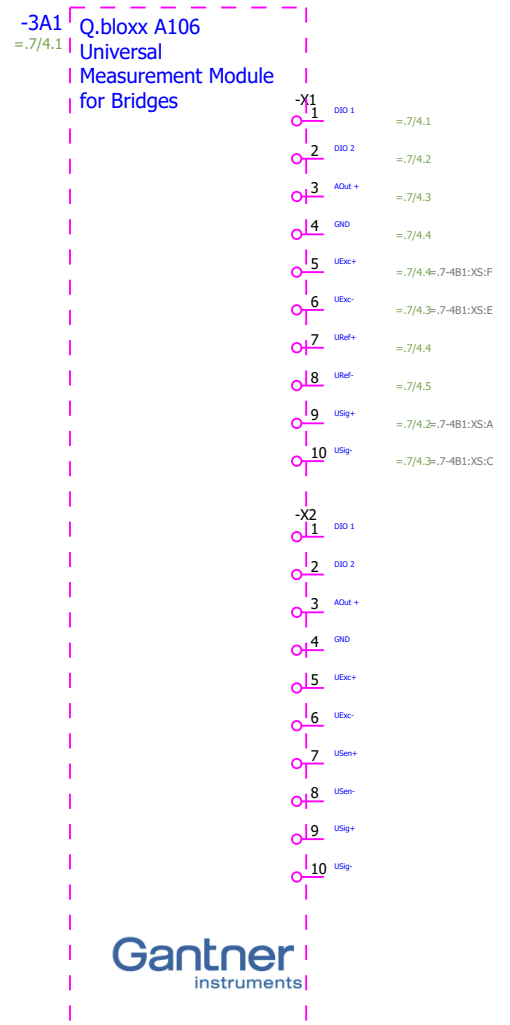
CX5130-0155



Vorab Version

Modification	Date	Name	Date	22.05.2018	Test Bench		PLC Overview	Drawing number Test Bench-U1-05-2018	=U1.4	Page	1
			M.Glum	Ethernet Network							
								+U1			
								Test Bench		Page 13 of 31	





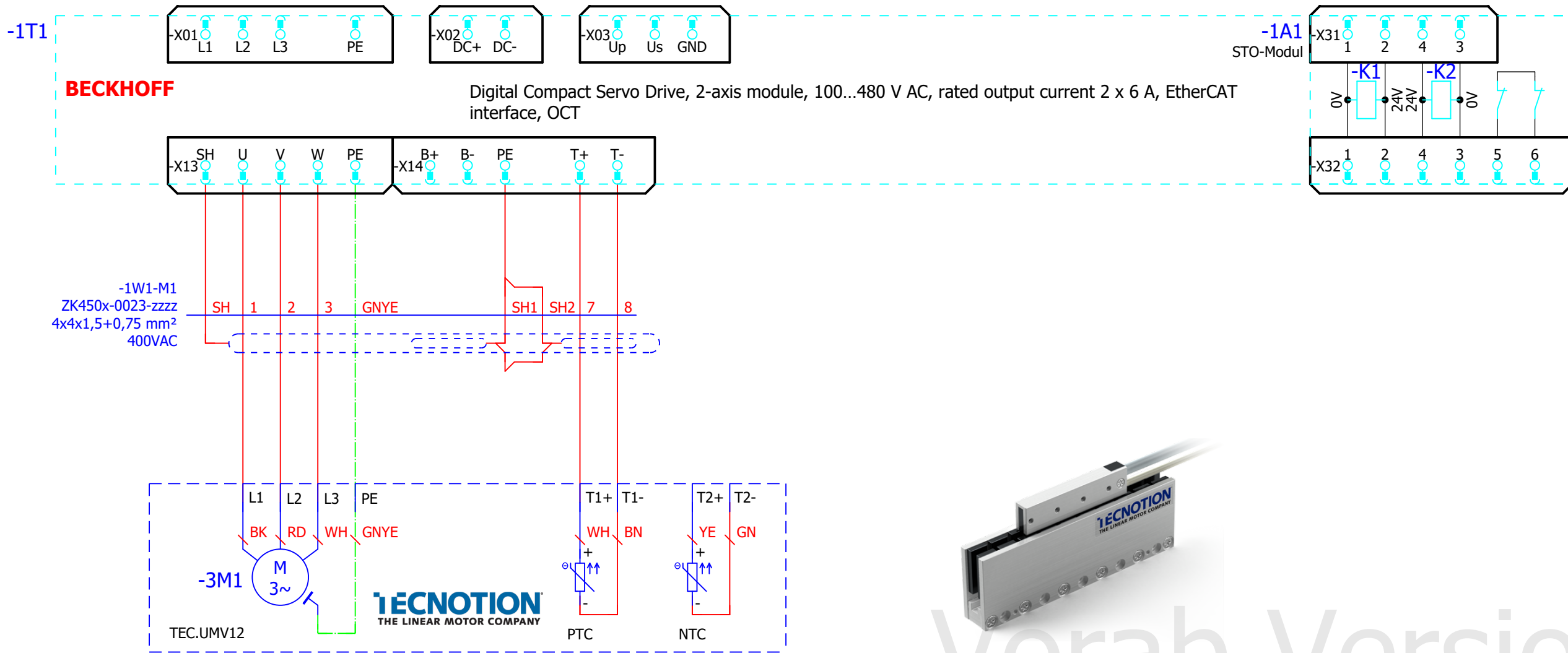
Vorab Version

			Date	22.05.2018	Test Bench		Overview Gantner Q.bloxx A106	Drawing number Test Bench-U1-05-2018	=U1.4	Page	3
			Ed.	M.Glum					Ethernet Network		
Modification	Date	Name							+U1	Page 15 of	31
									Test Bench		



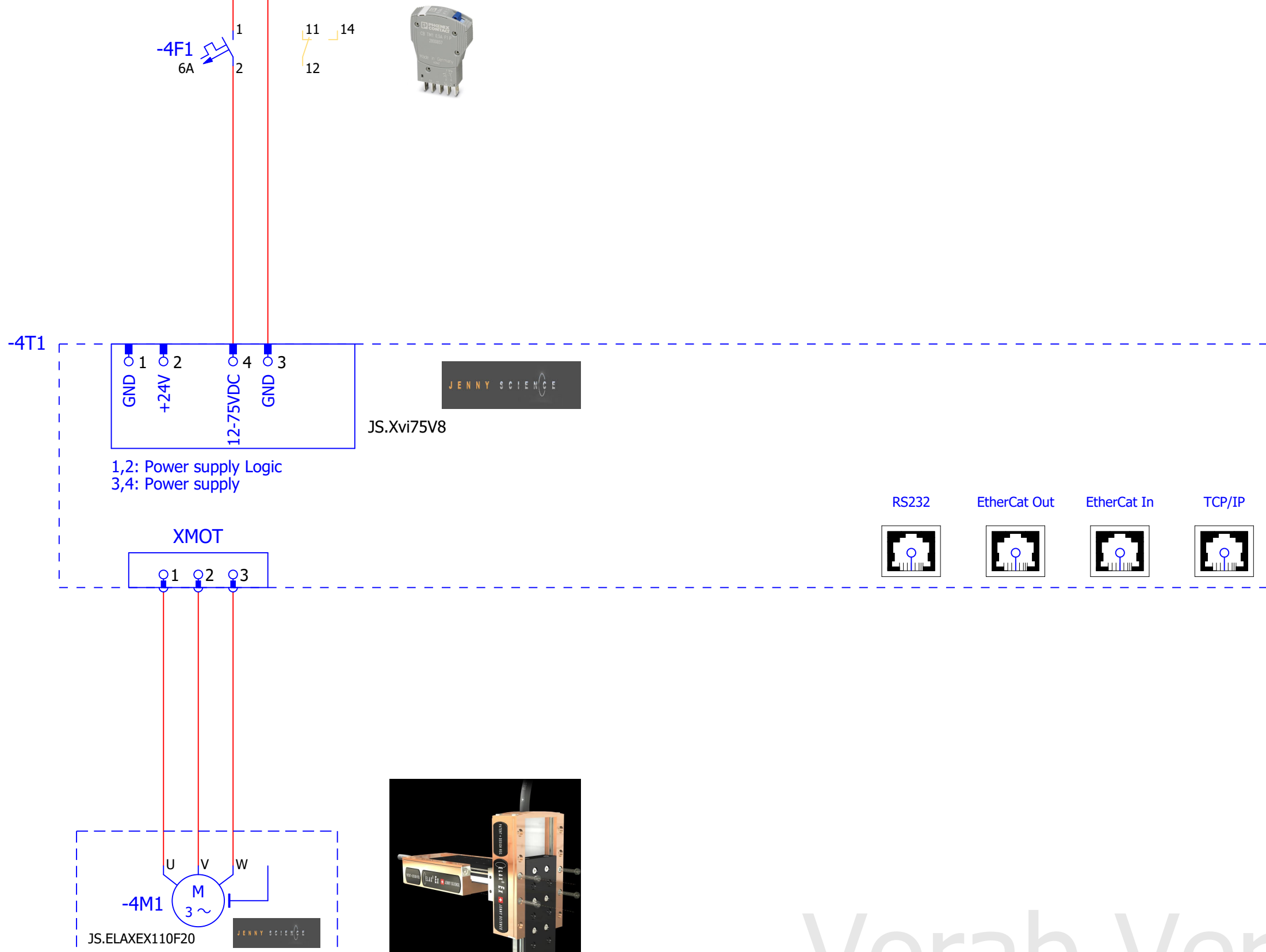




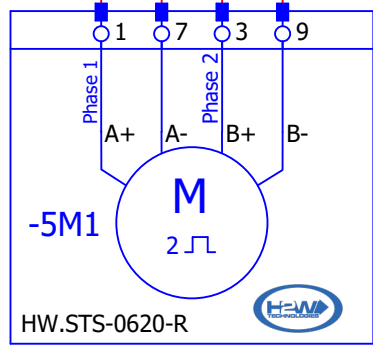
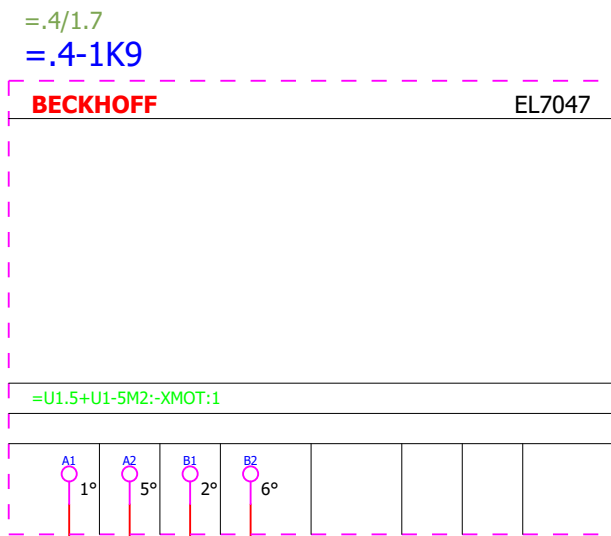


Vorab Version

=.4/2.8 / =.4-2F1:1 / 48VDC:L+  
 =.4/2.8 / =.4-1K9:7 / 48VDC:L-



Vorab Version

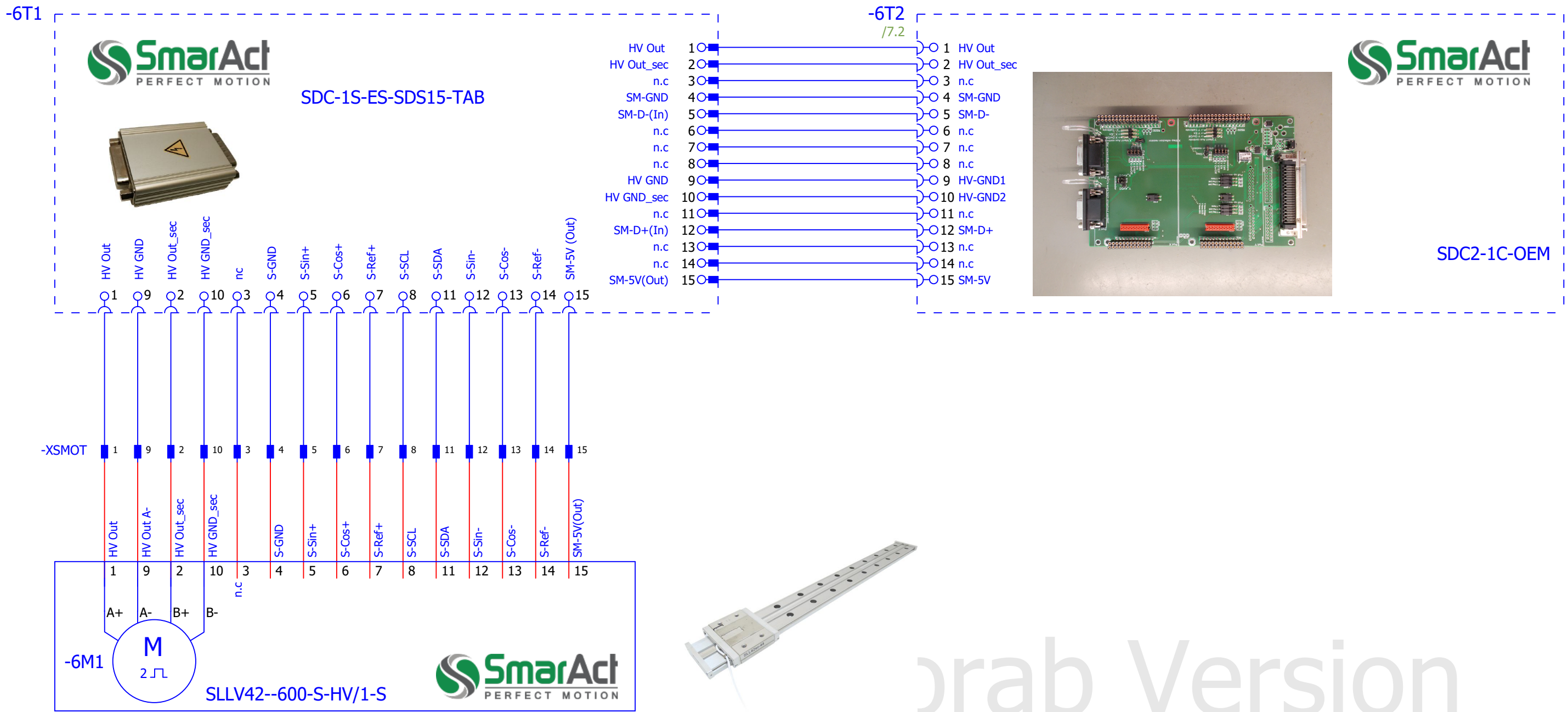


Integrated Encoder unknown



Vorab Version

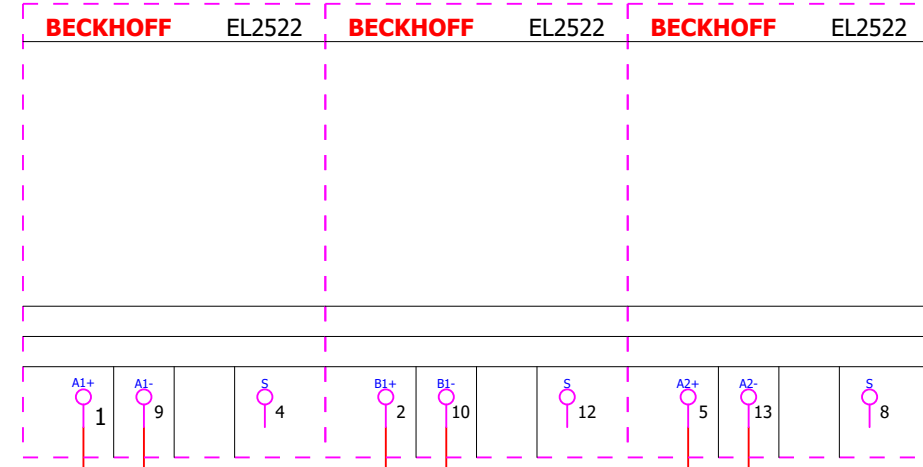
			Date	22.05.2018	Test Bench		Motor Option 5 (H2W Technologies)	Drawing number Test Bench-U1-05-2018	=U1.5	Page	5
			Ed.	M.Glum					Motor Control		
Modification	Date	Name							+U1		
									Test Bench		Page 20 of 31



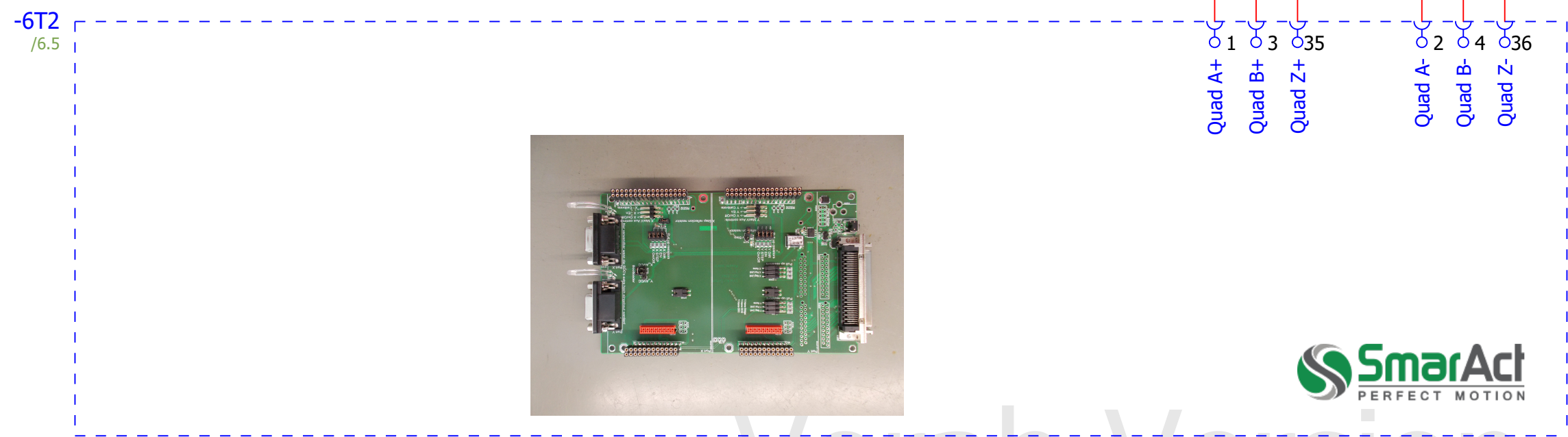
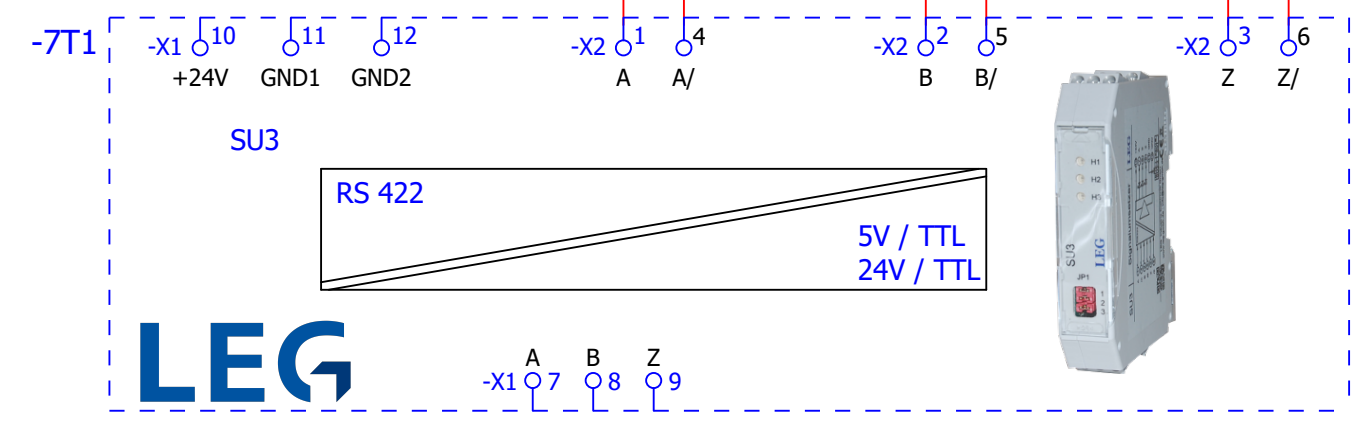
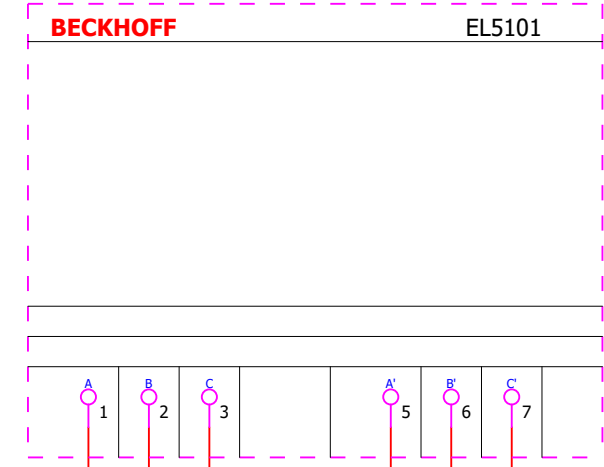
orab Version

Modification	Date	Name	Date	23.05.2018	Test Bench		Motor Option 6 (SmarAct)	Drawing number	Test Bench-U1-05-2018	=U1.5 +U1 Test Bench	Page	6
			Ed.	M.Glum								

=.4/1.5  
=.4-1K6

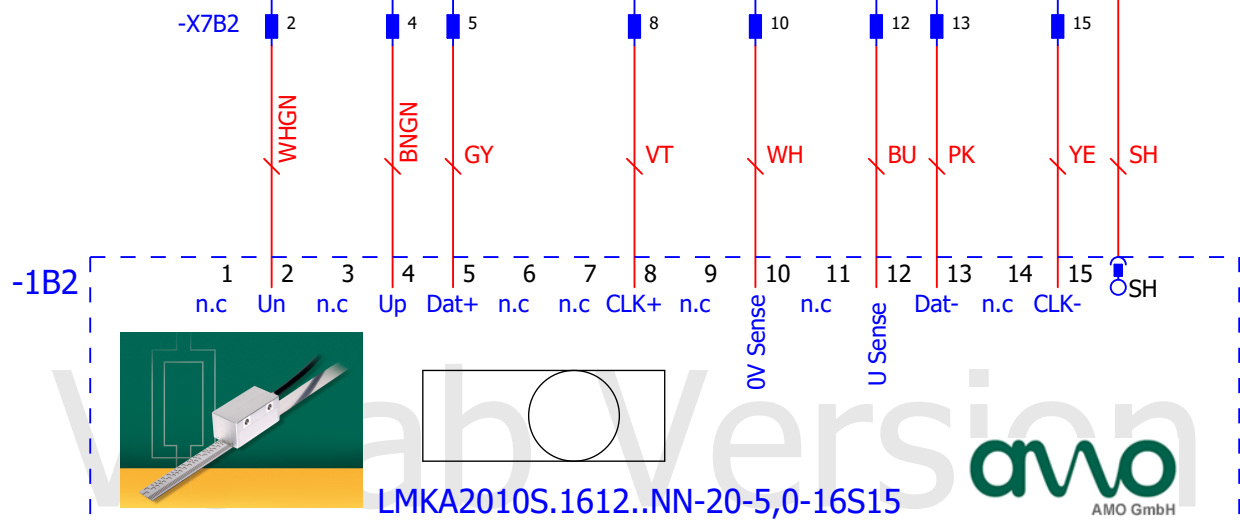
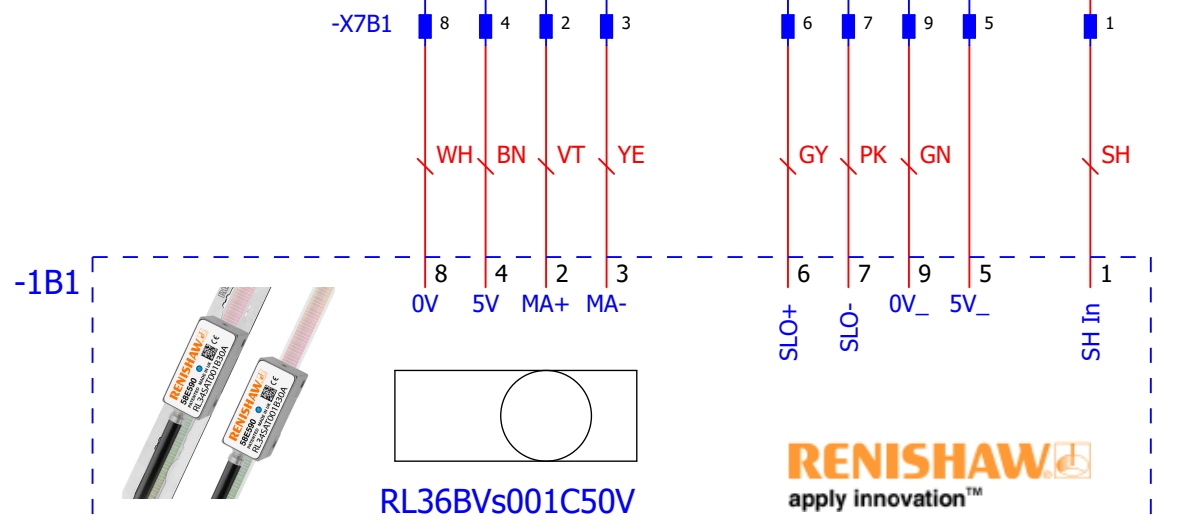
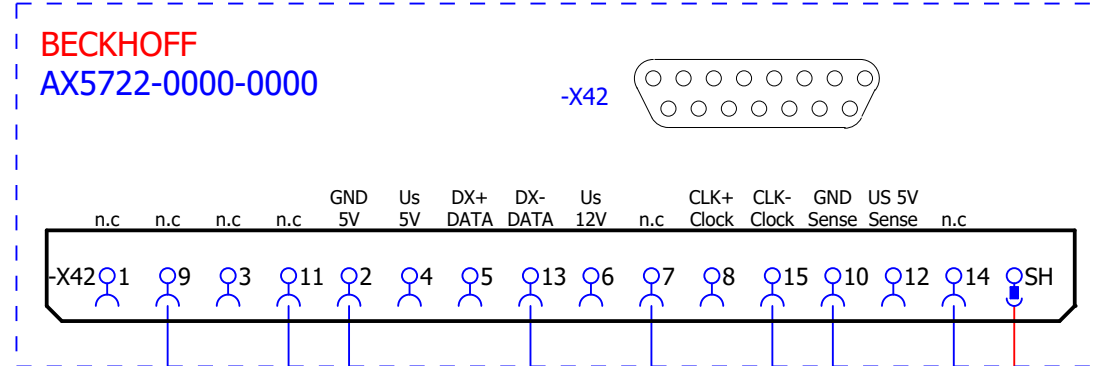
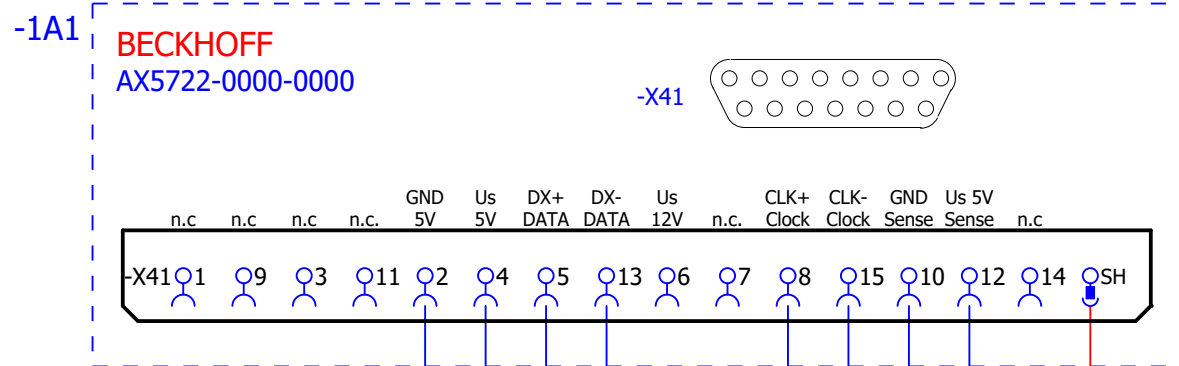
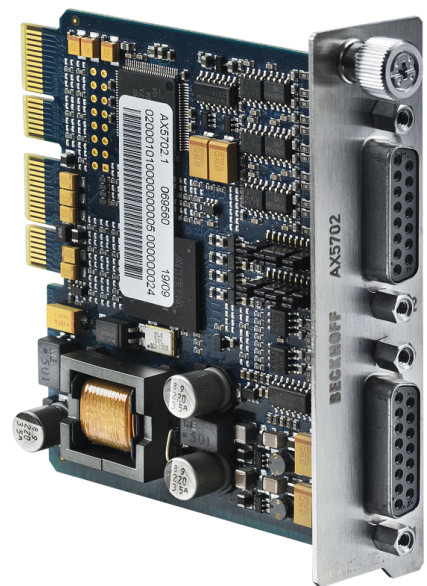


=.4/1.6  
=.4-1K8



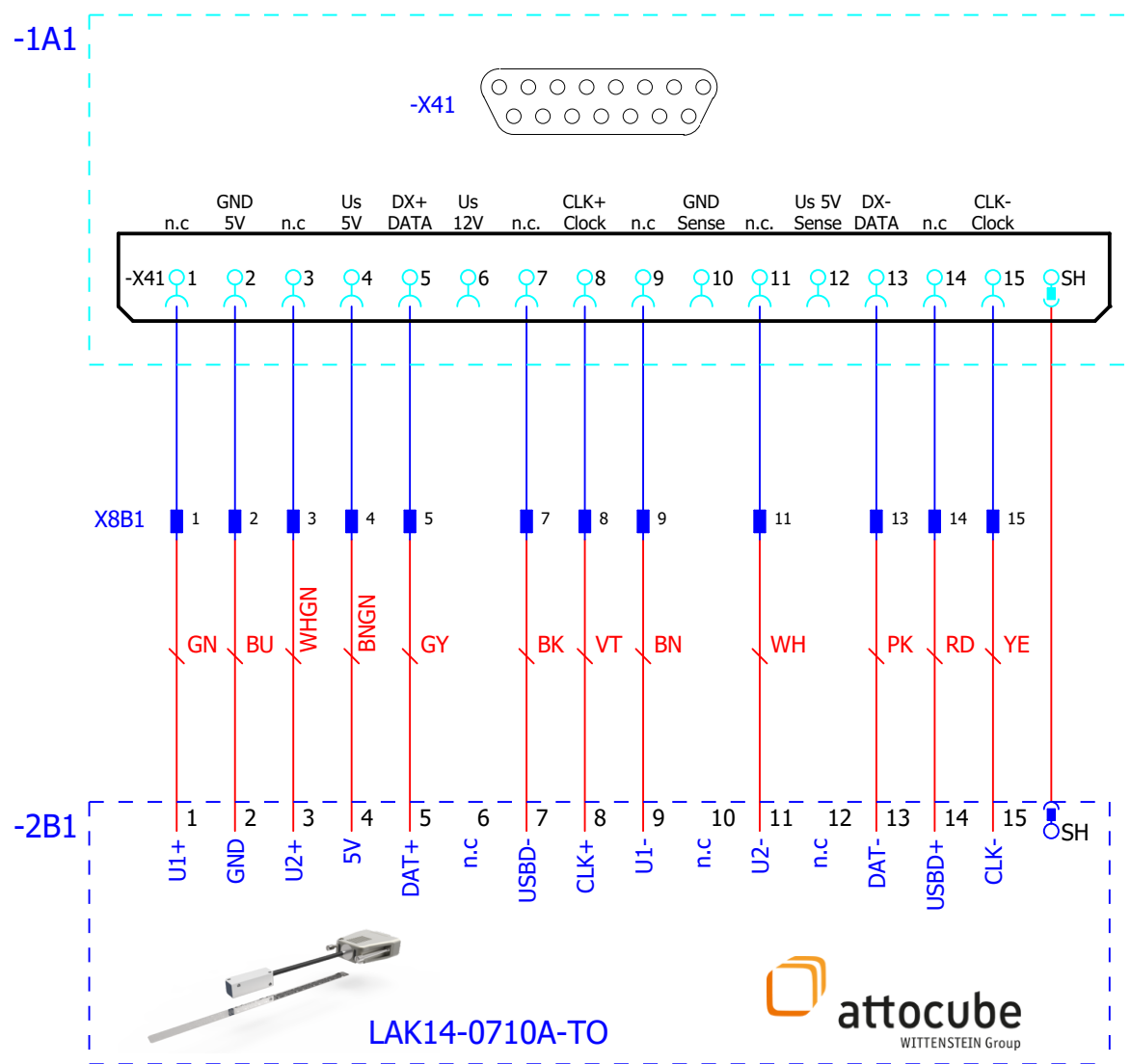
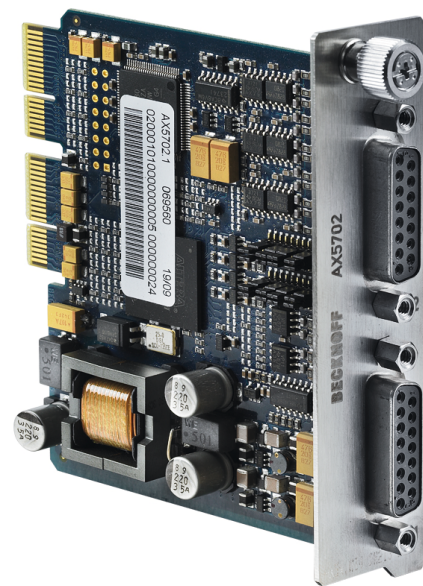
Vorab Version

Date		23.05.2018		Test Bench		Motor Option 6 (SmarAct) SDC2 Max controller with PLC Components	Drawing number Test Bench-U1-05-2018	=U1.5 +U1 Test Bench	Page	7
Ed.		M.Glum							Page	22 of 31
Modification	Date	Name								



=.5/7

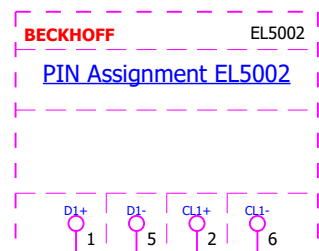
Modification	Date	Name	Date	23.05.2018	Test Bench		BSSI-Interfacecard Servo drive Encoder Option 1 (Renishaw RL36B) Encoder Option 2 (AMO LMKA)	Drawing number Test Bench-U1-05-2018	=U1.6	Page	1
			Ed.	M.Glum					Encoder systems		
									Test Bench	Page	23 of 31



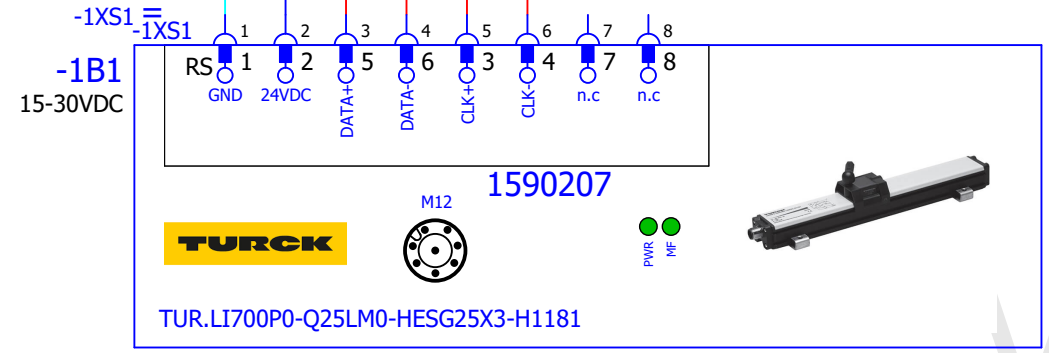
Vorab Version



=.4/1.5  
=.4-1K4



=.2/4.2 / =.2-4F1:OUT+:4 / 24VDC1\_4  
=.2/4.7 / -GNDX8:2:d / GND\_7



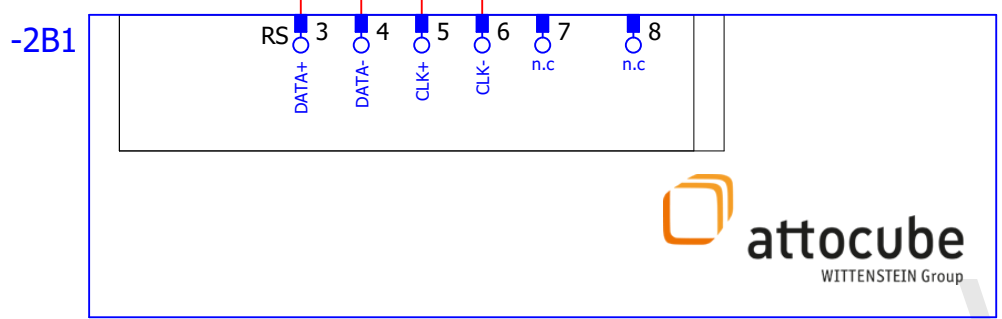
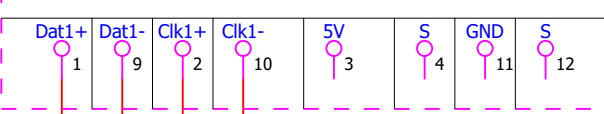
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=.6/2

Modification	Date	Name	Date	22.05.2018	Test Bench		Length measuring system Option 1 (Turck LI700P)	Drawing number Test Bench-U1-05-2018	=U1.7	Page	1
			Ed.	M.Glum					Length measuring system	+U1	Page 25 of 31

=.4/1.5  
 =.4-1K5  
**BECKHOFF** EL5042

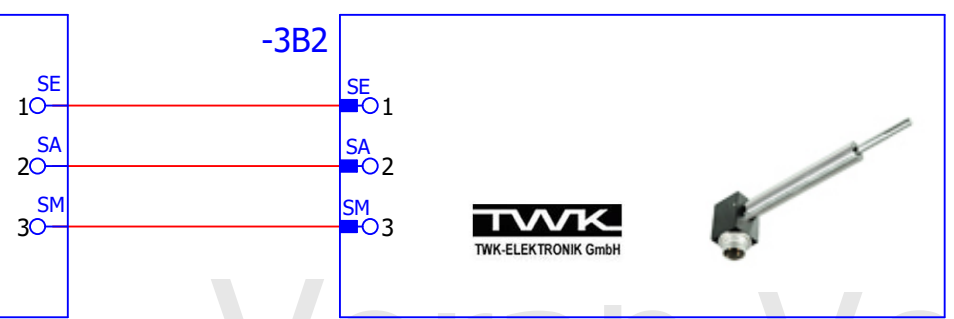
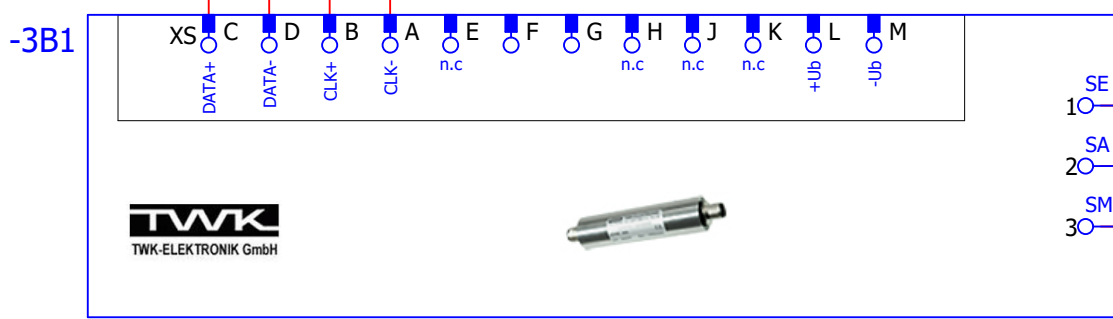
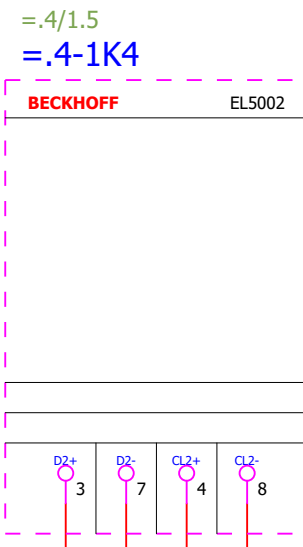
Pin assignment EL 5042



**attoSENSORICS**  
Ultra Precision Sensors  
**IDS3010**  
Displacement Sensing for Industry

Vorab version

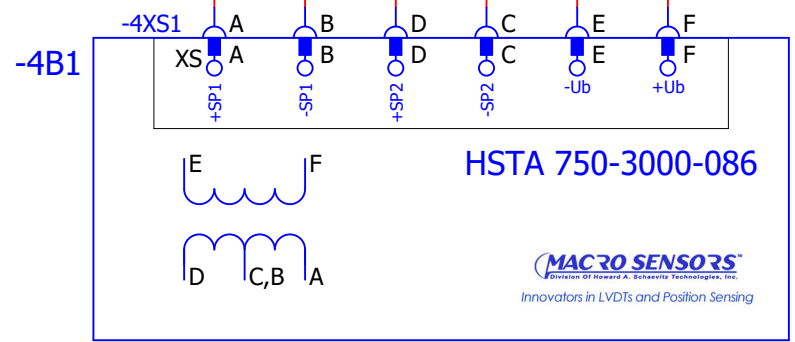
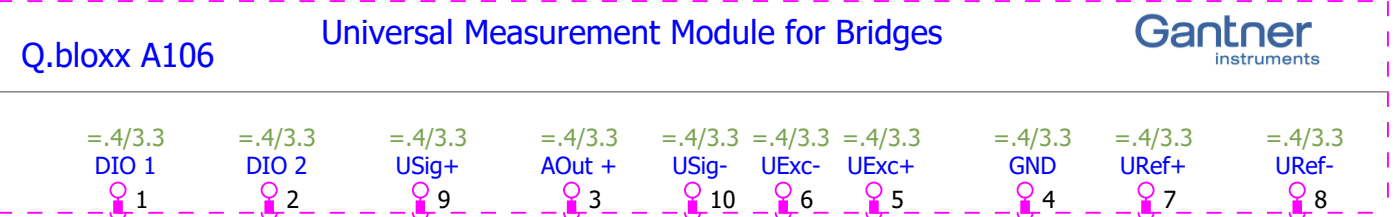
		Date	22.05.2018	Test Bench		Length measuring system Option 2 (Attocube systems IDS 3010)	Drawing number Test Bench-U1-05-2018	=U1.7	Page	2
		Ed.	M.Glum					<a href="#">Length measuring system</a>		
Modification	Date	Name						+U1		
								<a href="#">Test Bench</a>	Page	26 of 31



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Modification	Date	Name	Date	22.05.2018	Test Bench		Length measuring system Option 3 (LVDTwith TWK Elektronik)	Drawing number Test Bench-U1-05-2018	=U1.7	Page	3
			Ed.	M.Glum					Length measuring system	+U1	
									Test Bench	Page 27 of 31	

=.4-3A1  
=.4/3.2



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Modification	Date	Name	Date	22.05.2018	Test Bench		Length measuring system Option 4 (LVDT with Gantner Q.bloxx))	Drawing number Test Bench-U1-05-2018	=U1.7	Page	4
			Ed.	M.Glum					Length measuring system	+U1	
									Test Bench	Page	28 of 31

# Summarized parts list

Supplier	Order number	Designation	Type number	Quantity
<b>AMO GmbH</b>				
	LMKA2010S.1612..NN-20-5,0-16615	Positioning head for exposed linear encoders	LMKA 2010 Serie	1
<b>Beckhoff Automation GmbH</b>				
	CX5130-0155	CPU-Modul CX5130, TwinCAT-3-Runtime (XAR)	CX5130-0155	1
	EL1808	8-channel digital input terminal 24 V DC, filter 3.0 ms, 2-wire system	EL1808	2
	EL2819	16-channel digital output terminal 24 V DC, 0.5 A, 1-wire system, with diagnostics	EL2819	1
	EL5002	2-channel SSI encoder interface	EL5002	1
	EL5042	2-channel BiSS-C interface	EL5042	1
	EL2522	Incremental encoder simulation terminal (pulse train)	EL2522	22
	EL9189	Potential distribution terminal, 16 x 0 V DC	EL9189	1
	EL5101	Incremental encoder interface with differential input, 16 bit	EL5101	2
	EL7047	Stepper motor terminal with incremental encoder, 50 V DC, 5 A, 2 phases, 2 digital inputs 24 V DC, 4 digital	EL7047	1
	EL9576	Brake chopper terminal	EL9576	1
	EK1110	EtherCAT extension	EK1110	1
	AX5206-0000-0202	Digital Compact Servo Drive, 2-axis module, 100...480 V AC, rated output current 2 x 6 A, EtherCAT	AX5206-0000-0202	1
	AX5722-0000-0000	Encoder option card: two additional encoder inputs EnDat 2.2, BiSS C (only for AX52xx)	AX5722-0000-0000	1
<b>DEHN</b>				
	918422	Combined arrester BLITZDUCTOR VT for d.c. voltage supplies	BVT AVD 24	1
<b>Eaton Industries</b>				
	278549	MCB, C-Curve, 2A, 1p	FAZ-C2/1	1
	286054	Auxiliary contact, for FAZ, PKNM, 1N/O+1N/C, 0.5HP	FAZ-XHIN11	4
	216557	LED element, white, Front fixing, 12-30V AC/DC	M22-LED-W	1
	216374	Befestigungsadapter (RMQ-System)	M22-A	5
	081438	Main switch flush mounting/red	P1-32/EA/SVB	1
	088915	Transformer-protective circuit-breaker, 3p, Ir=4-6.3A, screw connection	PKZM0-6,3-T	2

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=.7+U1/4

1.a

Modification	Date	Name	Date	23.05.2018	Test Bench		Summarized parts list	Drawing number Test Bench-U1-05-2018	=U1.REP	Page	1
			Ed.	M.Glum					Reports		
									+ART	Page	29 of 31
									Artikelstücklisten		

# Summarized parts list

Supplier	Order number	Designation	Type number	Quantity	
<b>Eaton Industries</b>					
	010213	Contactora, 3p+1N/O, 4kW/400V/AC3	DILEM-10-G(24VDC)	3	
	216602	Pushbutton actuator, flush, without button plate, spring-return	M22-D-X	3	
	010112	Auxiliary contact, 2N/O+2N/C, surface mounting, screw connection	22DILEM	2	
	218172	Tastenplatte, flach blau, beschriftet	M22-XD-B-X6	1	
	278557	Over current switch, 10A, 1p, C-Char, AC	FAZ-C10/1	3	
<b>Gantner</b>					
	942886	Universal Measurement Module for Bridges	Q.bloxx A106	1	
<b>HIWIN Motion Control &amp; Systems</b>					
	LMSA12	Linear motor LMSA1	LMSA Series	1	
<b>H2Win Technologies</b>					
	STS-0620-R	Single Axis Stepper Motor	STS Series	1	
<b>Jenny Science</b>					
	116.03.00	Linearmotor Schlitten ELAX	Elax Serie	1	
	110.16.01	Kompakter Ethernet Servocontroller	Xenax Serie	1	
<b>LAPP Kabel</b>					
	16001293	H07RN-F 5G2,5	H07RN-F	3,00	
<b>LEG Industrie-Elektronik GmbH</b>					
	SU3-2	Signal Converter 3 channels 5VDC TTL into RS422	SU3	1	
<b>LinMOT NTI/AG</b>					
	0150-2194/0150-2282	Linearmotor mit Encoder	PS10-70X80U	1	
<b>Macro Sensors TM</b>					
	HSTA 750-3000-086		HSTA 750 Series	1	
<b>Numerik Jena</b>					
	LAK14-0710A-TO	Messkopf mit BiSS-C Interface	LAK Serie	1	
<b>PILZ</b>					
	750 104	PNOZsigma Safety relay 3n/o 1n/c	PNOZ s4 24VDC	1	

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# Summarized parts list

Supplier	Order number	Designation	Type number	Quantity	
<b>PULS</b>					
	CT10.241	Power Supply, 3AC, Output 24V 10A	CT10.241	1	
	QT40.481	Power Supply, 3AC, Output 48V 20A	QT40.481	1	
<b>Phoenix Contact</b>					
	2905743	Electronic device circuit breaker	CBM E4 24DC/0.5-10A NO-R	1	
	2800837	Thermomagnetic device circuit breaker	CB TM1 2A SFB P	2	
	2800929	Base element	CB 1/6-2/4 PT-BE	4	
	2800841	Thermomagnetic device circuit breaker	CB TM1 6A SFB P	2	
<b>Renishaw GmbH</b>					
	RL36BVs001C50V	RESOLUTE absolute optical encoder (BiSS)	RTLA	1	
<b>Rittal GmbH</b>					
	3110000	Enclosure internal thermostat	SK.3110000	1	
	3237600	Filter fan EMC	SK.3237600	1	
	3237060	SK Outlet filter, for EMC fan-and-filter units, WHD: 116.5x116.5x16 mm	SK.3237060	1	
<b>SmarAct GmbH</b>					
	SLLV42--600-S-HV/1-S	Linear positioner with integrated Nanosensor	SLLV	1	
	SDC-1S-ES-SDS15-TAB	SDC Sensor Modul 1-Chanel	SDC-1S	1	
	SDC2-1C-OEM	Step Direction Controller	SDC2	1	
<b>Tecnotion GmbH , München</b>					
	104354	Lienarmotor ironless	UM-Serie Eisenlos	1	
<b>Turck Industrielle Automation</b>					
	1590207	Inductive Linear Position Sensor	LI700PO	1	
<b>Weidmueller</b>					
	1608570000	Durchgangs-Reihenklemme	ZDU 2.5/4AN	2	
	1608800000	Accessories, End plate, Seperation plate	ZAP/TW 3	1	
	1806120000	Klemmenmarkierung, EM 8/30	EM 8/30	1	
	1771360000	Schutzleiter-Reihenklemme ZPE 6-2/3AN	ZPE 6-2/3AN	5	

Vorab Version

1.a