



TESTED VALIDATED

DOCUMENTED ARCHITECTURE

PLANT DESIGNATION

DRAWING NUMBER

: Compact / Hardwired / Logic Controller M241

: TVDA

: EIO0000001821.00

DEPARTMENT	:	Industry Business	INCOMING SUPPLY	:	400V 3~, N, PE, 50Hz
PRODUCT DOMAIN	:	TVDA	FEEDER	:	Oelflex Classic 100 5G2,5mm²
CAE SYSTEM	:	ePlan P8 V 2.4.4	POWER INPUT	:	4,5 kW
RELATED PRODUCTS	:	Logic Controller M241; Magelis HMI STU; TM3 Expansion Modules; Harmony Wireless Push-Buttons; Altivar 32; Lexium 28 TeSys U; iEM3150	CONTROL VOLTAGE	:	24V dc
			MANUFACTURING DATE	:	2015
			CABINET TYPE	:	Spacial, RAL 7035
			CHECKED TO	:	IEC 60364

RESPONSIBLE FOR PROJECT

CREATOR

DATE CHANGED

REVISION DATE

: Machine Solutions

: TVDA

: 2015/03/24

:

VERSION INDEX

0

This document is based on European standards and is not valid for use in U.S.A.

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Structure identifier overview									
First Level	Structure description		Second Level	Structure description		Third Level	Structure description		
=COMM	Common pages		+COVER	Cover page		#PSD	Power Supply Distribution		
=WIRD	Wiring diagramm		+CONT	Table of Content		#SAF	Safety		
=REPORT	Report pages		+INFO	Informations		#PLC	PLC Pages		
			+DEF	Definitions		#HMI	Human Machine Interface		
			+LAYOUT	Layout Pages		#CTRL	Control		
			+TERP	Terminal plan		#MOV	Movement		
			+PLUG	Plug Connection Plan		#COM	Communication		
			+CABLE	Cable Overview & Connection Plan					
			+PART	Partlist					
			+ORDER	Orderlist					
			+MC	Main Cabinet					

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Assignment	Page	Page description	Date	Edited by
=COMM +COVER	Cover page			
	1	Cover Page	2013/12/12	kJakob
=COMM +CONT	Table of Content			
	1	Structure identifier overview	2014/02/27	kJakob
	2	Table of contents	2015/01/22	HKR
	3	Table of contents	2015/01/22	HKR
	4	Table of contents	2015/01/22	HKR
=COMM +INFO	Informations			
	1	Disclaimer	2014/01/09	kJakob
	2	Safety Information 1	2014/01/09	kJakob
	3	Safety Information 2	2014/01/09	kJakob
	4	Informations about changes	2014/01/09	kJakob
=COMM +DEF	Definitions			
	1	Wiring, Plug and Terminal definitions	2014/11/25	HKR
=COMM +LAYOUT	Layout Pages			
	1	Plant Layout	2013/12/19	kJakob
=WIRD +MC #PSD	Main Cabinet / Power Supply Distribution			
	1	Power supply infeed	2014/11/25	HKR
	2	Cabinet Lamp, Socket, Fan	2014/11/25	HKR
	3	Energy Measurement - iEM3150	2014/11/25	HKR
	4	Emergency Stop Main Power Supply	2015/01/22	HKR
	5	Power Supply 24V dc	2014/11/25	HKR
	6	Power Supply 24V dc	2015/01/22	HKR
	7	Power Supply 24V dc	2015/01/22	HKR
	8	Power Supply 24V dc	2014/11/25	HKR
	9	Power Supply 0V dc	2015/01/22	HKR
=WIRD +MC #SAF	Main Cabinet / Safety			
	1	Emergency Stop	2014/11/25	HKR
	2	Emergency Stop Door Guard	2015/01/22	HKR

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Assignment	Page	Page description	Date	Edited by
=WIRD +MC #SAFMain Cabinet / Safety				
	3	TM3 Safety module E-Stop	2014/11/25	HKR
	4	TM3 Safety module E-Stop	2014/11/25	HKR
	5	TM3 Safety module Door Guard	2014/11/25	HKR
	6	TM3 Safety module Door Guard	2014/11/25	HKR
=WIRD +MC #PLCMain Cabinet / PLC Pages				
	1	Assembly layout M241	2015/01/22	HKR
	2	Overview M241	2015/01/22	HKR
	3	Overview safety module TM3	2014/11/19	HKR
	4	Overview I/O module TM3	2015/01/22	HKR
	5	Overview I/O module TM3	2015/01/22	HKR
	6	Power supply M241	2015/01/22	HKR
	7	Power supply TM3	2015/01/22	HKR
	8	Power supply TM3	2015/01/22	HKR
	9	Power supply TM3	2015/01/22	HKR
	10	Power supply TM3	2015/01/22	HKR
=WIRD +MC #HMIMain Cabinet / Human Machine Interface				
	1	HMI Magelis Panel Power Supply	2014/11/25	HKR
=WIRD +MC #CTRLMain Cabinet / Control				
	1	Digital inputs M241	2015/01/22	HKR
	2	Digital inputs M241	2015/01/22	HKR
	3	Digital inputs M241	2015/01/22	HKR
	4	Digital outputs M241	2015/01/22	HKR
	5	Digital outputs M241	2015/01/22	HKR
	6	Digital outputs M241	2015/01/22	HKR
	7	Digital inputs TM3	2015/01/22	HKR
	8	Digital inputs TM3	2015/01/22	HKR
	9	Digital inputs TM3	2015/01/22	HKR
	10	Digital inputs TM3	2015/01/22	HKR

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Assignment	Page	Page description	Date	Edited by
=WIRD +MC #CTRL		Main Cabinet / Control		
	11	Digital inputs TM3	2015/01/22	HKR
	12	Digital outputs TM3	2015/01/22	HKR
	13	Digital outputs TM3	2015/01/22	HKR
	14	Digital outputs TM3	2015/01/22	HKR
	15	Analog inputs TM3	2015/01/22	HKR
	16	Analog outputs TM3	2015/01/22	HKR
	17	Analog inputs TM3	2015/01/22	HKR
	18	Incremental Encoder	2014/11/25	HKR
	19	Remote operator panel wireless pushbuttons	2015/01/22	HKR
	20	Drive 1 Control Terminals Altivar 32	2015/01/22	HKR
	21	Drive 2 Control Terminals Altivar 32	2015/01/22	HKR
	22	Brake Contactor Drive 1+2	2014/11/25	HKR
	23	Drive 3 - LXM28 Control Terminals - CN1 connection module	2015/01/22	HKR
	24	Drive 4 - LXM28 Control Terminals - CN1 connection module	2015/01/22	HKR
	25	Drive 3 & 4 - LXM28 STO connector - CN9	2015/01/22	HKR
=WIRD +MC #MOV		Main Cabinet / Movement		
	1	Drive 1 Variable speed drive Altivar 32	2014/11/25	HKR
	2	Drive 2 Variable speed drive Altivar 32	2015/01/22	HKR
	3	Drive 3 Servo drive Lexium 28	2015/01/22	HKR
	4	Drive 4 Servo drive Lexium 28	2015/01/22	HKR
	5	Motor 5 Motor Starter Controller TeSys U	2014/11/25	HKR
=WIRD +MC #COM		Main Cabinet / Communication		
	1	EtherNet switch	2014/11/25	HKR
	2	Ethernet topology	2015/01/22	HKR
	3	Modbus topology	2015/01/22	HKR

General project information

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When selecting automation and control equipment and related software for a particular application, you must refer to the applicable local and national standards and regulations.

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General project information

Equipment Grounding

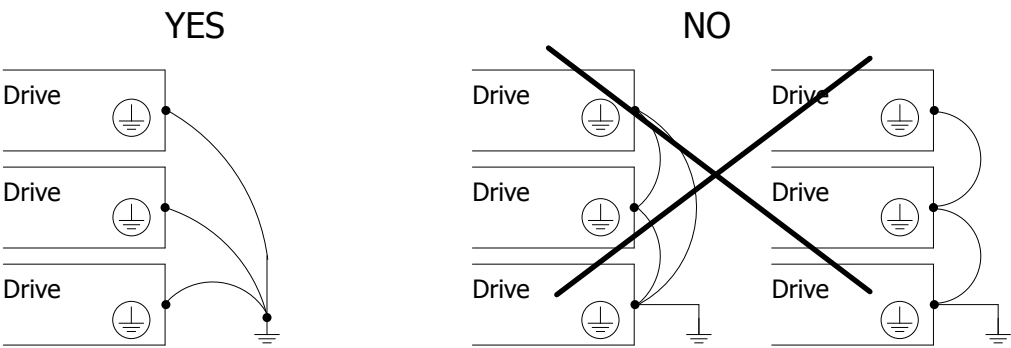
Secure the ground connection of the devices to the protective ground (PE) of your panel at a single point and in conformance with local and national electrical code requirements. Depending on these local and national code requirements, a minimum wire section (gauge) of 10 mm² (6 AWG) may be required to meet standards limiting leakage current.

⚡ ⚠ DANGER

ELECTRIC SHOCK

- Properly ground your panel and equipment before applying power.
- Always comply with local wiring requirements regarding grounding cables and grounding cable shields.
- Ground devices independently at a single point.

Failure to follow these instructions will result in death or serious injury.



- Ensure that the resistance of ground is one ohm or less.
- When grounding several drives, you must connect each one directly, as as shown in the figure to the left.
- Do not loop the ground cables or connect them in series.

General project information



⚡ ⚠ DANGER

LOSS OF CONTROL, ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- The designer of the machine and its control system must consider their potential failure modes and provide a means to achieve a safe state during and after a failure by installing and thoroughly testing security control devices.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- The designer of the machine and its control system is responsible for compliance with all international and national electrical standards in force concerning protective grounding of all equipment.

Failure to follow these instructions will result in death or serious injury.



⚠ WARNING

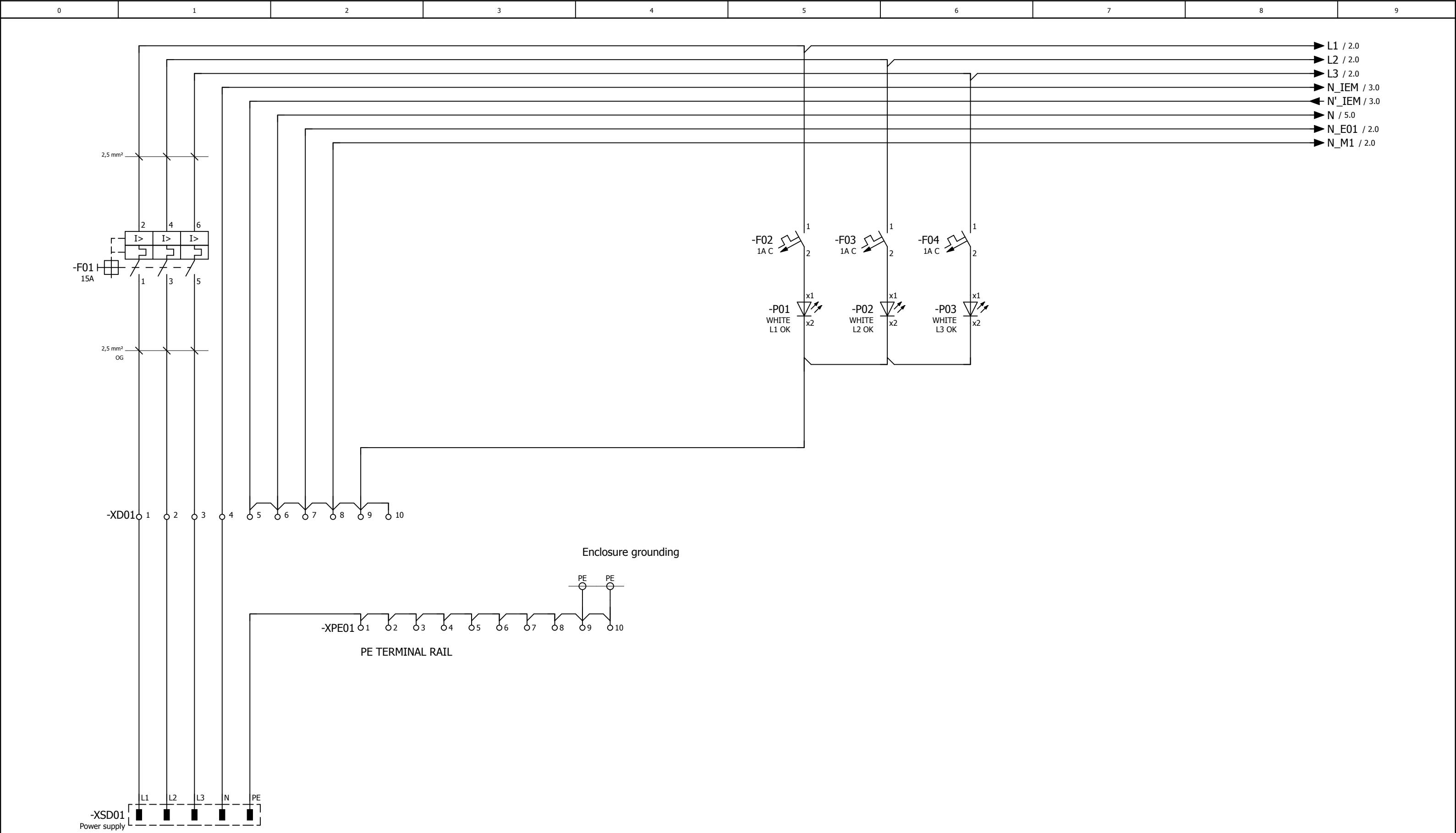
REGULATORY INCOMPATIBILITY

Be sure that all equipment applied and systems designed comply with all applicable local, regional, and national regulations and standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Wiring Definitions		
Main circuit	Black	1,5/2,5mm²
Neutral wire	Light-blue	1,5/2,5mm²
Control circuit 230V ac	Red	0,75-2,5mm²
Control circuit 120V ac	Red	0,75-2,5mm²
Control circuit 24V dc	Dark-blue	0,75-2,5mm²
Control circuit 0V dc	Dark-blue/white	0,75-2,5mm²
Control circuit ±15V dc	Violet	0,75mm²
External voltage	Orange	0,75-2,5mm²
Cable glands: If shielded cable use metal!		

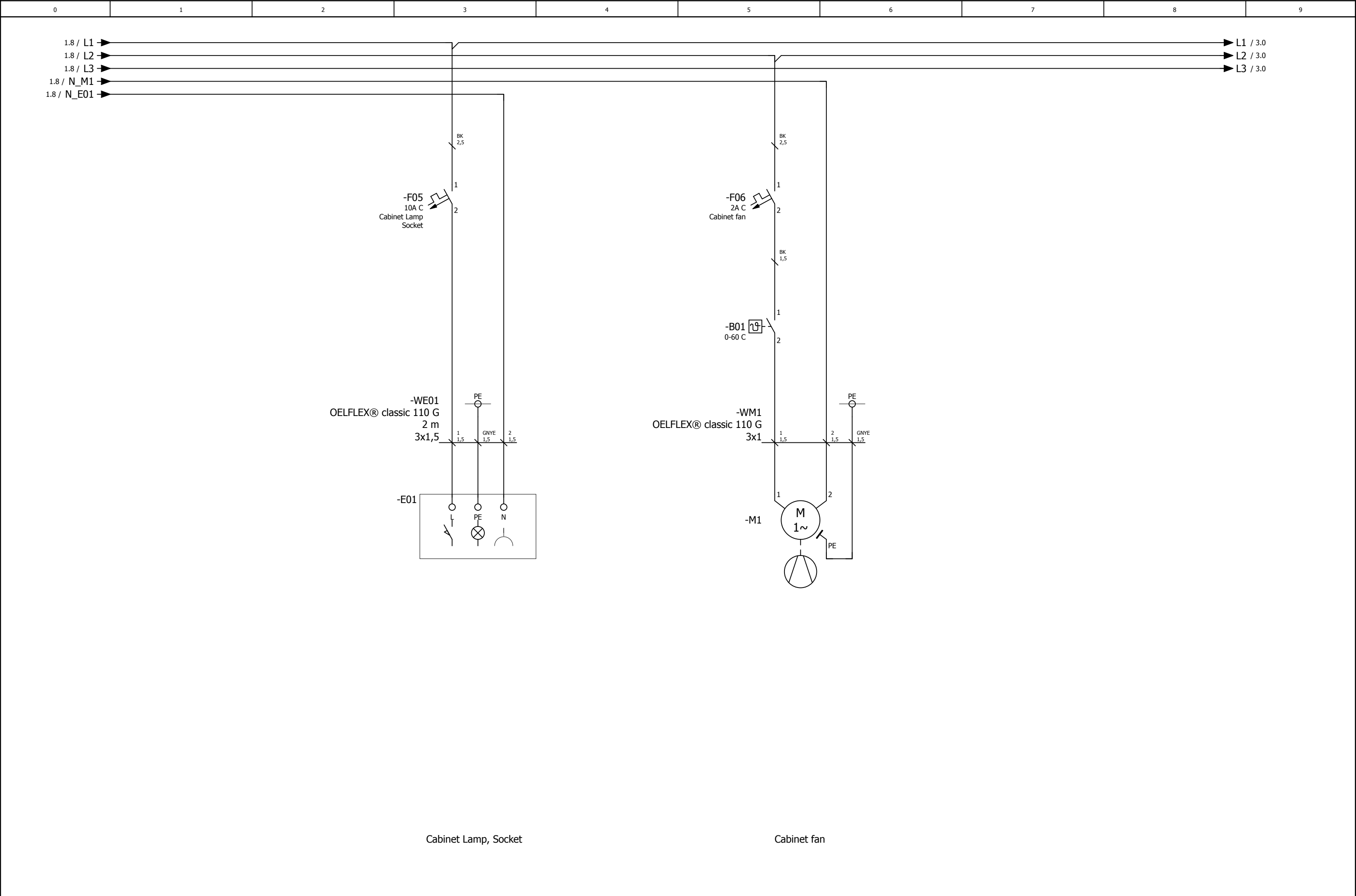
Plugdefinitions	Terminaldefinitions
+MC-XSETH01 = RJ45/M12 adapter - Ethernet	+MC-XD01 = Power Supply 400V ac +MC-X01 = Power Supply 24V dc Distribution intern +MC-XPE01 = PE Terminals +MC-XME01 = Encoder

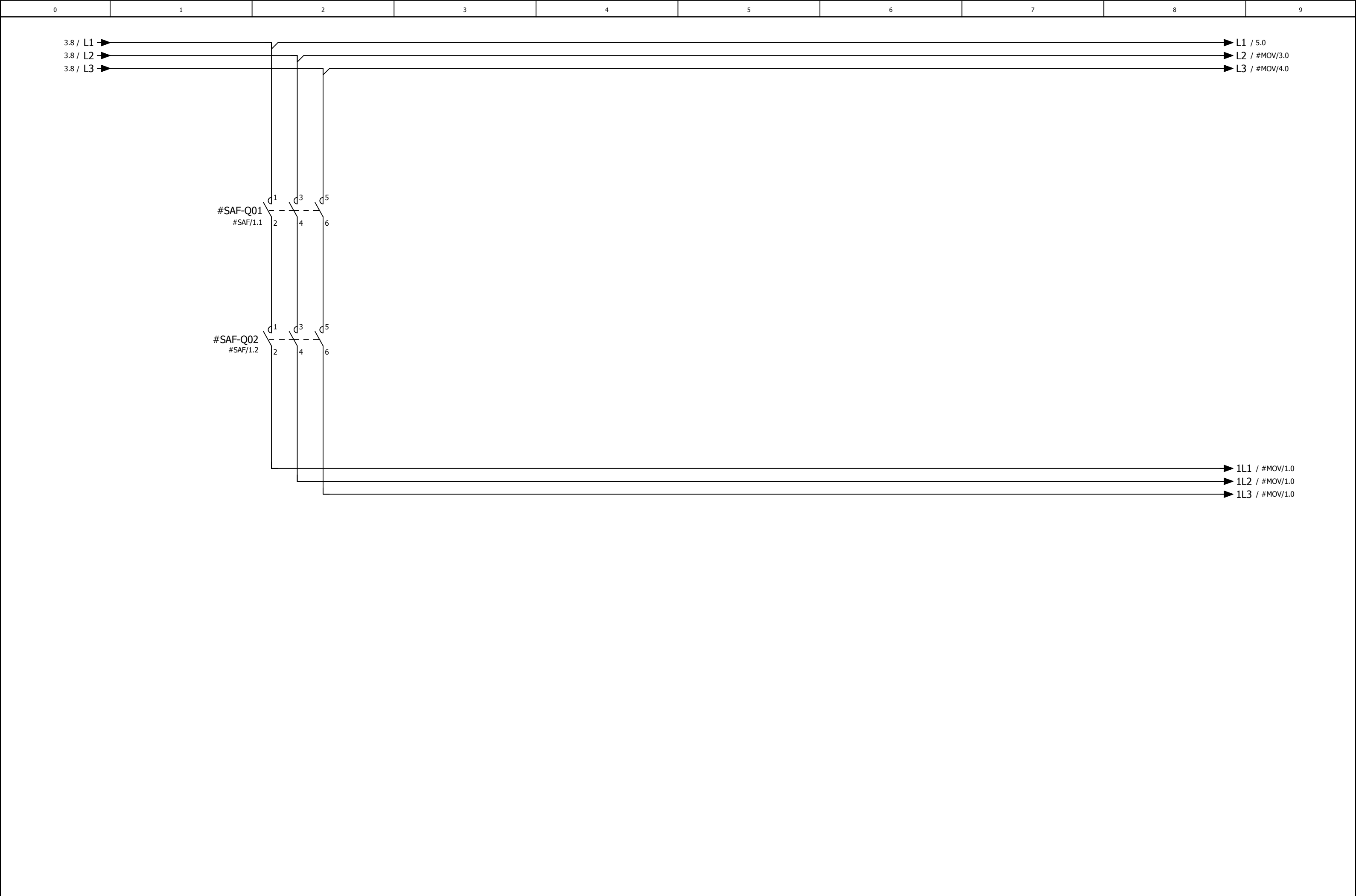


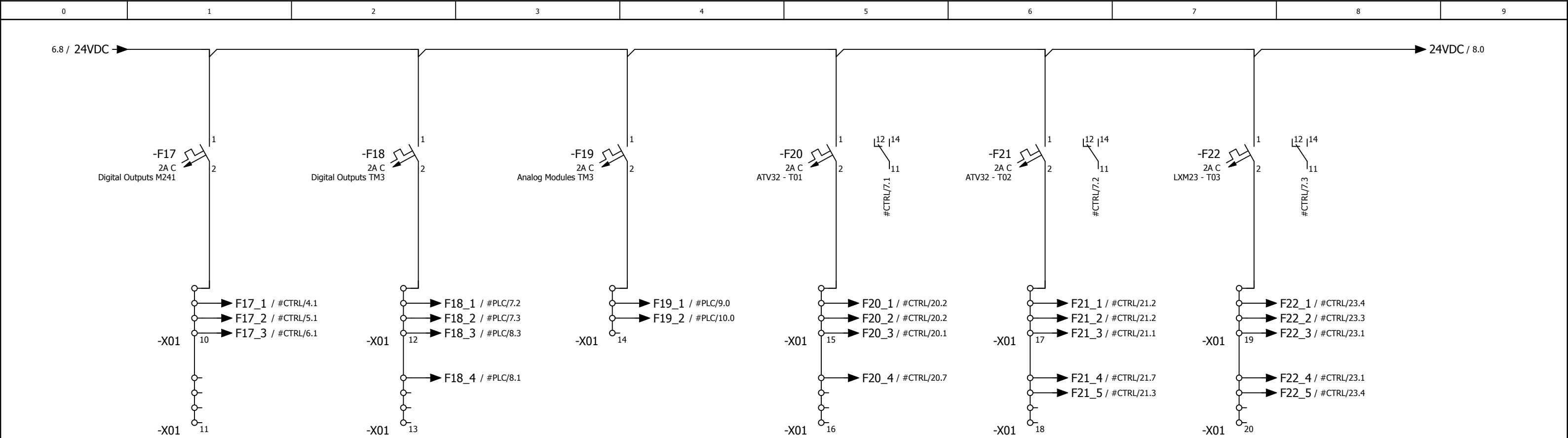
Note: In feed power supply must be adapted accordingly to the power consumption of the final plant.

Power supply

Phase control







Digital Outputs M241
power supply 24V dc

Digital Outputs TM3
power supply 24V dc

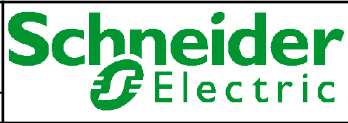
Analog Modules TM3
power supply 24V dc

ATV32 - T01
power supply 24V dc

ATV32 - T02
power supply 24V dc

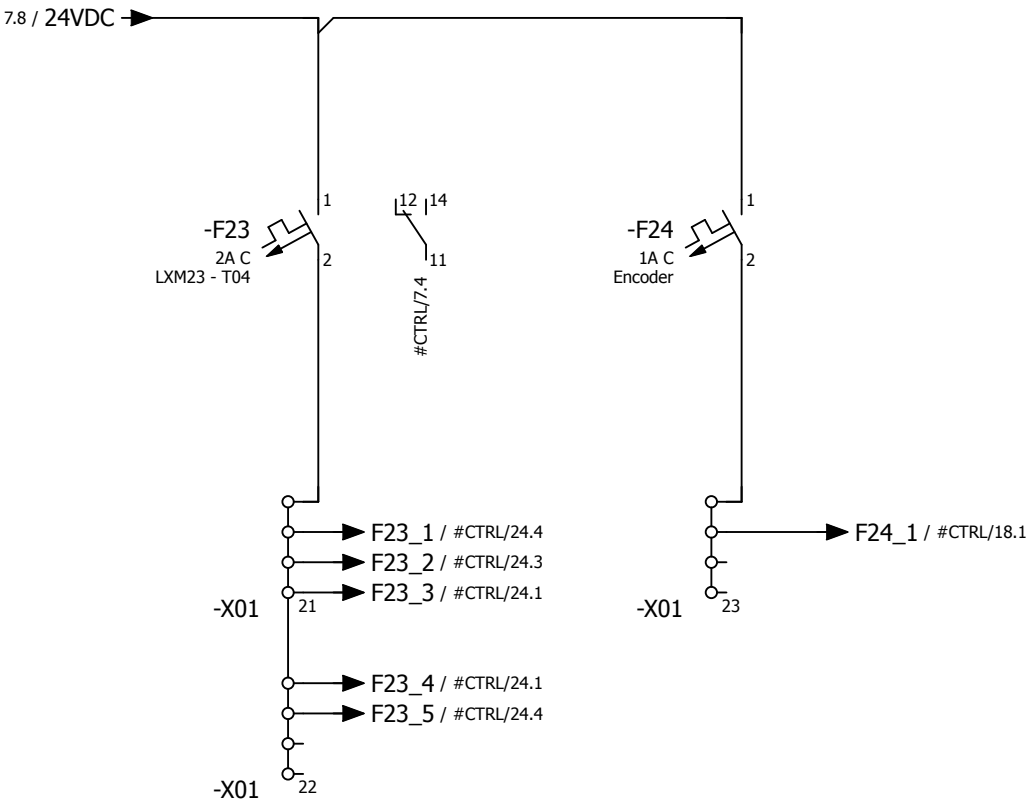
LXM28 - T03
power supply 24V dc

			Date	2015/02/17	Compact / Hardwired / Logic Controller M241	
			Ed.	HKR	TVDA	
			Appr			
Modification	Date	Name	Original		Replacement of	Replaced by



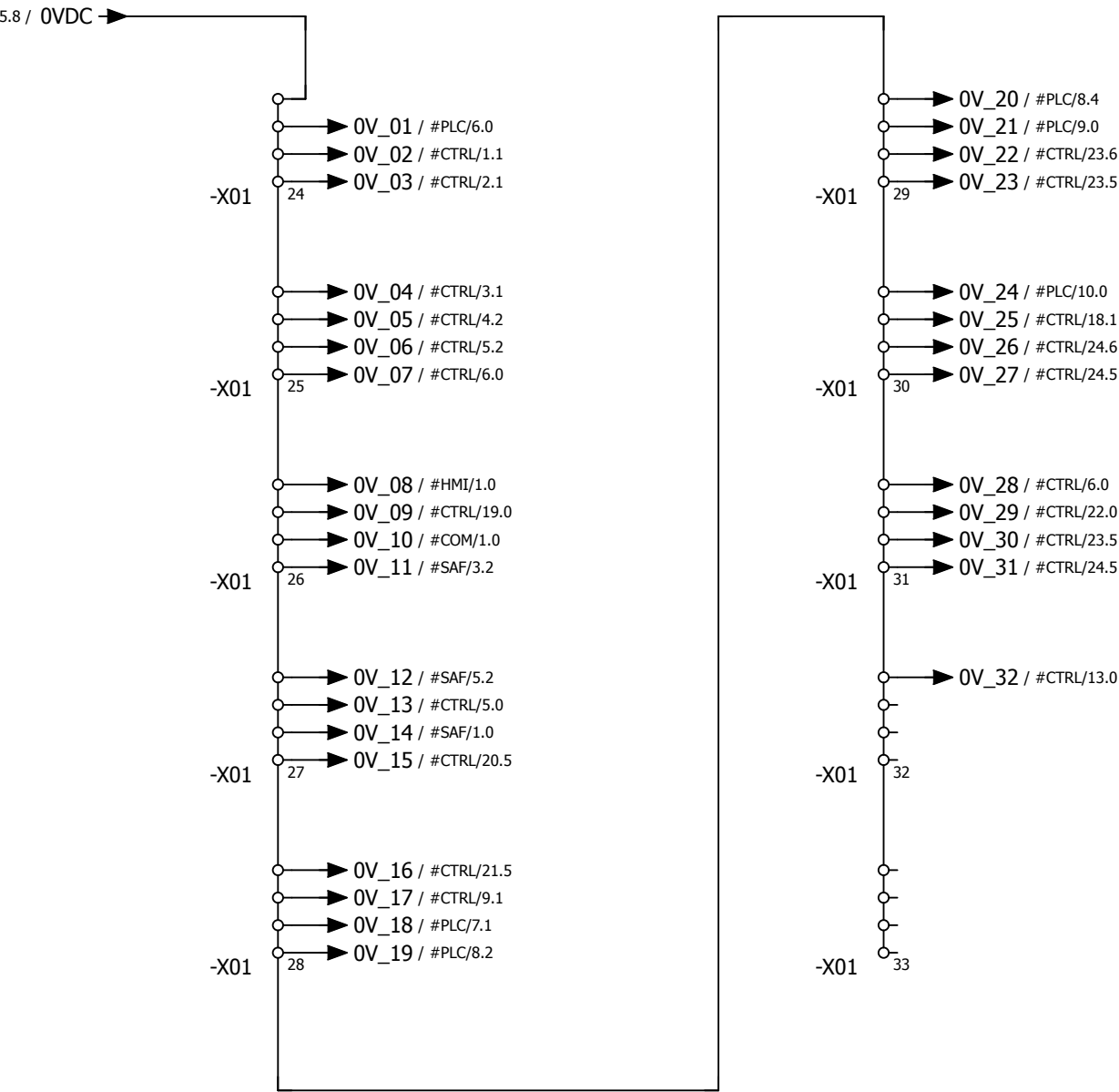
Power Supply 24V dc

		=WIRD		+MC	
				#PSD	
		EIO0000001821.00			Page 7
		=WIRD+MC#PSD/7			of 9



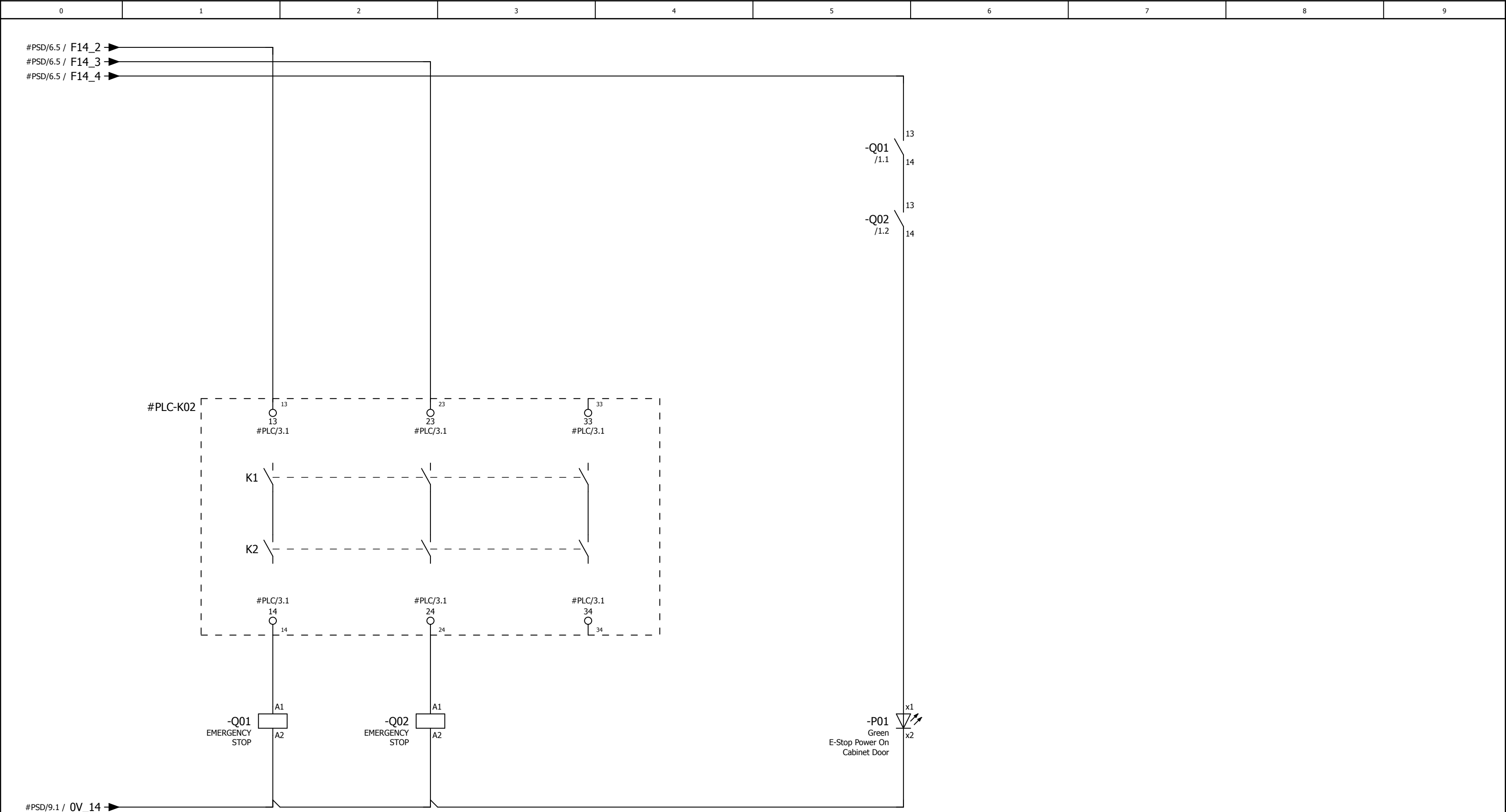
LXM28 - T04
power supply 24V dc

Encoder
power supply 24V dc



Power supply 0V dc

Power supply 0V dc



1 2 #PSD/4.2
3 4 #PSD/4.2
5 6 #PSD/4.2
13 14 /1.5
21 22 /4.2

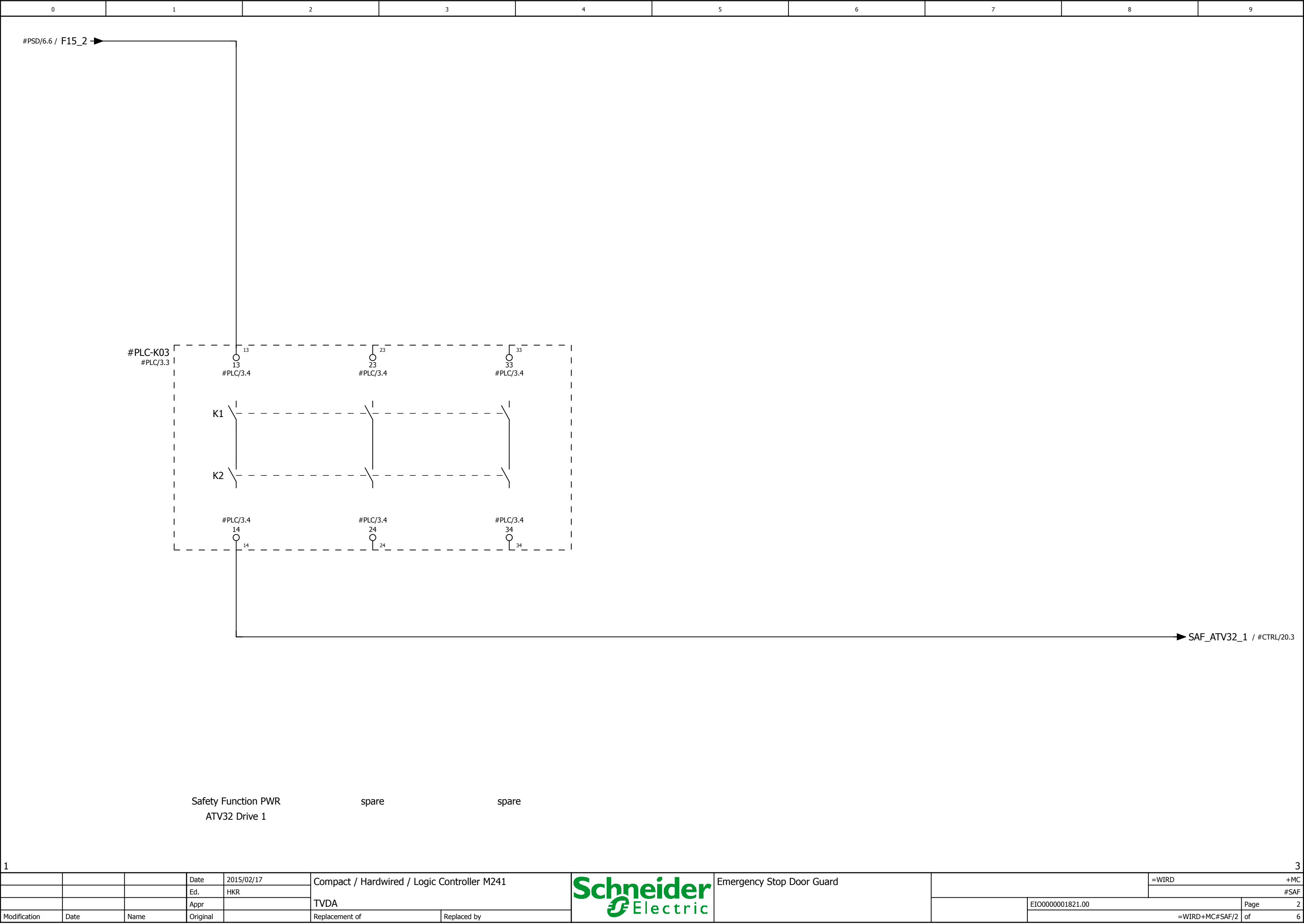
Emergency Stop
Main Contactor 1

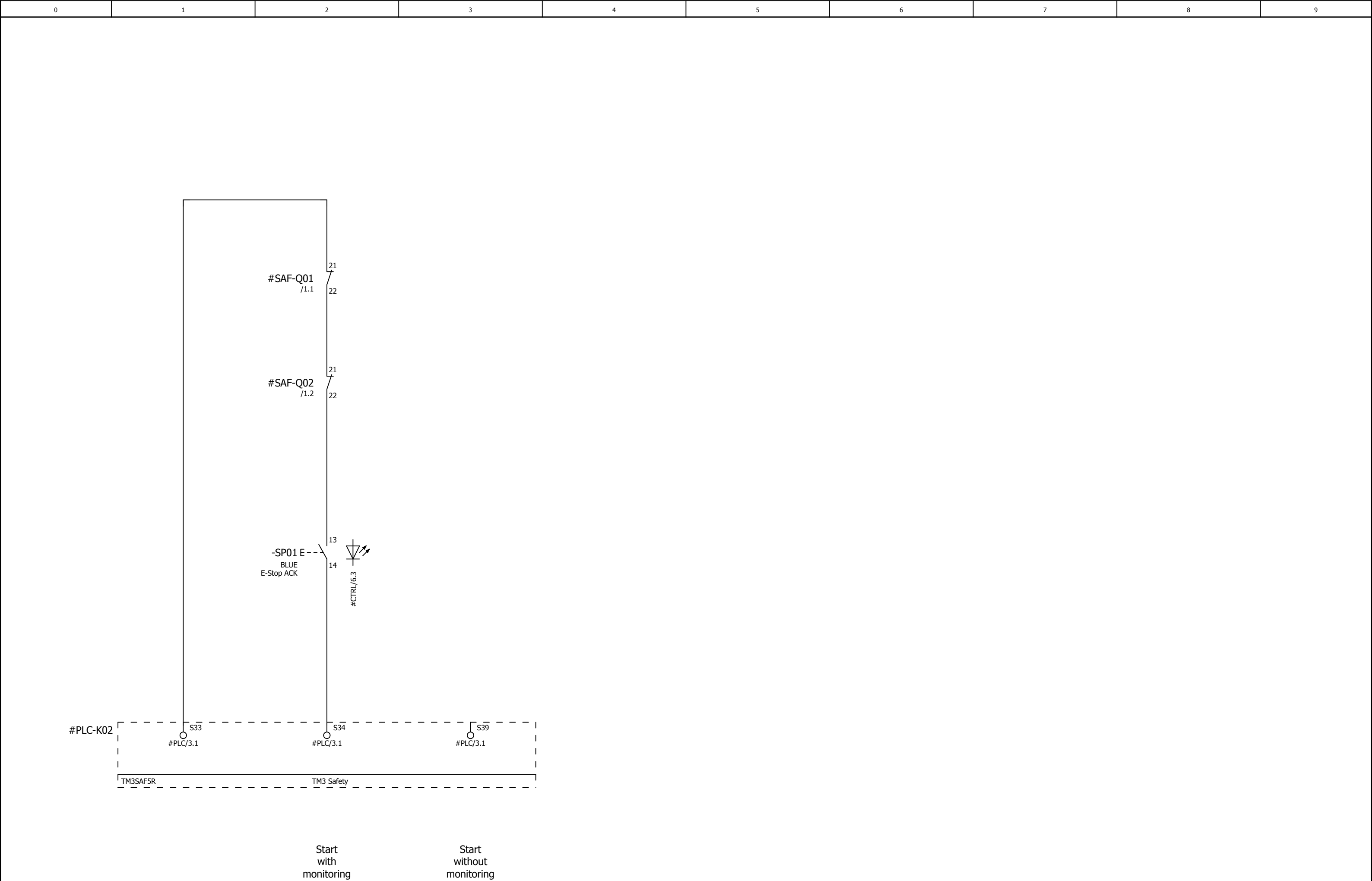
1 2 #PSD/4.2
3 4 #PSD/4.2
5 6 #PSD/4.2
13 14 /1.5
21 22 /4.2

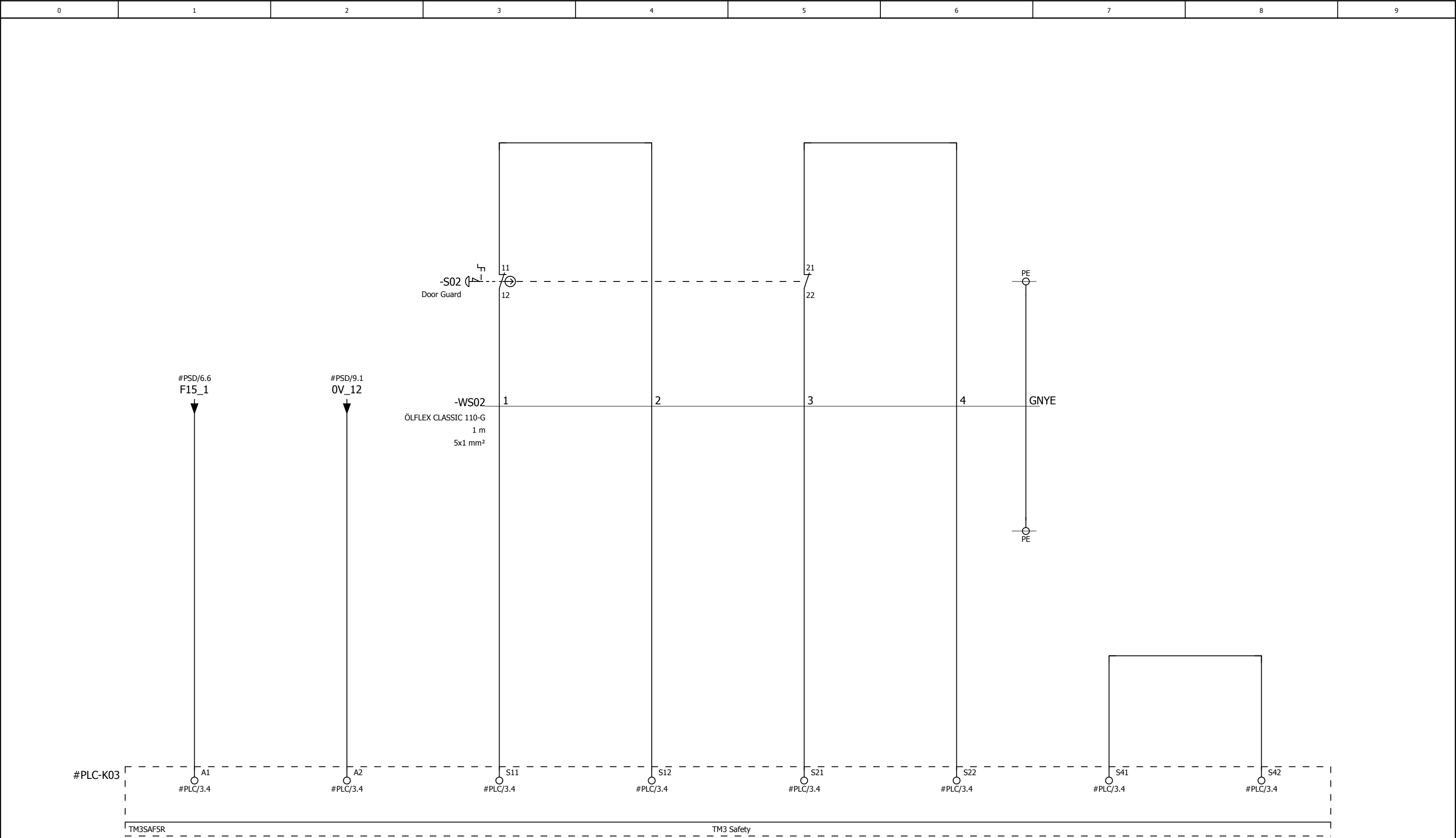
Emergency Stop
Main Contactor 2

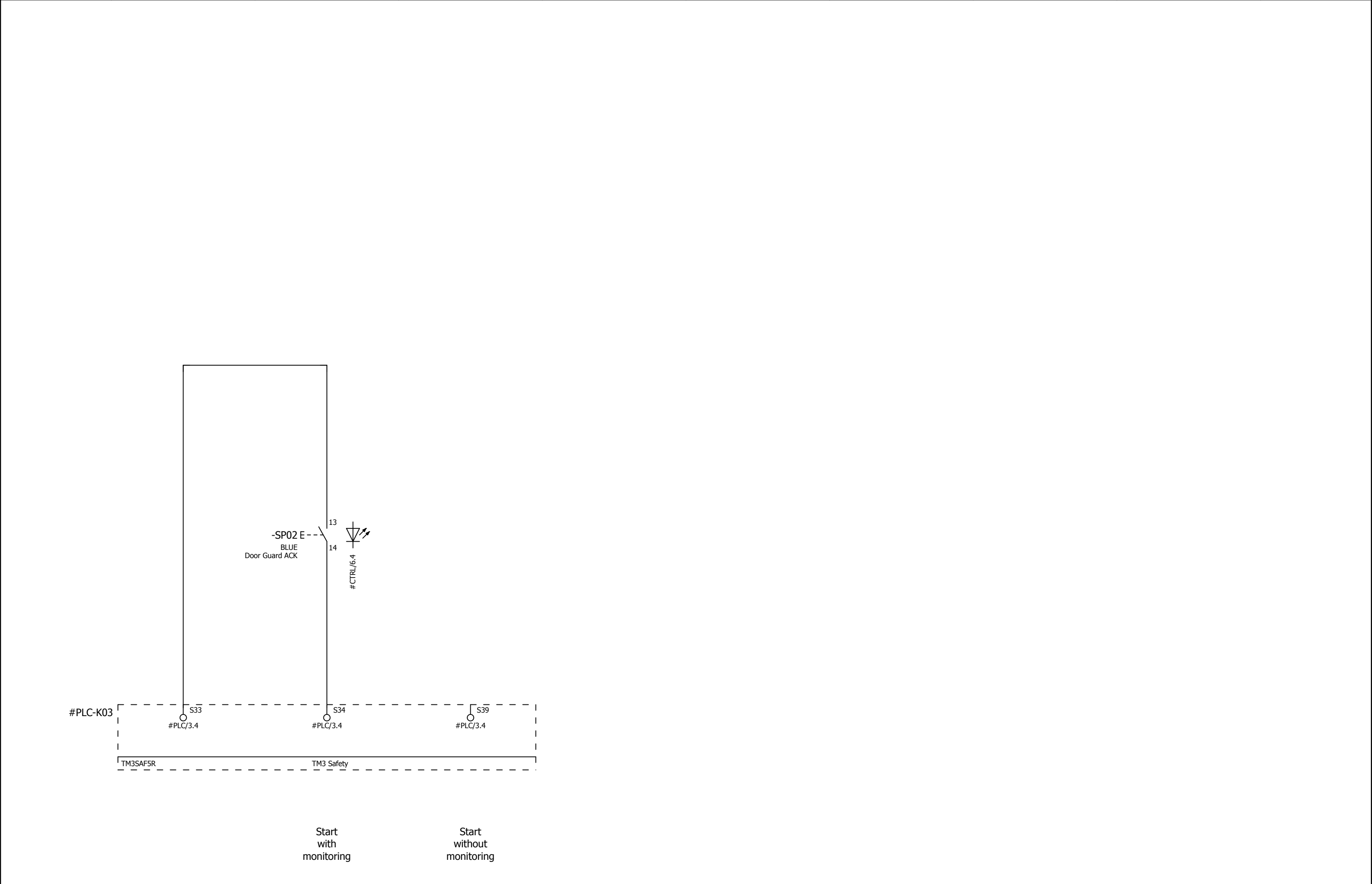
spare

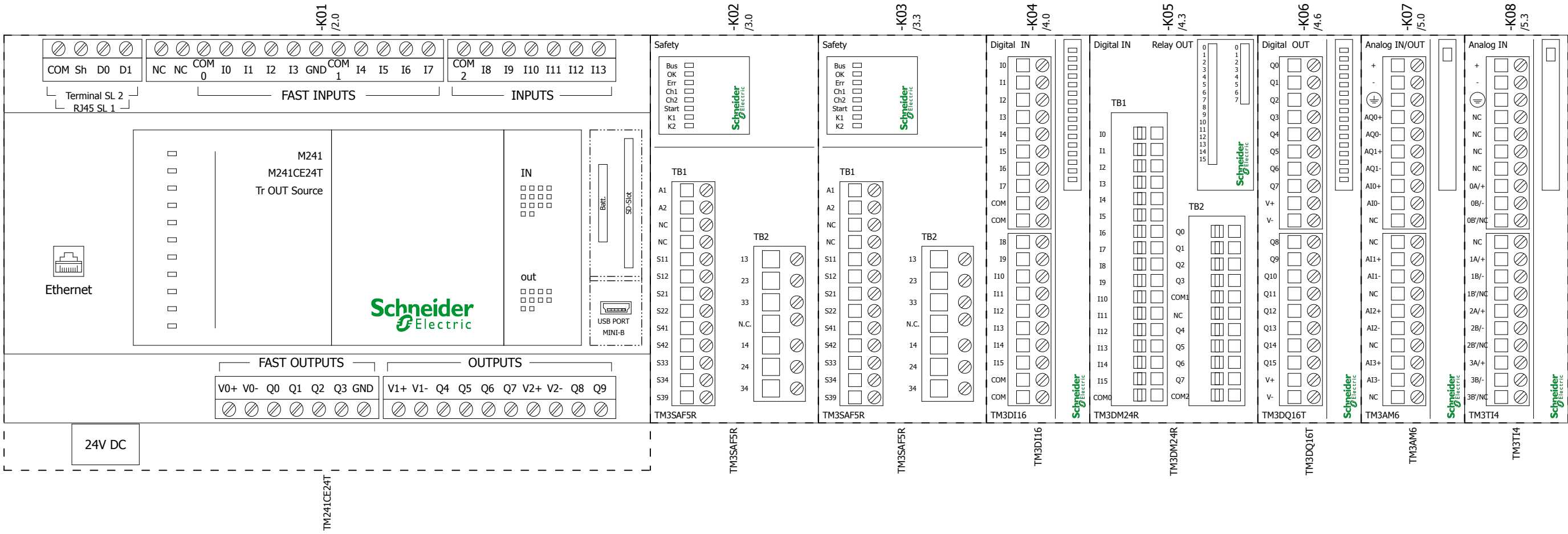
Emergency Stop
Power-ON



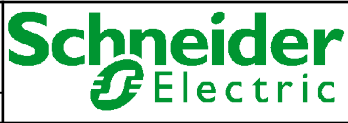








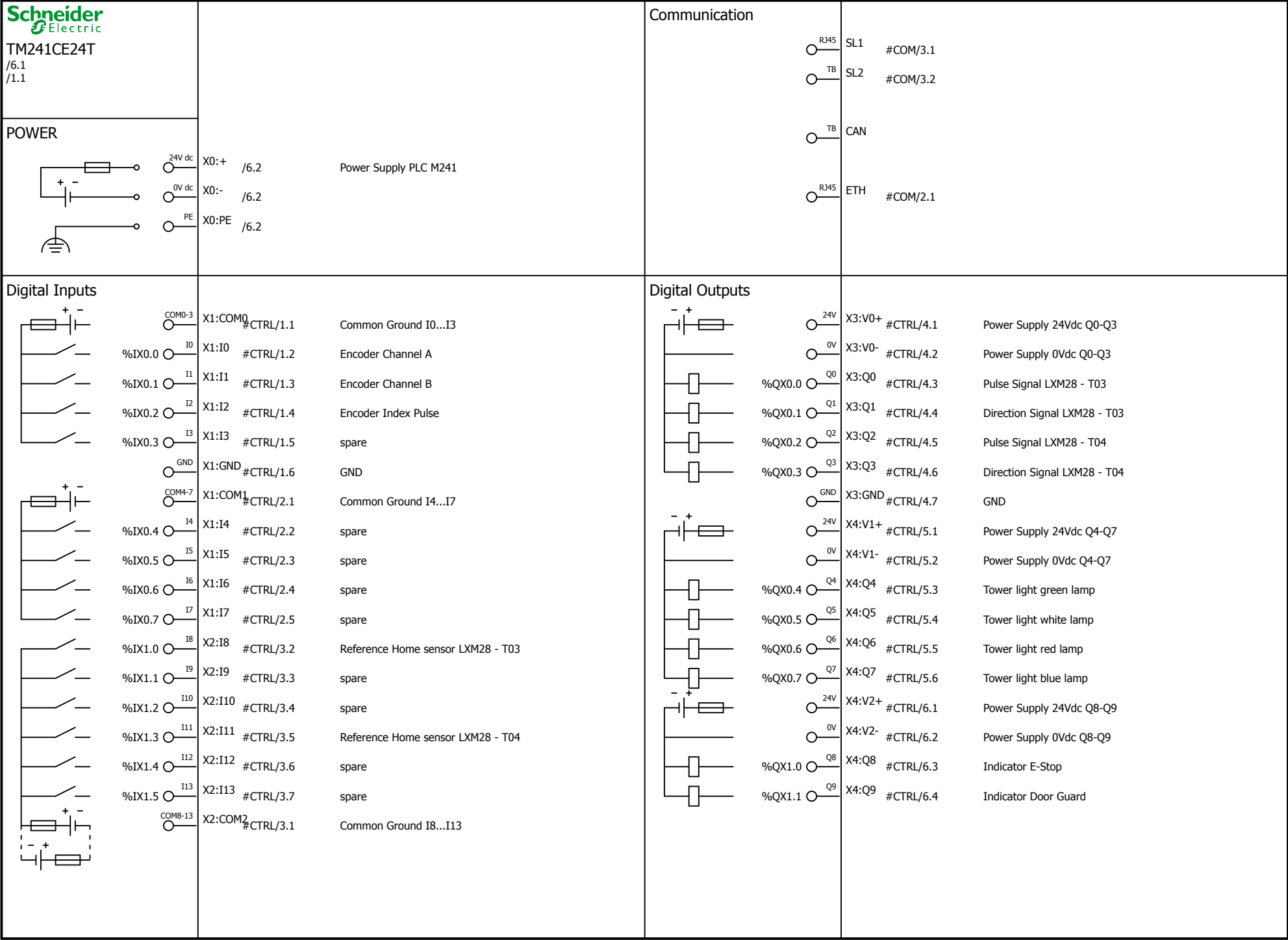
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			Ed.	HKR		
			Appr			
Modification	Date	Name	Original		Replacement of	Replaced by



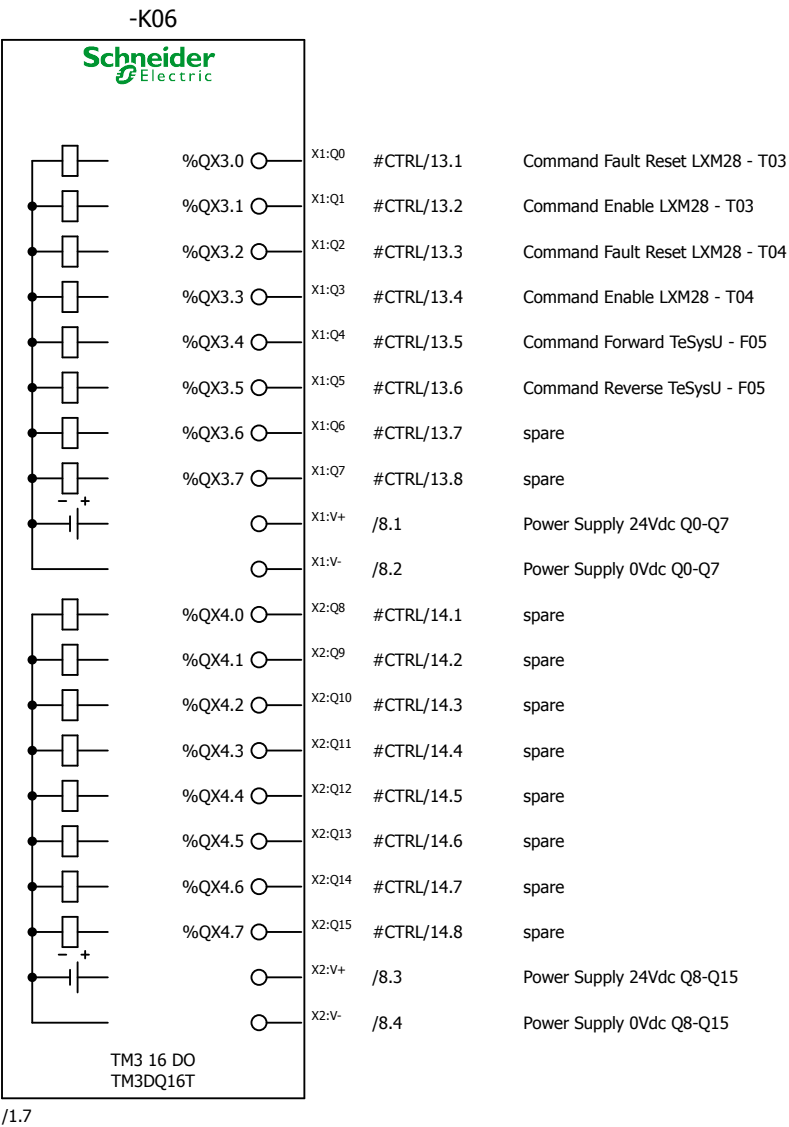
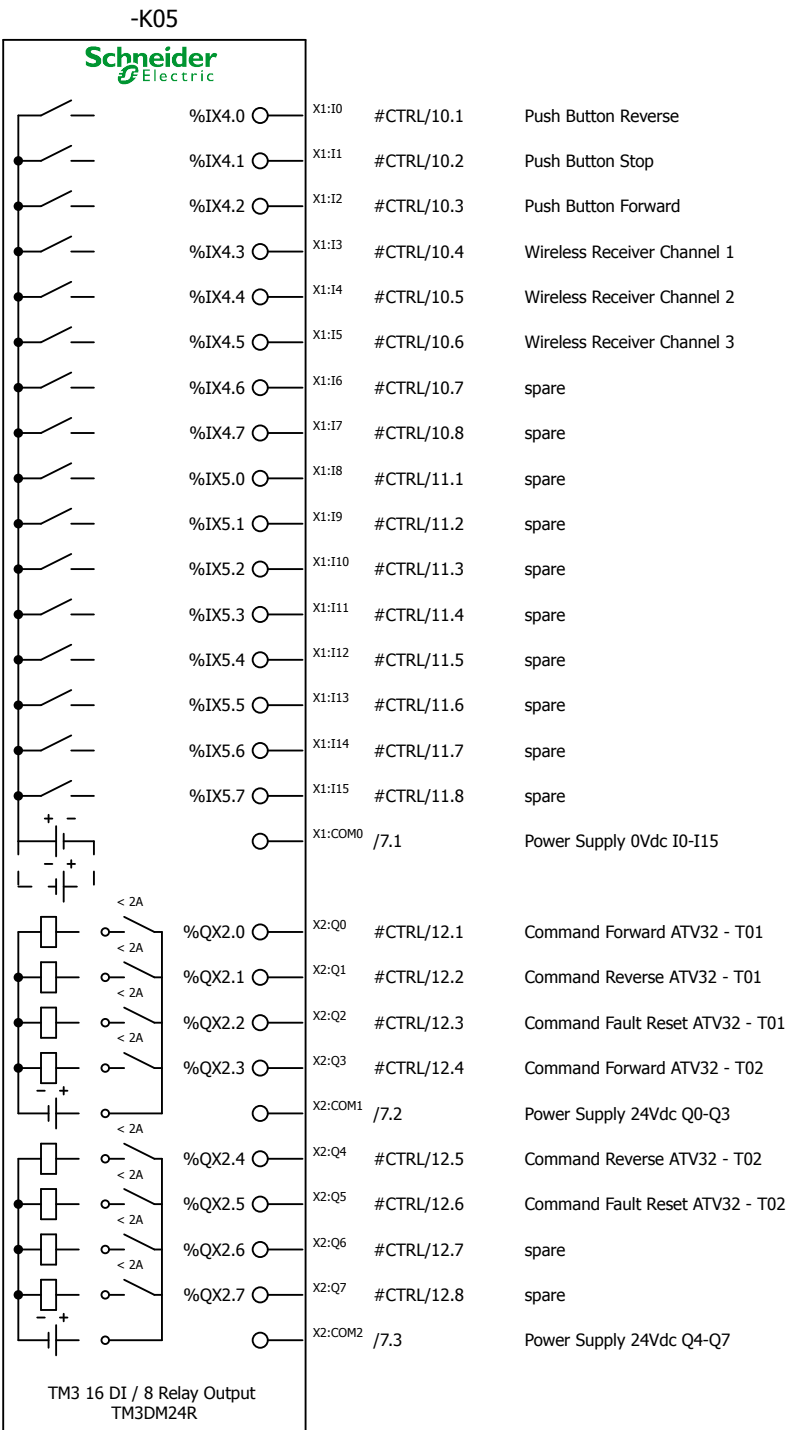
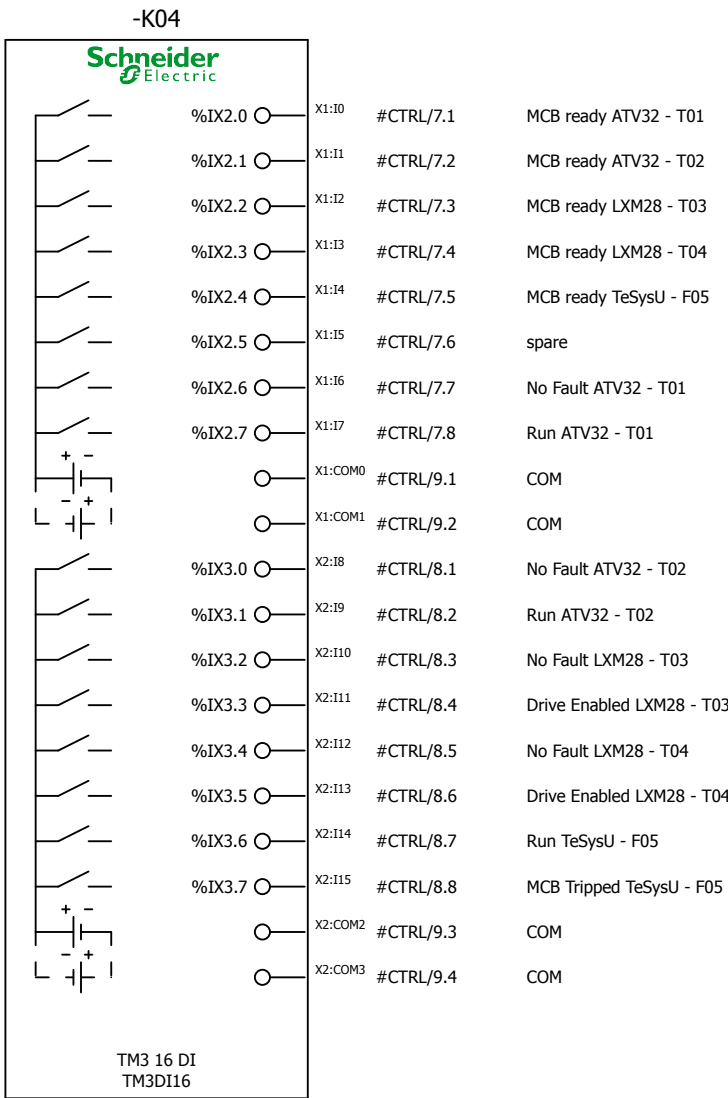
Assembly layout M241

		=WIRD		+MC	
				#PLC	
		EIO0000001821.00			Page 1
		=WIRD+MC#PLC/1			of 10

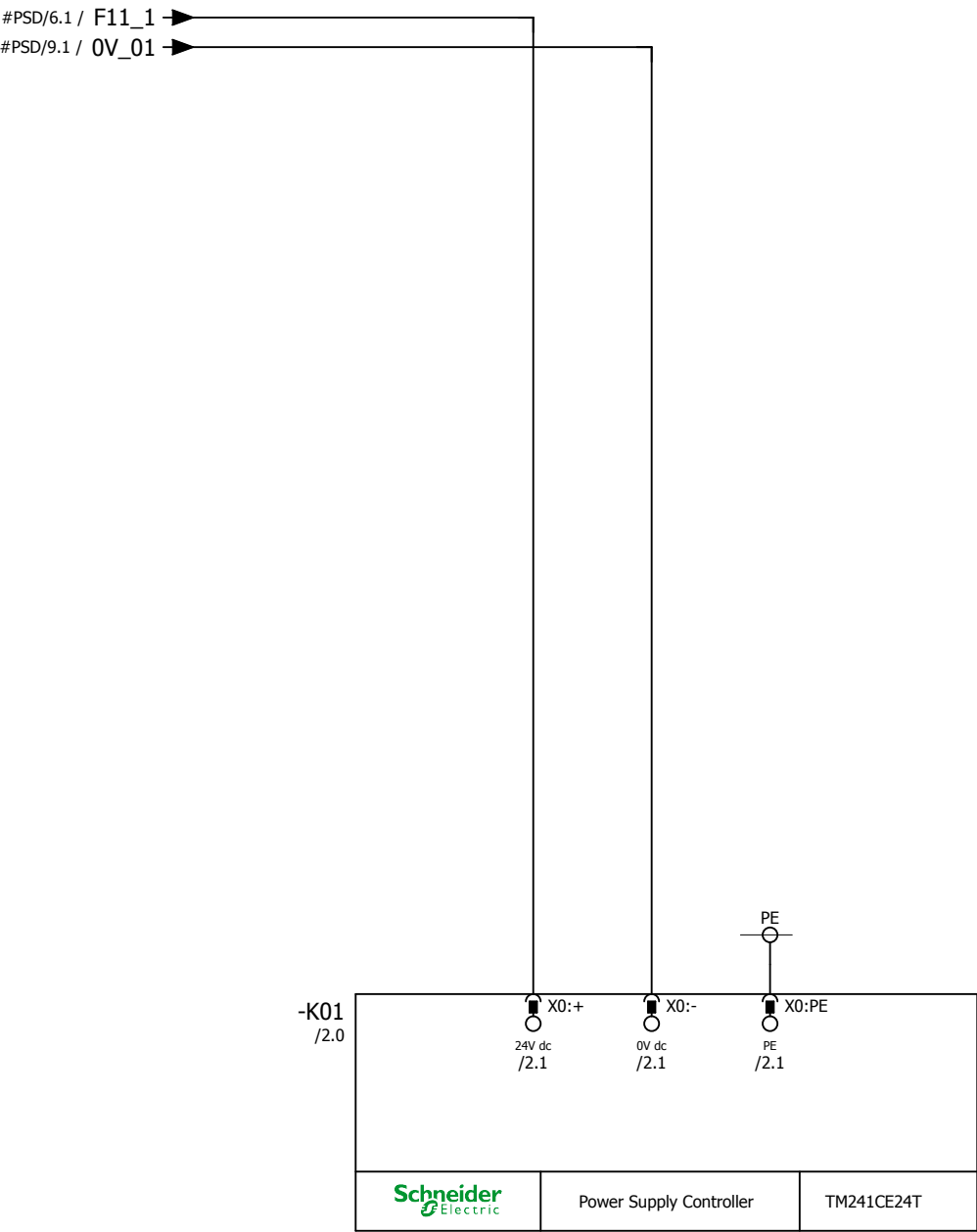
-K01



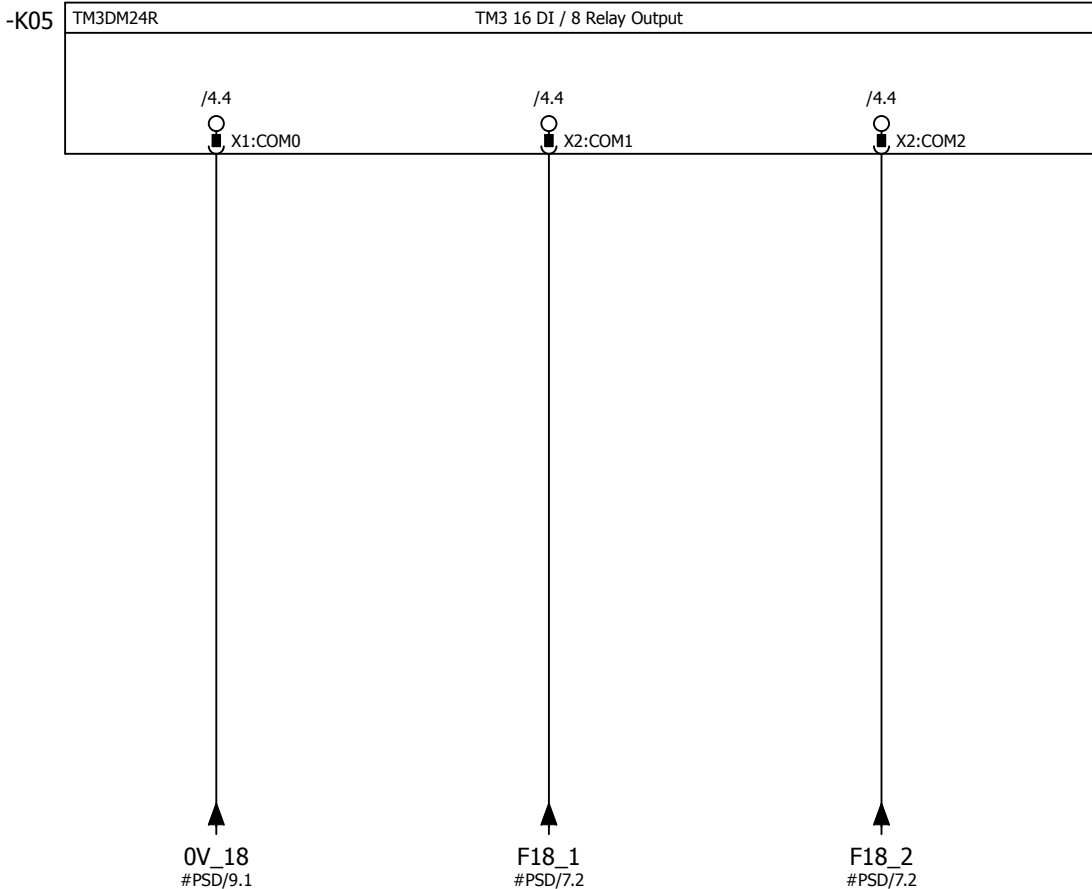
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			Ed.	HKR							#PLC		
			Appr						TVDA				
Modification	Date	Name	Original		Replacement of	Replaced by			EIO0000001821.00	Page	4		
									=WIRD+MC#PLC/4		of	10	



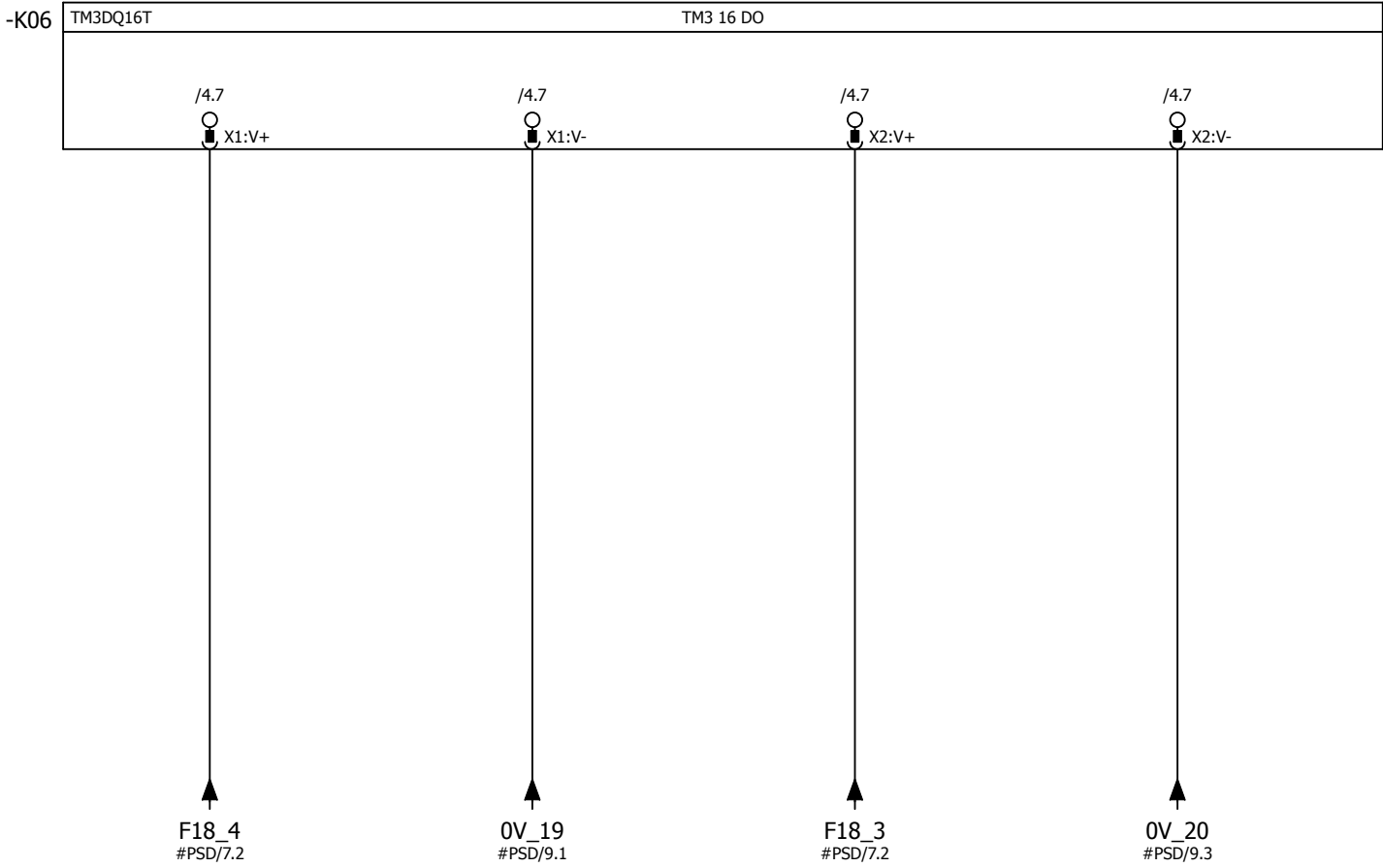
Power Supply PLC M241



Power Supply 0Vdc
I0-I15

Power Supply 24Vdc
Q0-Q3

Power Supply 24Vdc
Q4-Q7



Power Supply 24Vdc
Q0-Q7

Power Supply 0Vdc
Q0-Q7

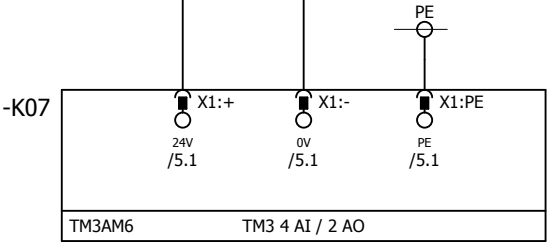
Power Supply 24Vdc
Q8-Q15

Power Supply 0Vdc
Q8-Q15

0	1	2	3	4	5	6	7	8	9
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#PSD/7.4 / F19_1

#PSD/9.3 / 0V_21

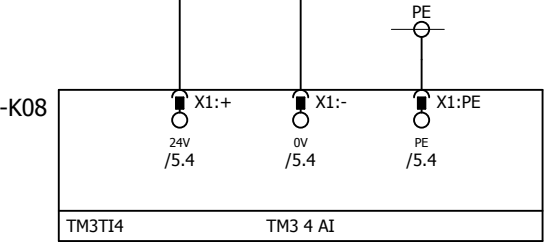


Power Supply TM3

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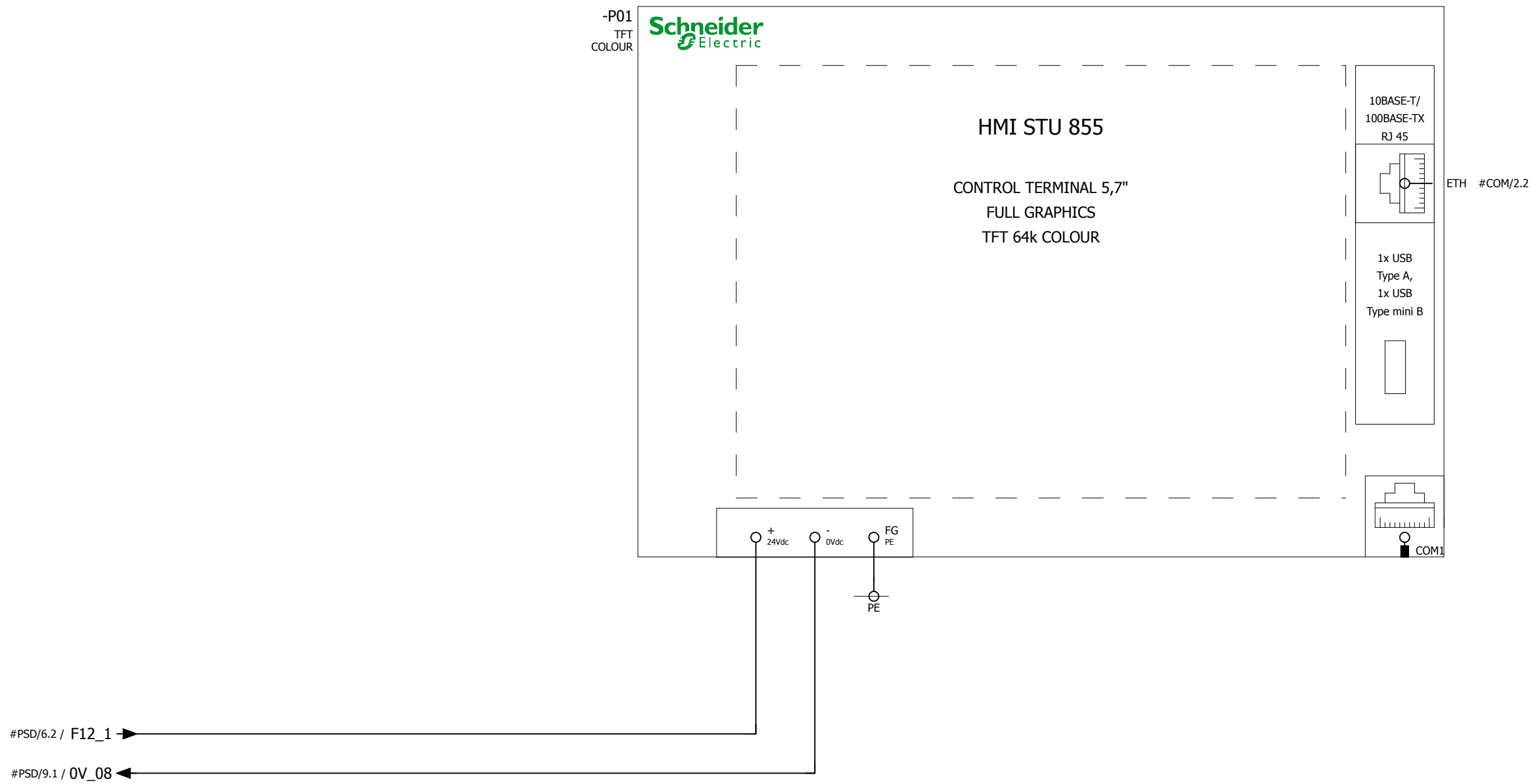
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#PSD/9.3 / 0V_24 ➡




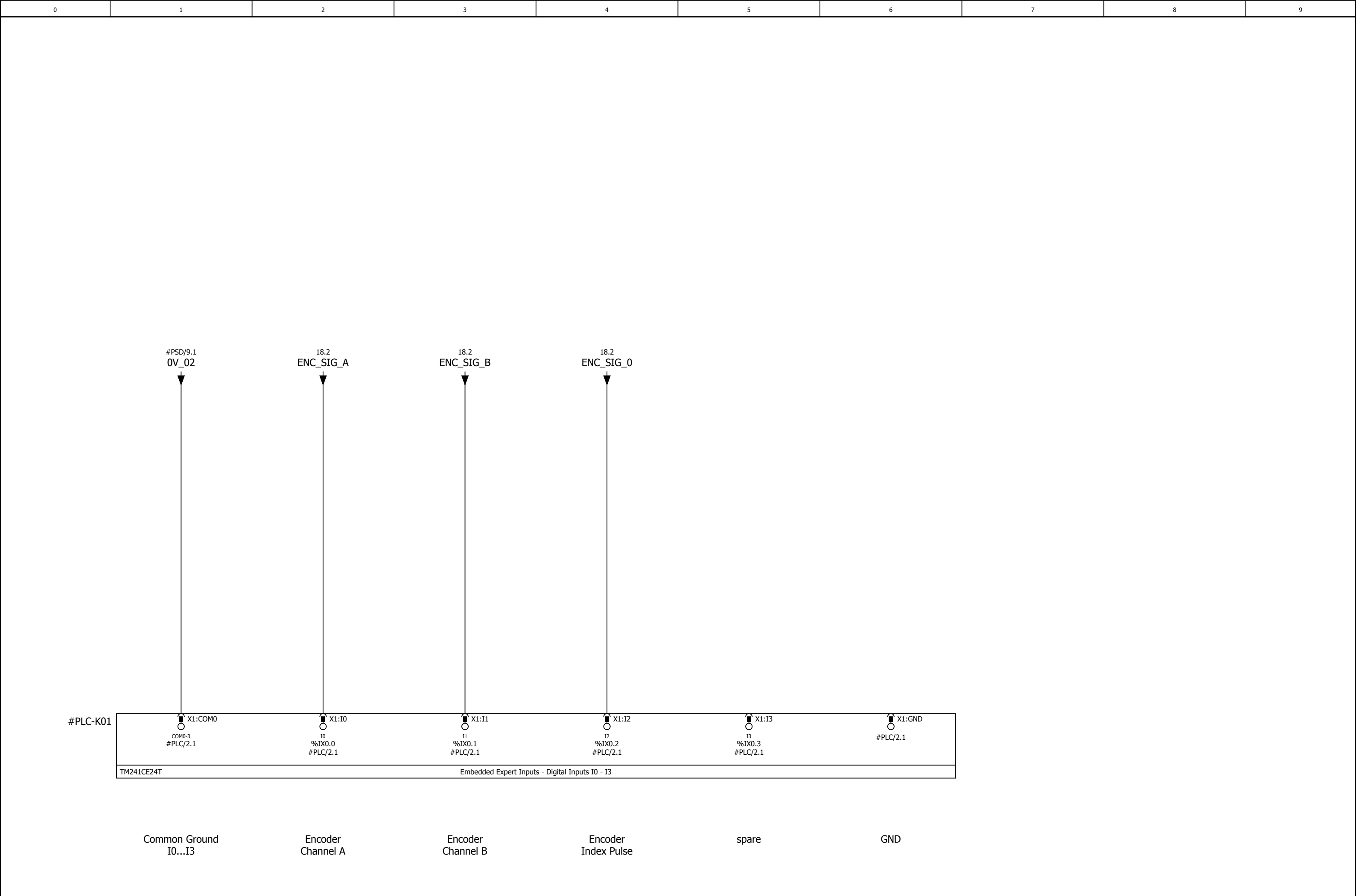
Power Supply TM3

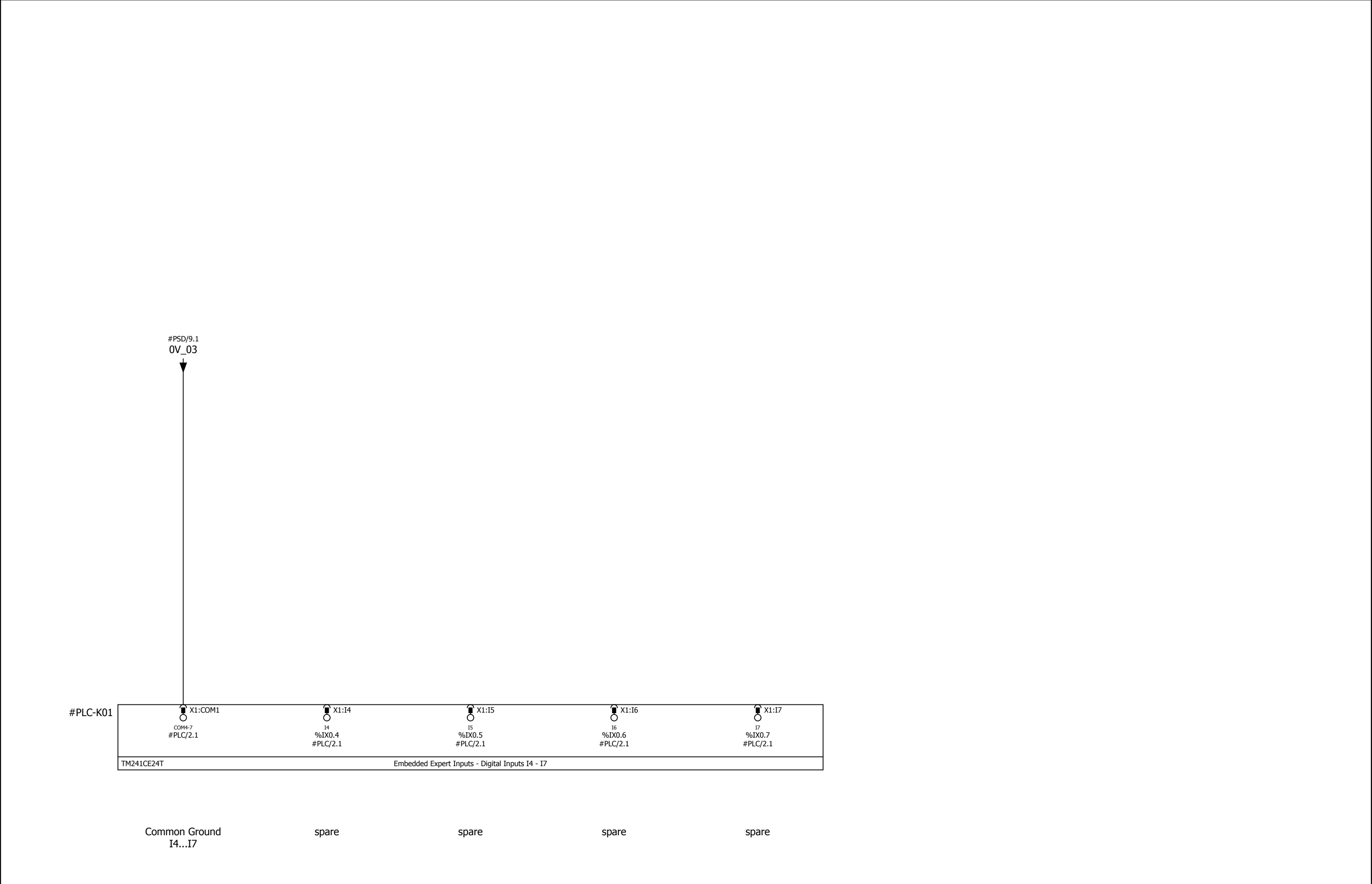
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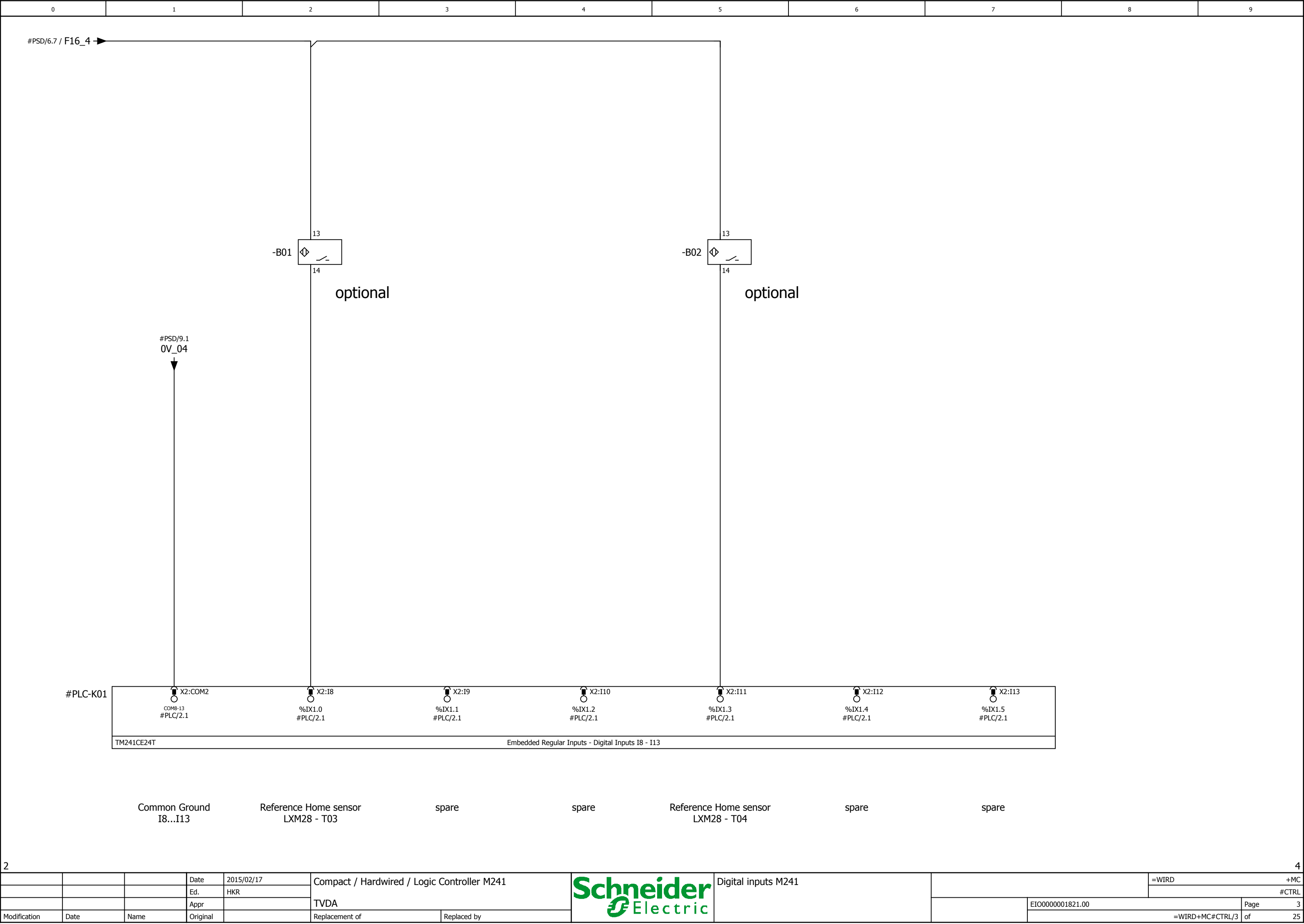


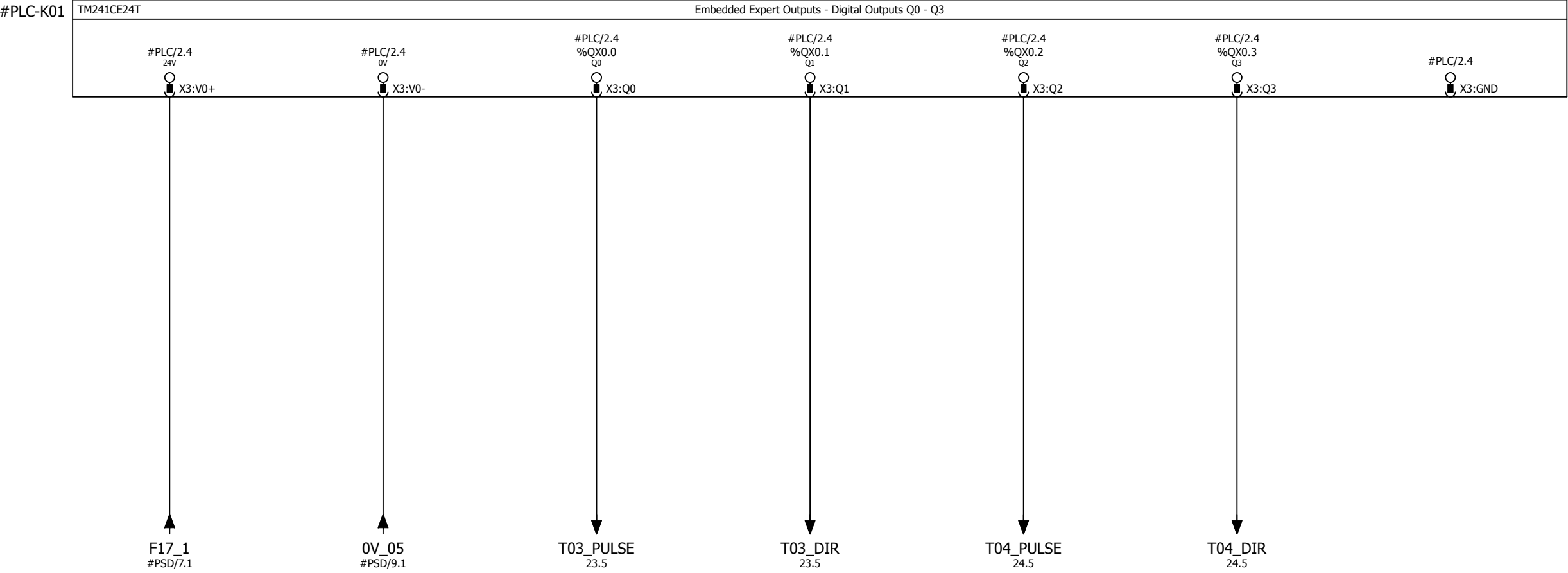
HMI STU 855

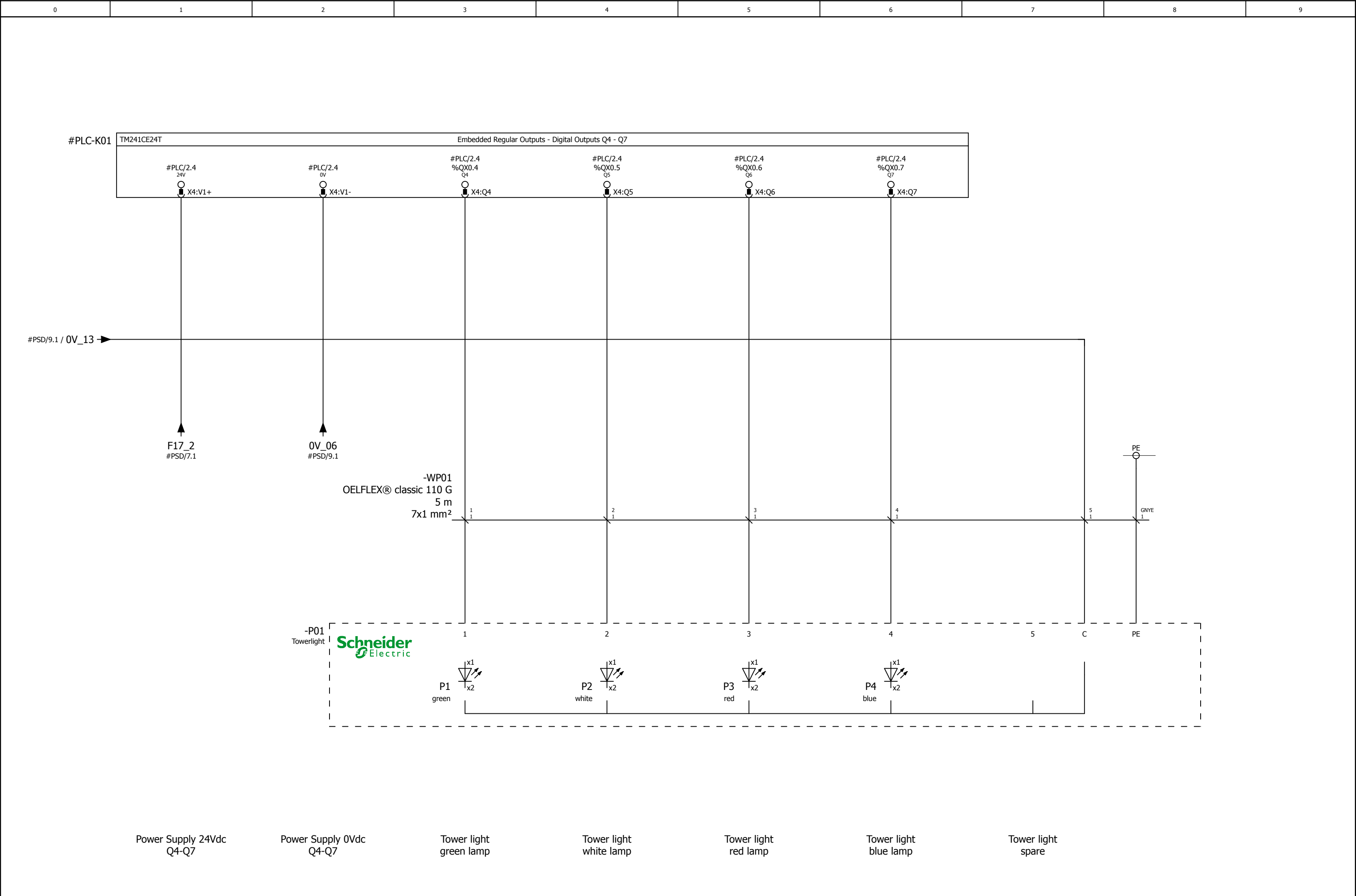
#PLC/10							#CTRL/1						
			Date	2015/02/17	Compact / Hardwired / Logic Controller M241			HMI Magelis Panel Power Supply				=WIRD	+MC
			Ed.	HKR								#HMI	
			Appr							TVDA			
Modification	Date	Name	Original		Replacement of	Replaced by				EIO0000001821.00		=WIRD+MC#HMI/1	of

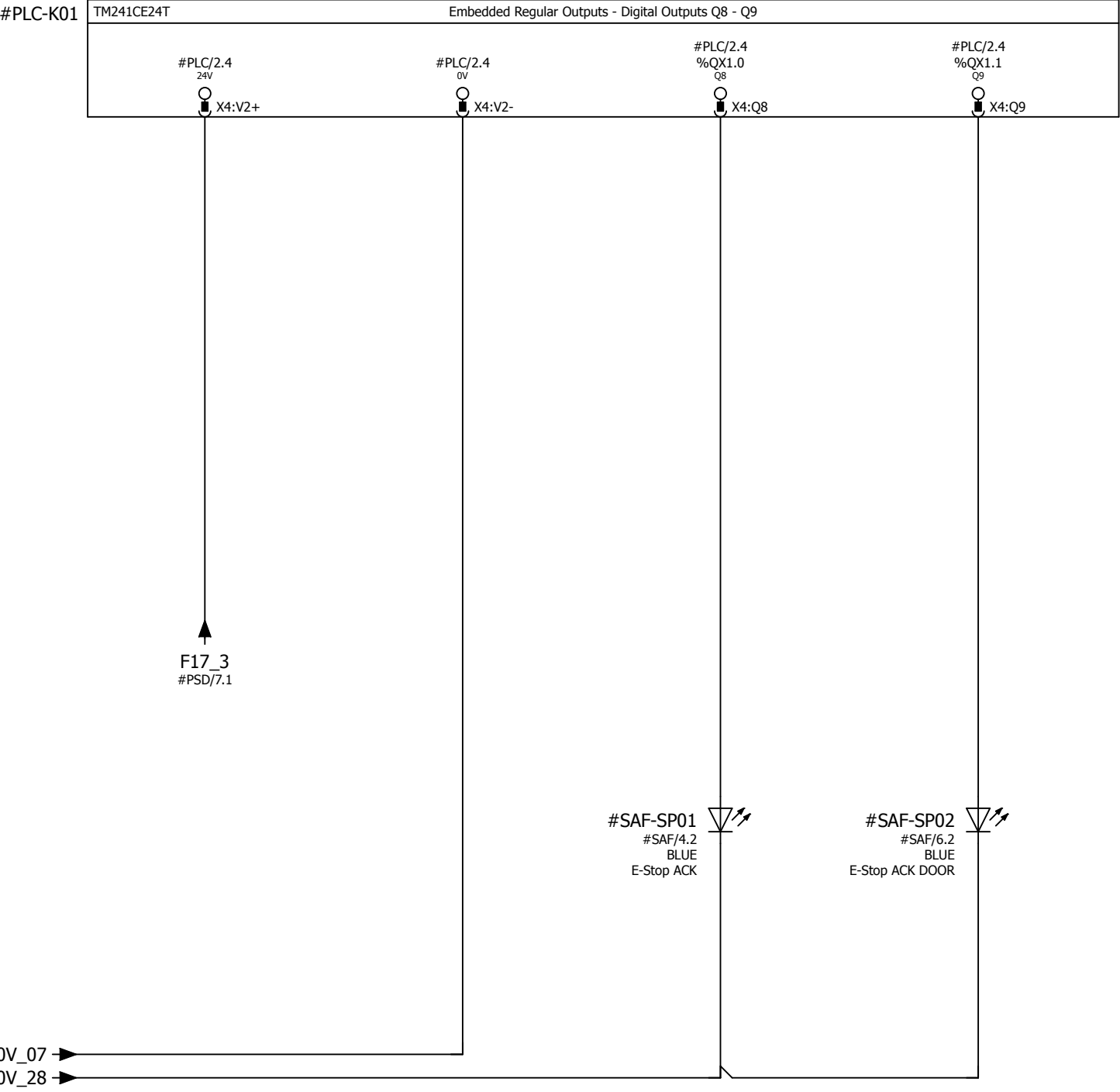


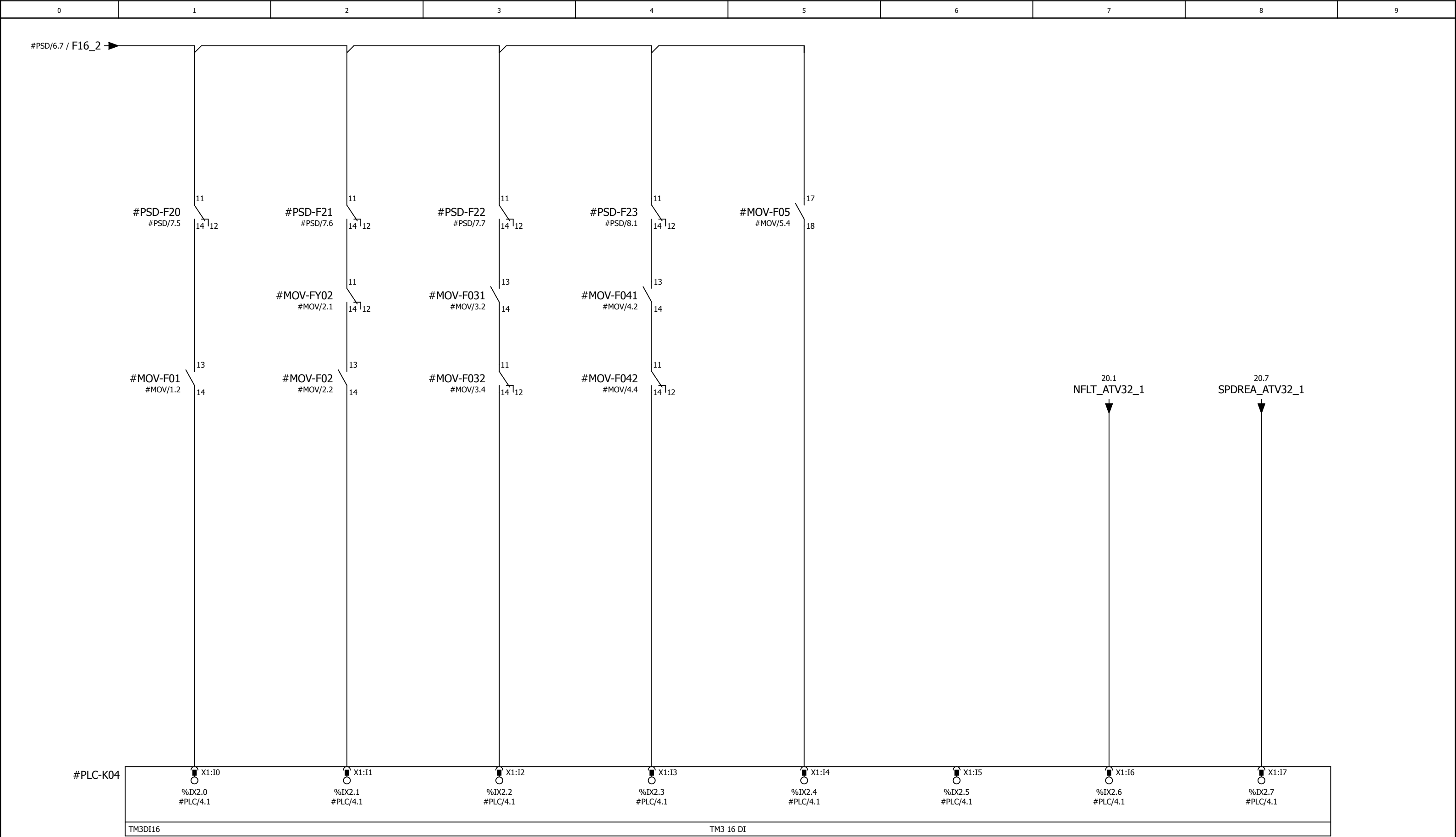


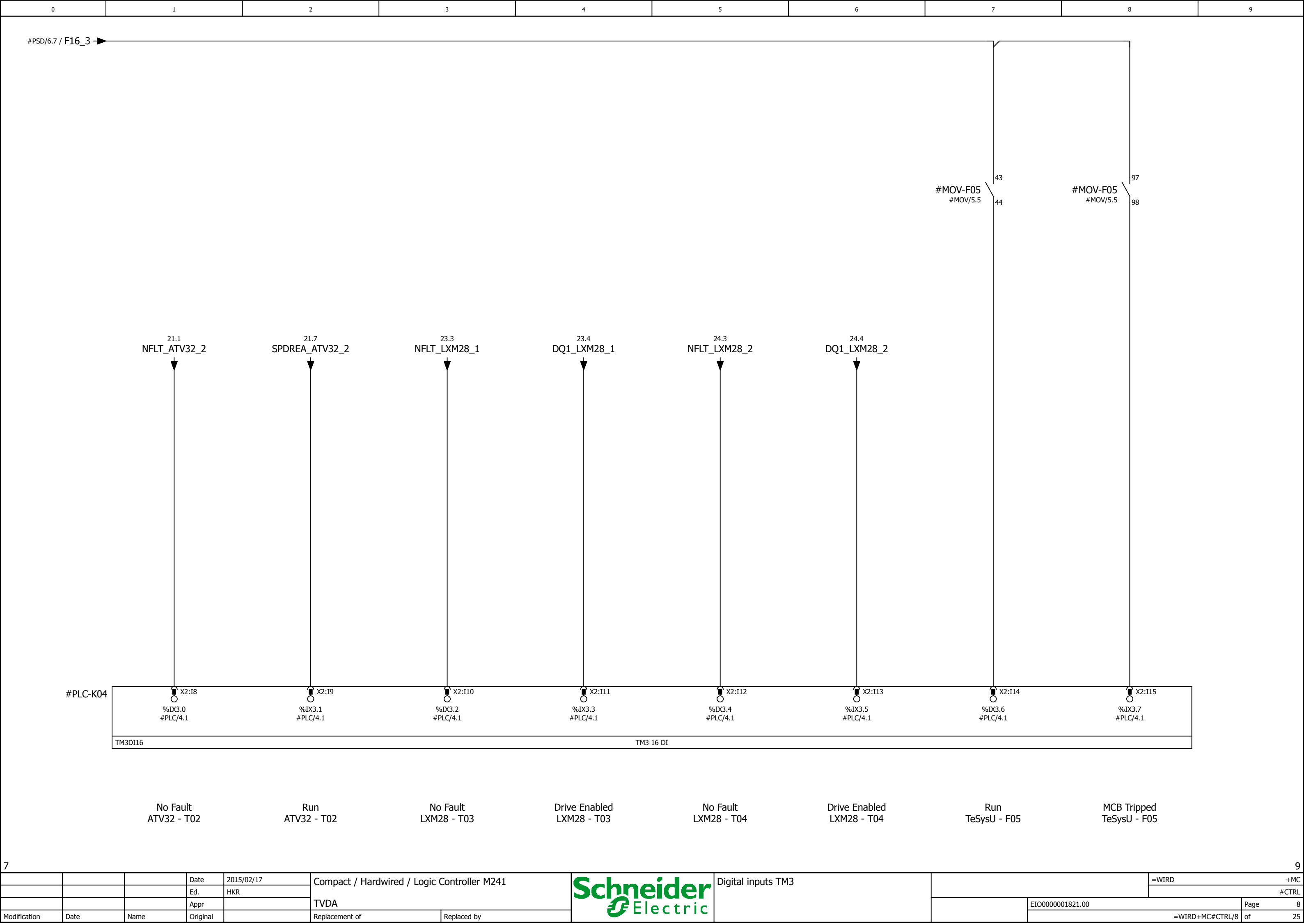


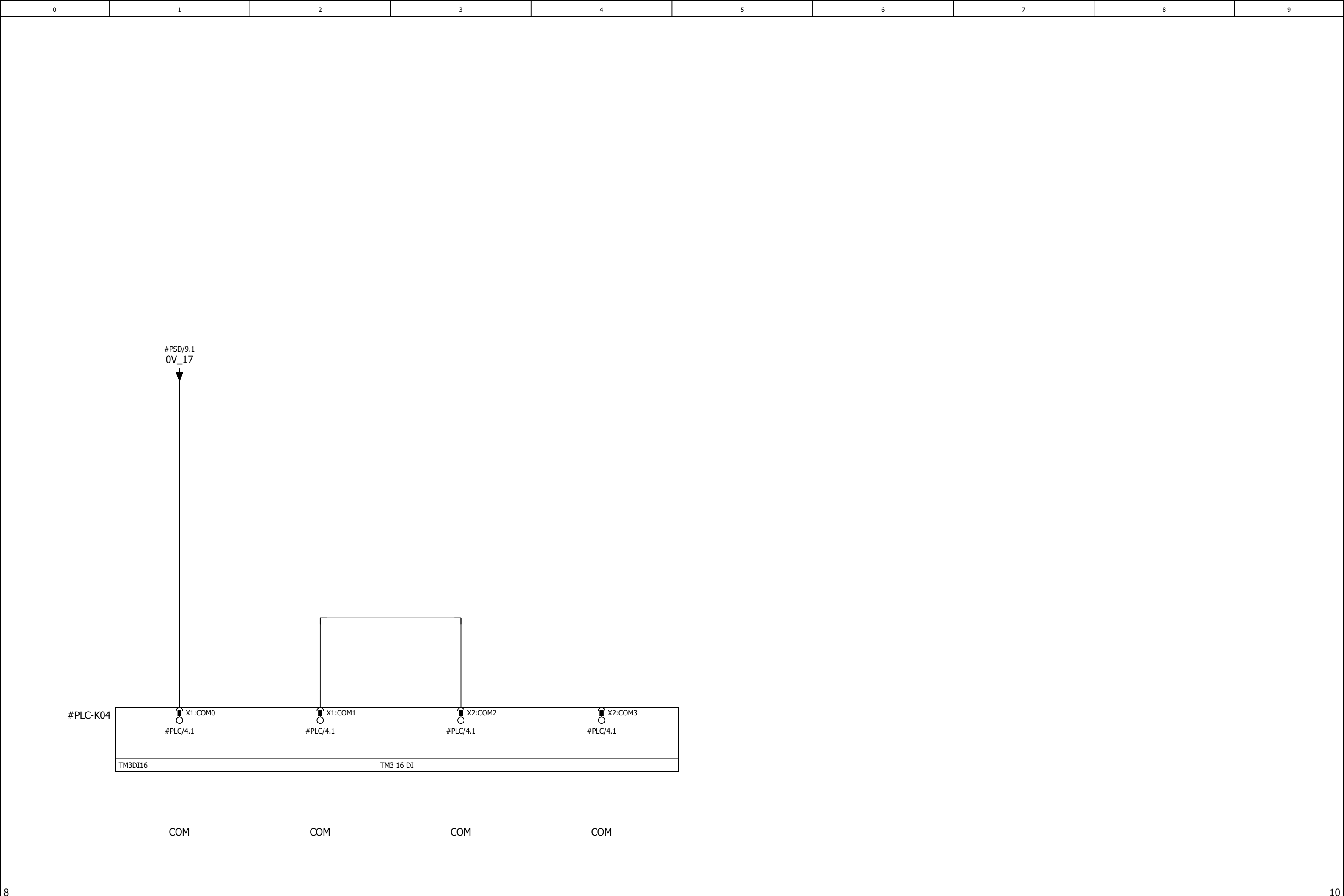


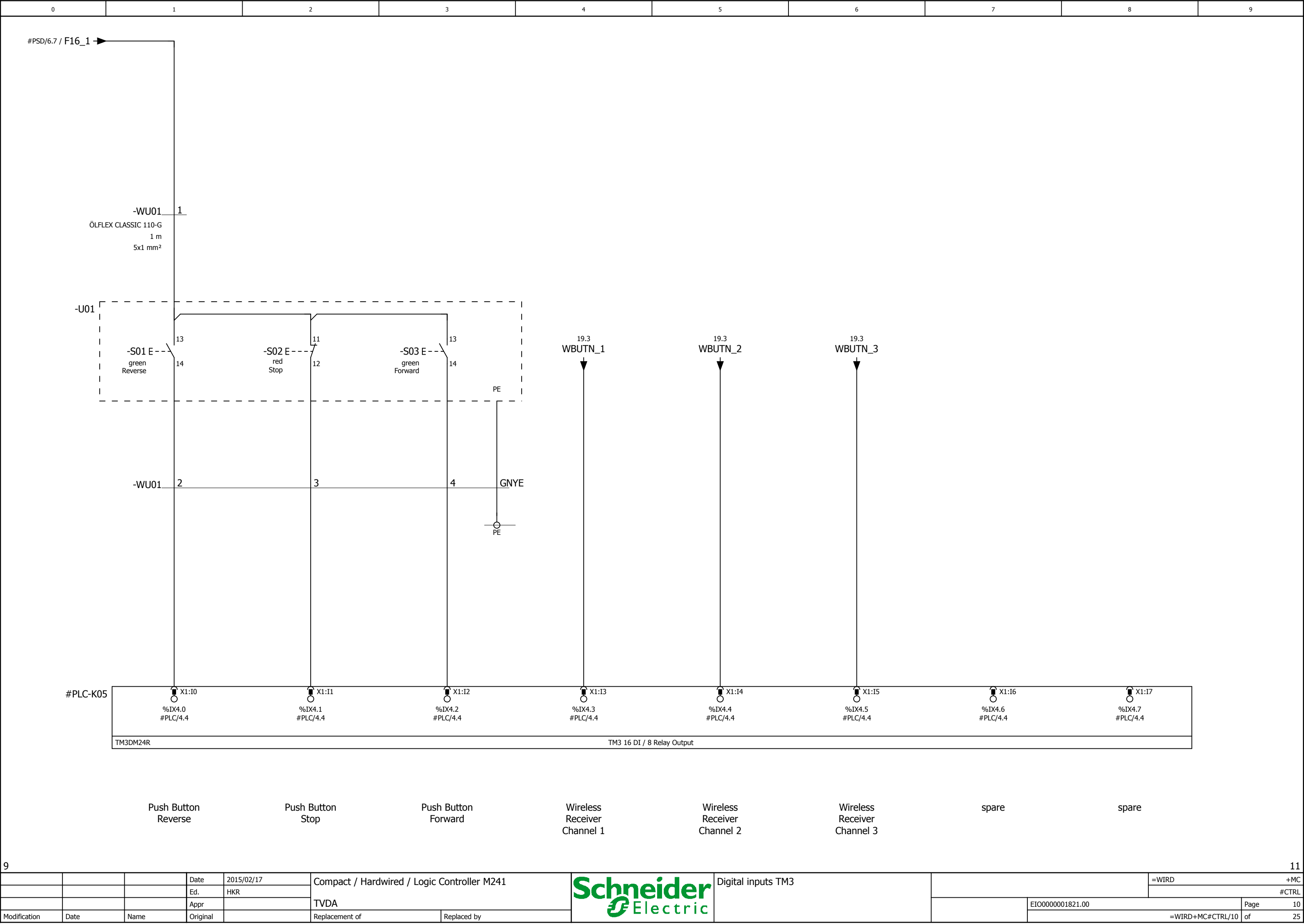


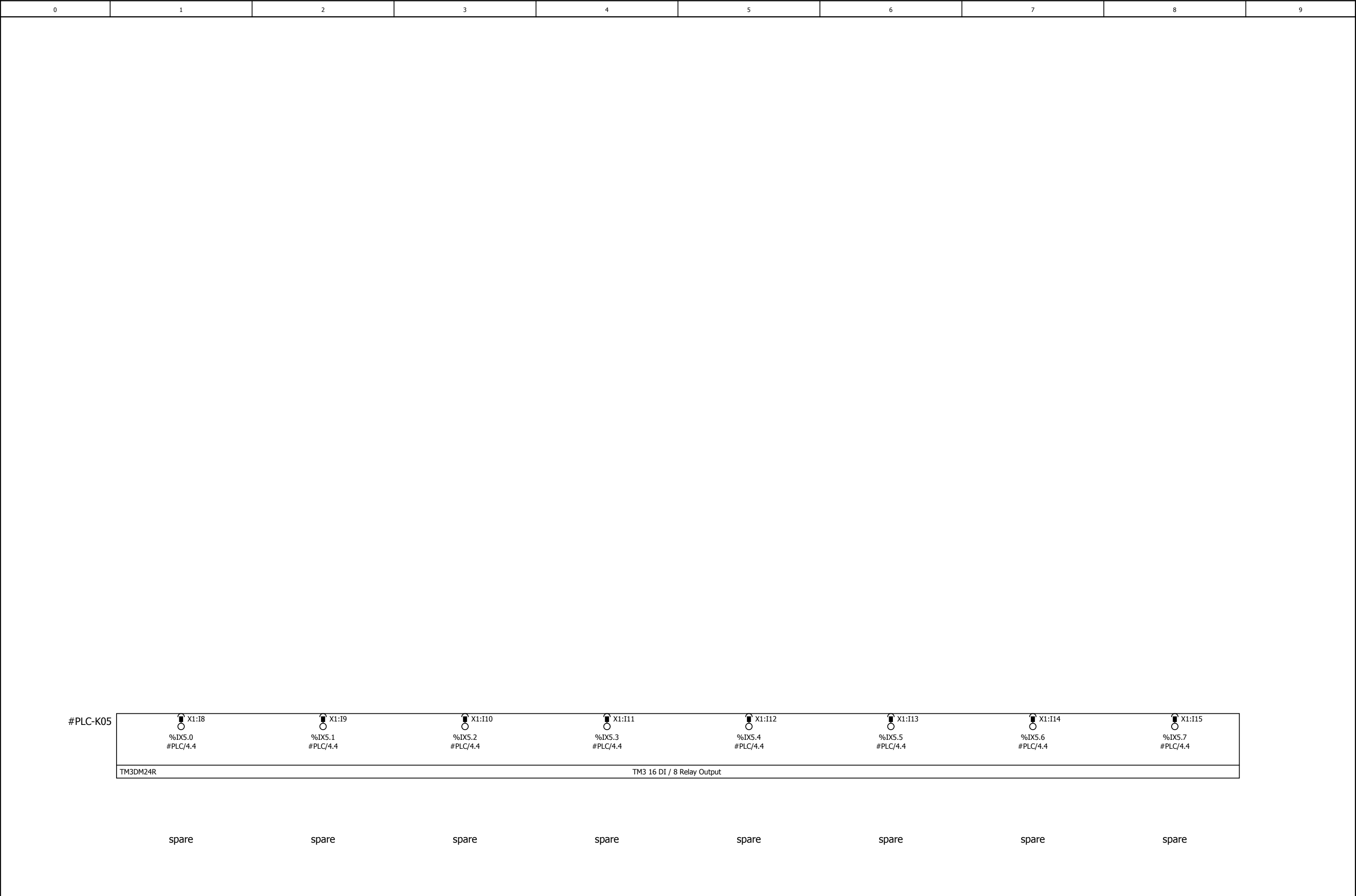


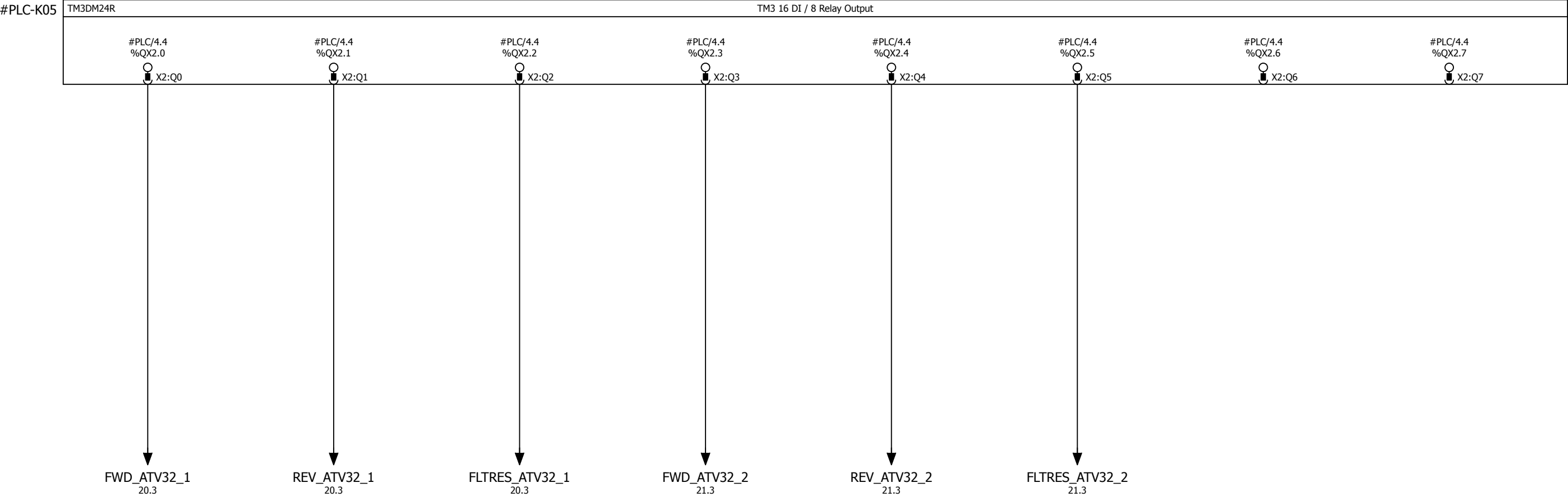












Command Forward
ATV32 - T01

Command Reverse
ATV32 - T01

Command Fault Reset
ATV32 - T01

Command Forward
ATV32 - T02

Command Reverse
ATV32 - T02

Command Fault Reset
ATV32 - T02

spare

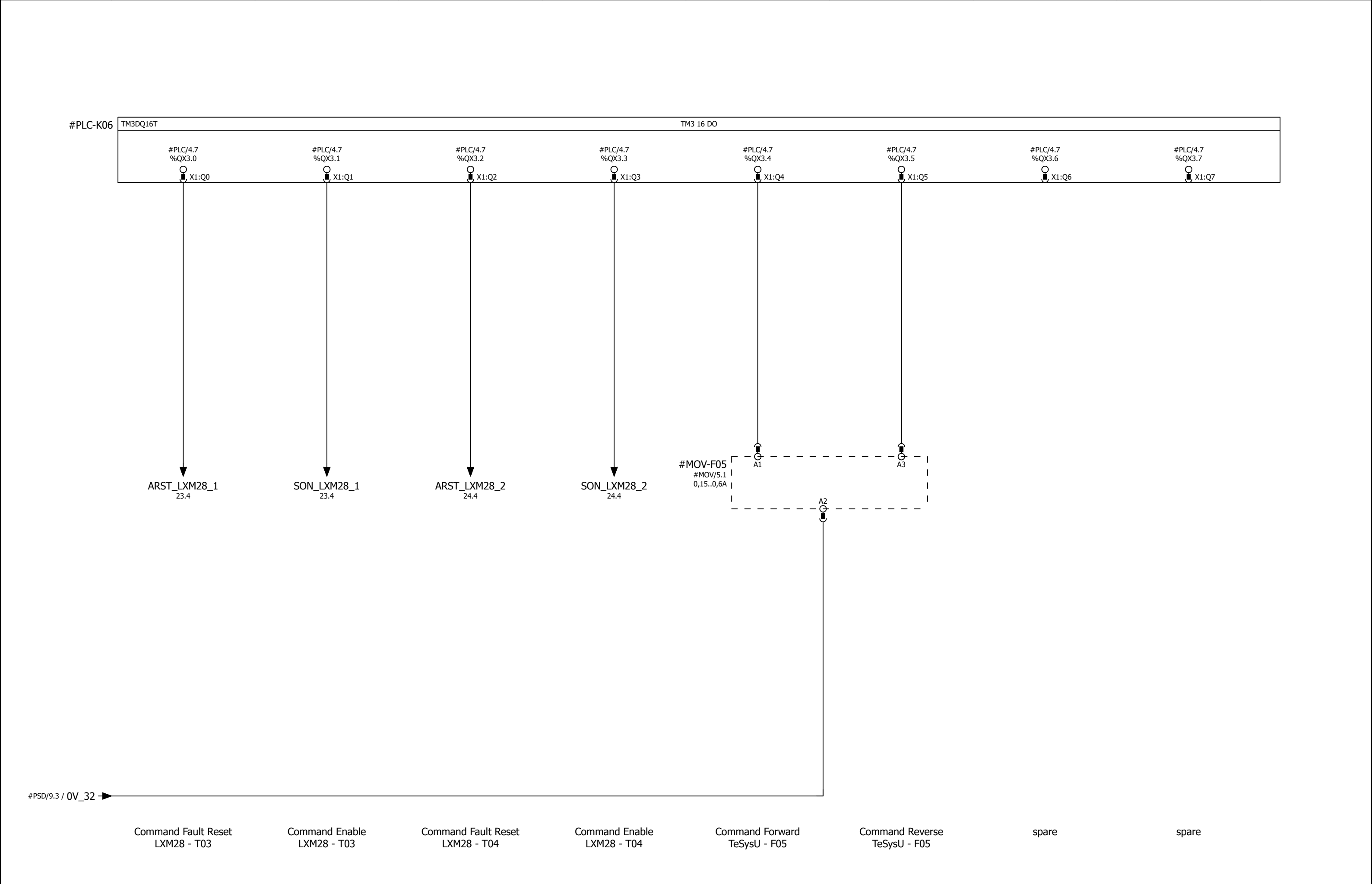
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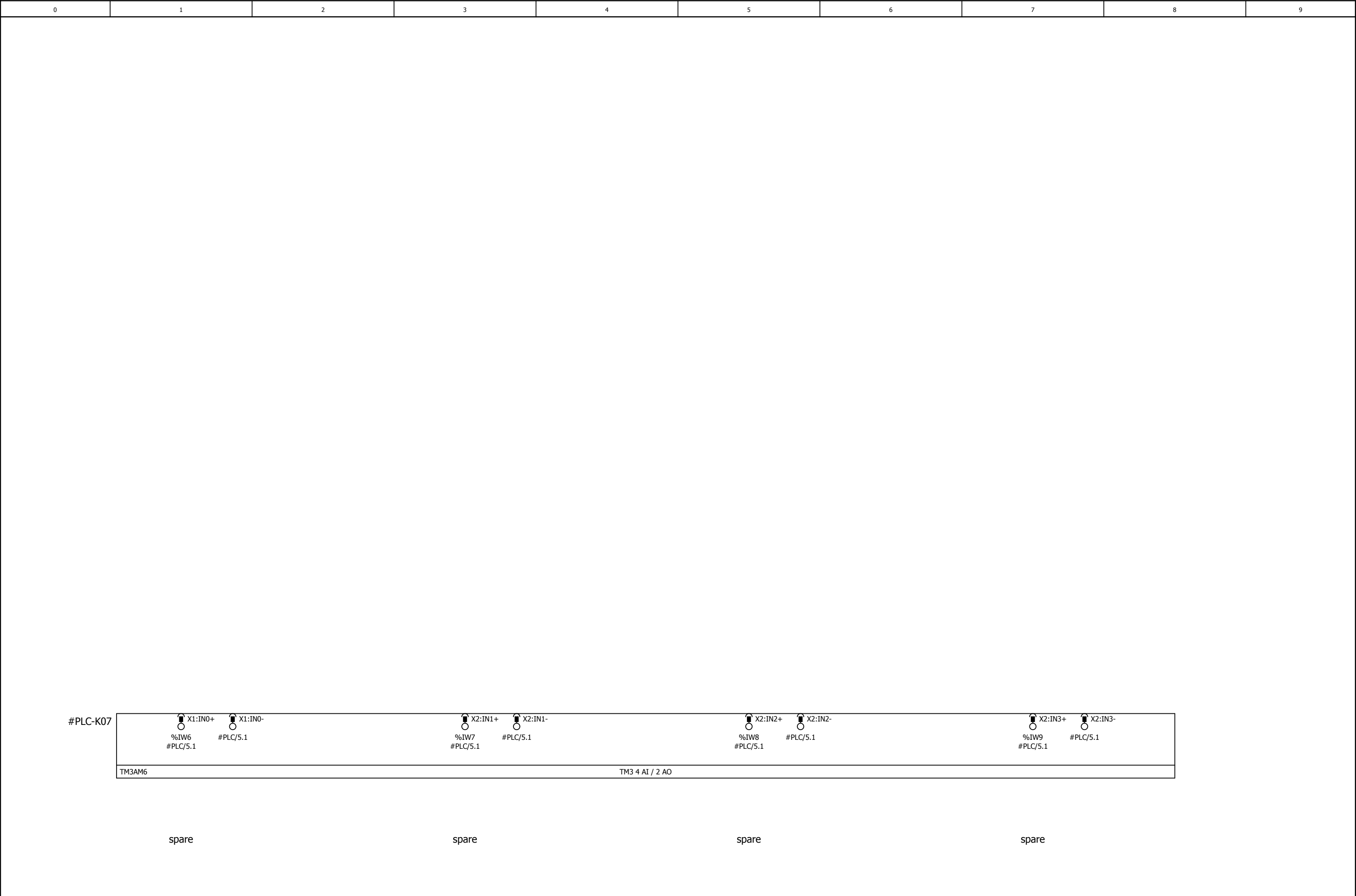
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			Ed.	HKR		
			Appr			
Modification	Date	Name	Original		Replacement of	Replaced by

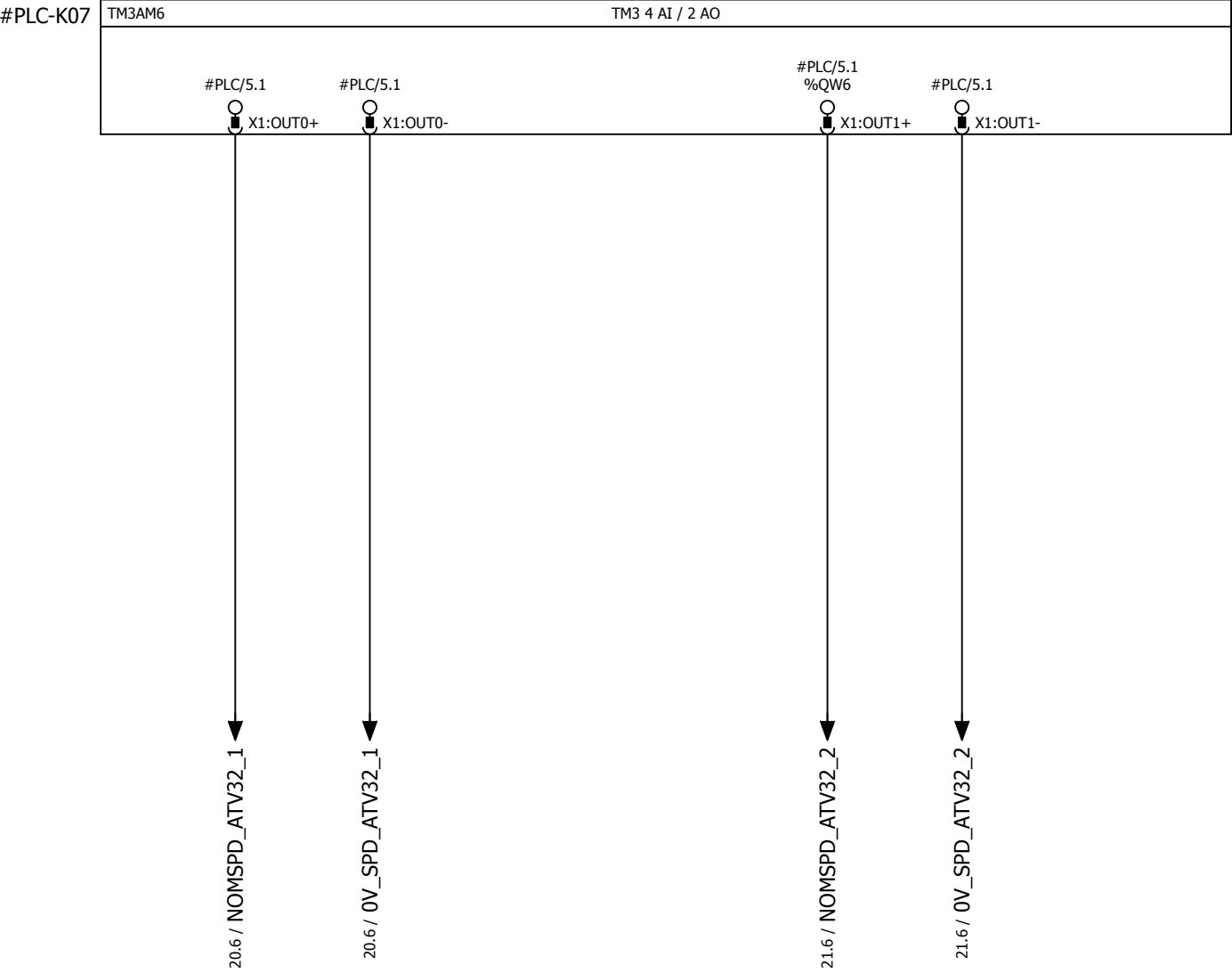


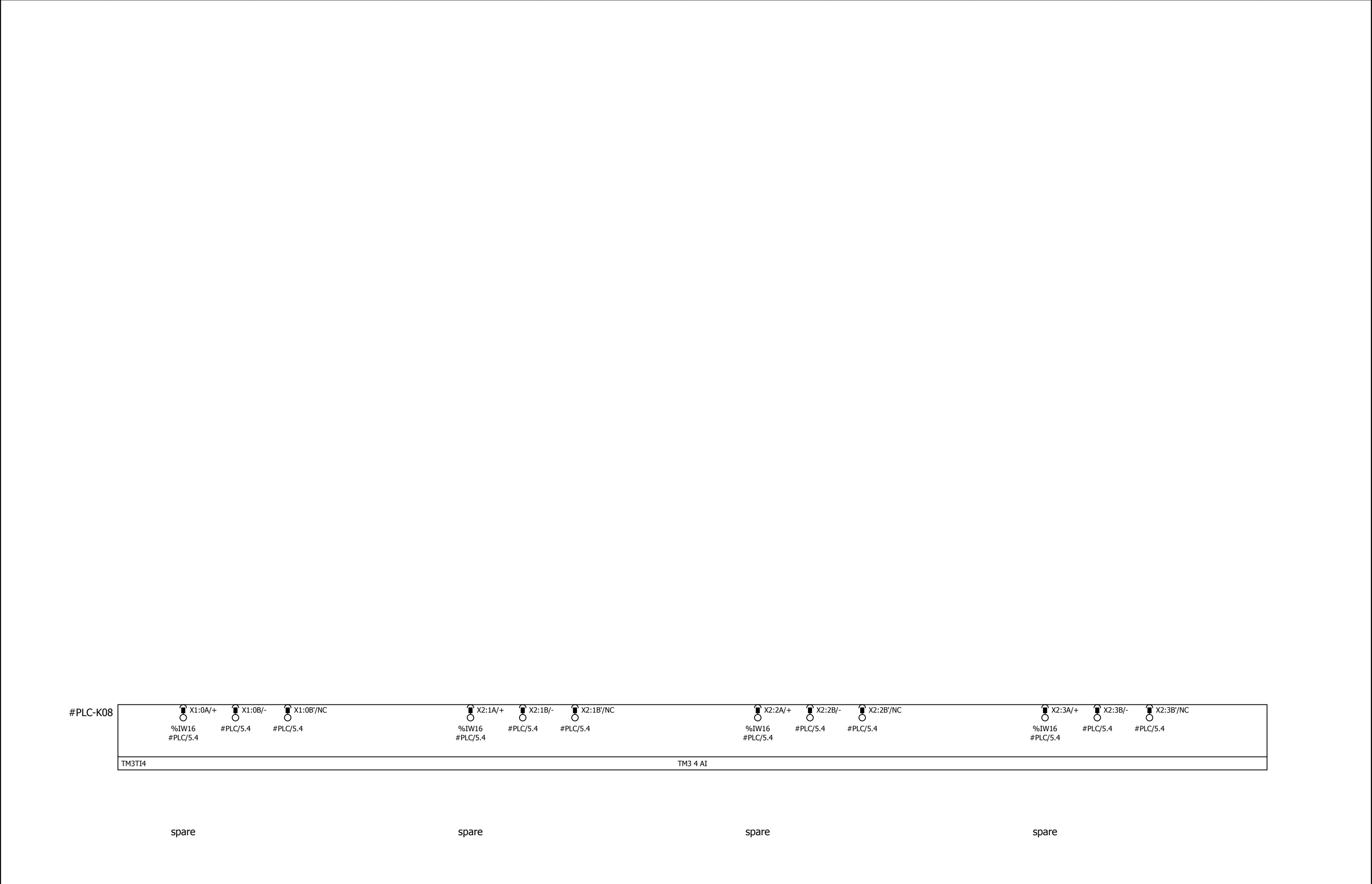
Digital outputs TM3

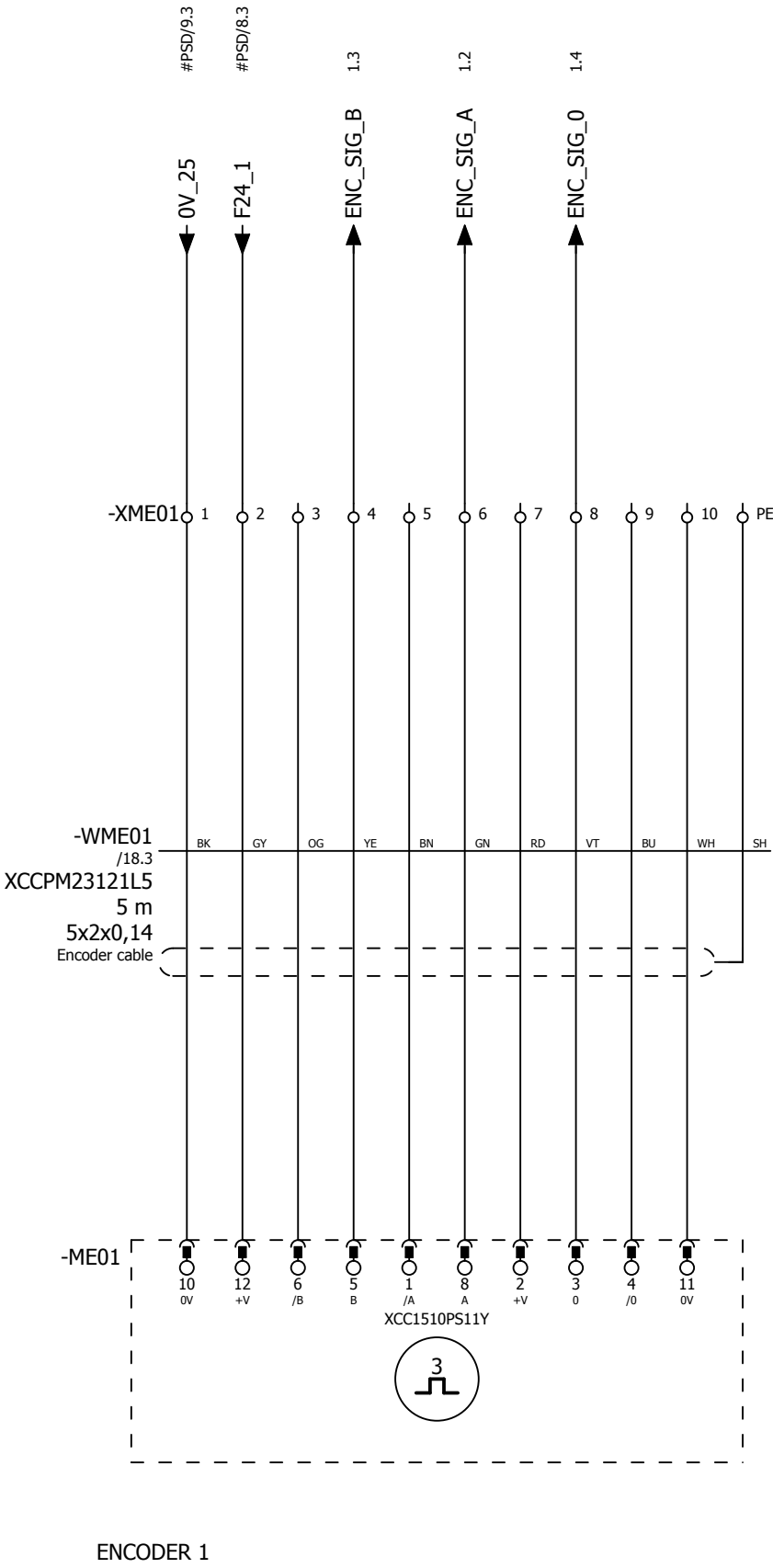
			=WIRD		+MC
			#CTRL		
		EIO0000001821.00	Page	12	
			=WIRD+MC#CTRL/12		of 25



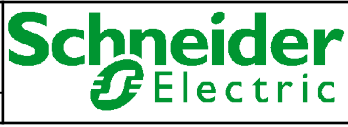




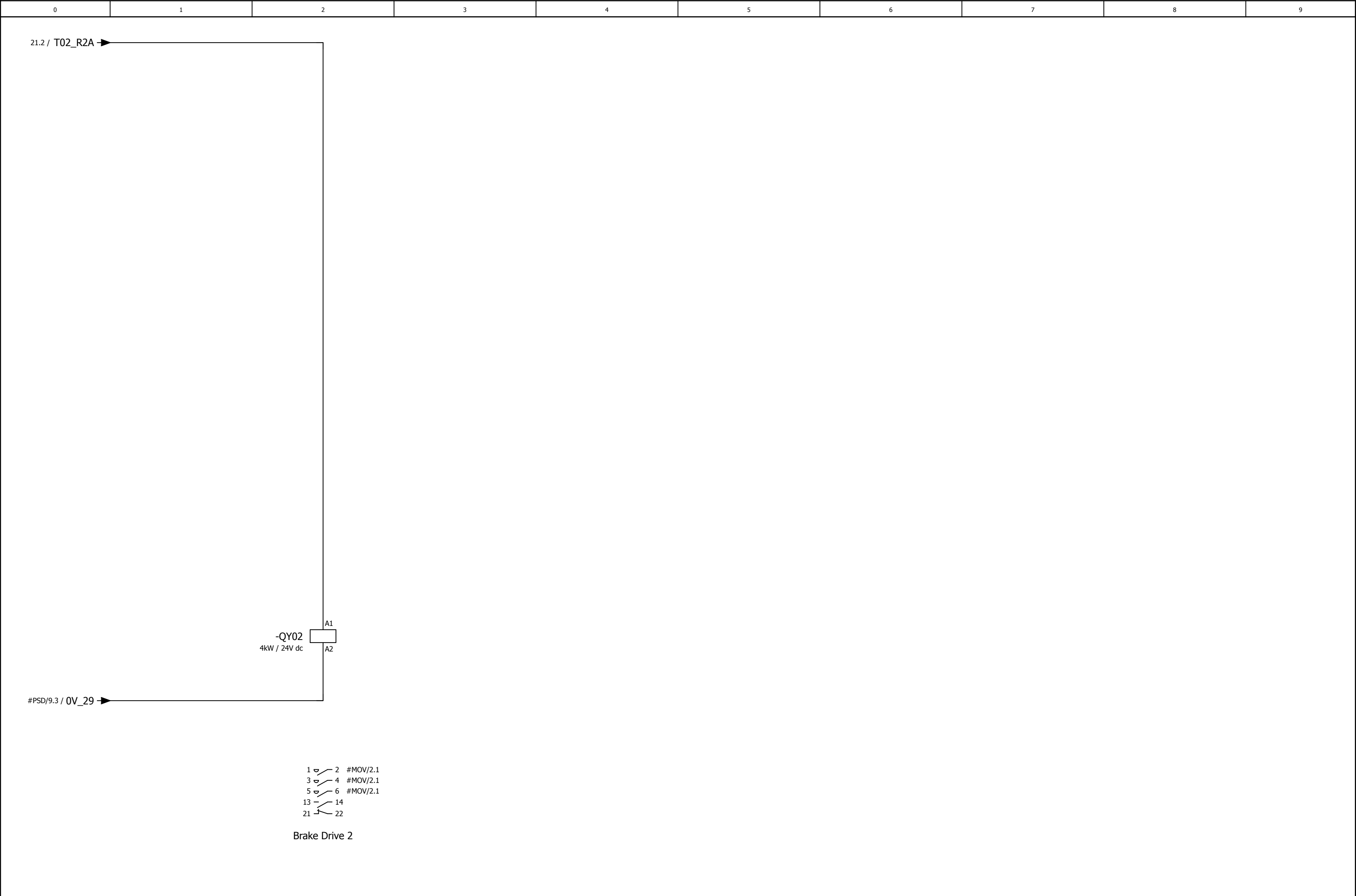


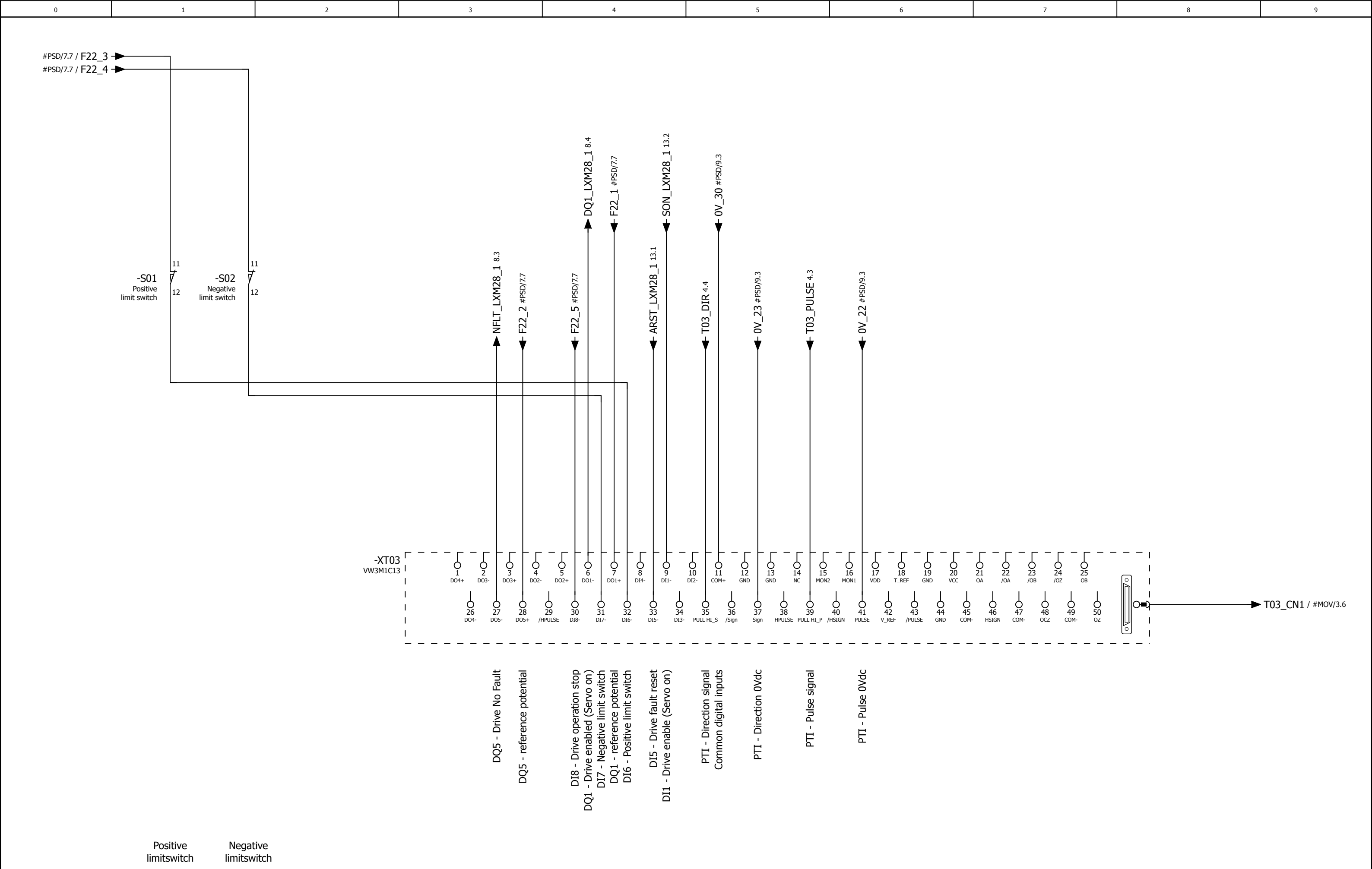


			Date	2015/02/17	Compact / Hardwired / Logic Controller M241	
			Ed.	HKR		
			Appr			
Modification	Date	Name	Original		Replacement of	Replaced by

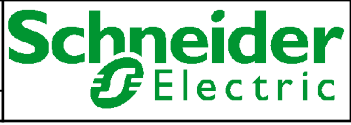


Incremental Encoder		=WIRD		+MC	
				#CTRL	
		EIO0000001821.00			Page 18
		=WIRD+MC#CTRL/18 of 25			



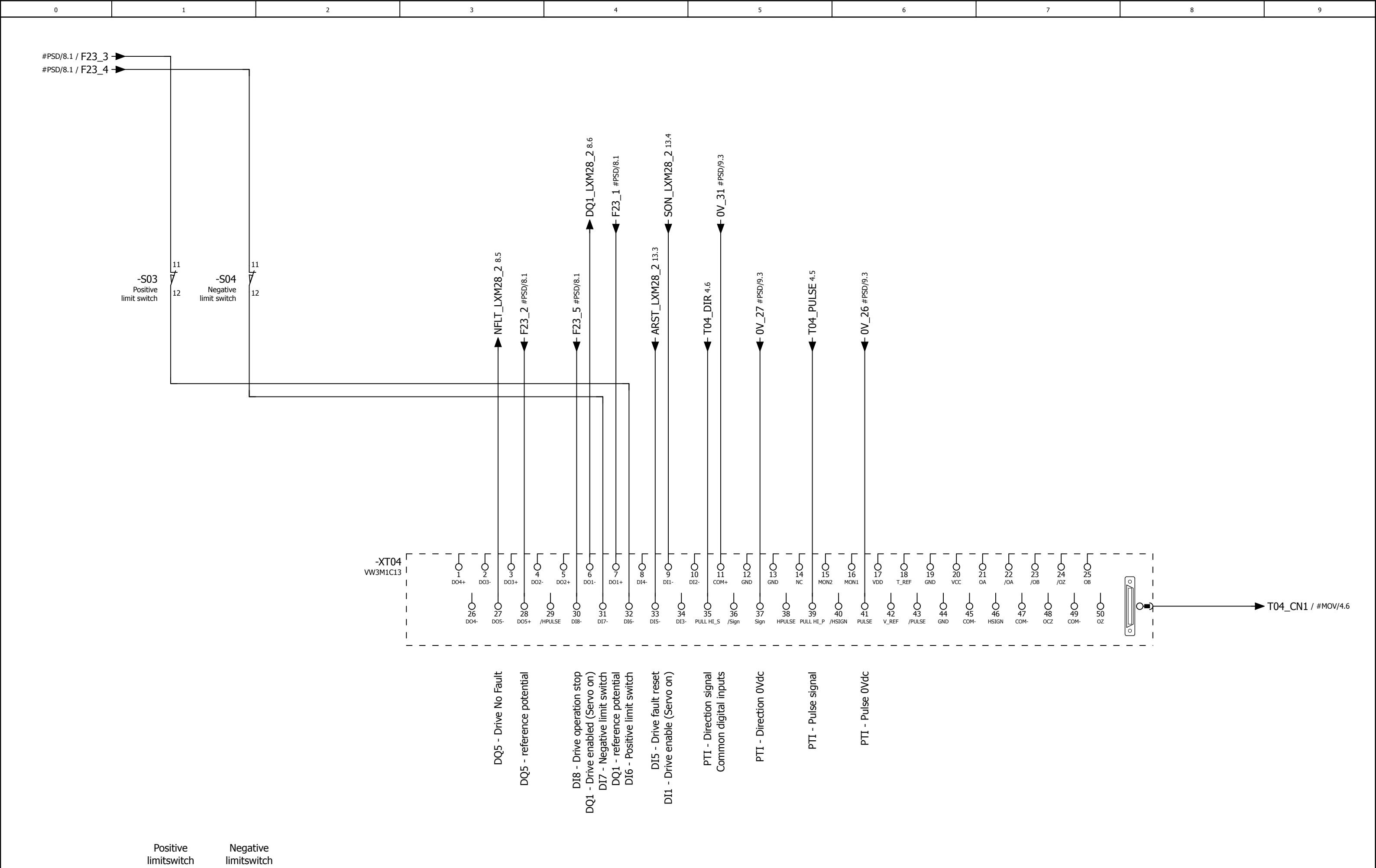


			Date	2015/02/17	Compact / Hardwired / Logic Controller M241	
			Ed.	HKR		
			Appr		TVDA	
Modification	Date	Name	Original		Replacement of	Replaced by

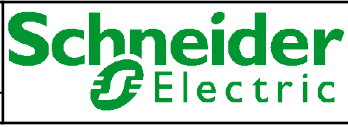


Drive 3 - LXM28
Control Terminals - CN1 connection module

		=WIRD		+MC
		#CTRL		
	EIO0000001821.00	Page	23	
		=WIRD+MC#CTRL/23	of	25

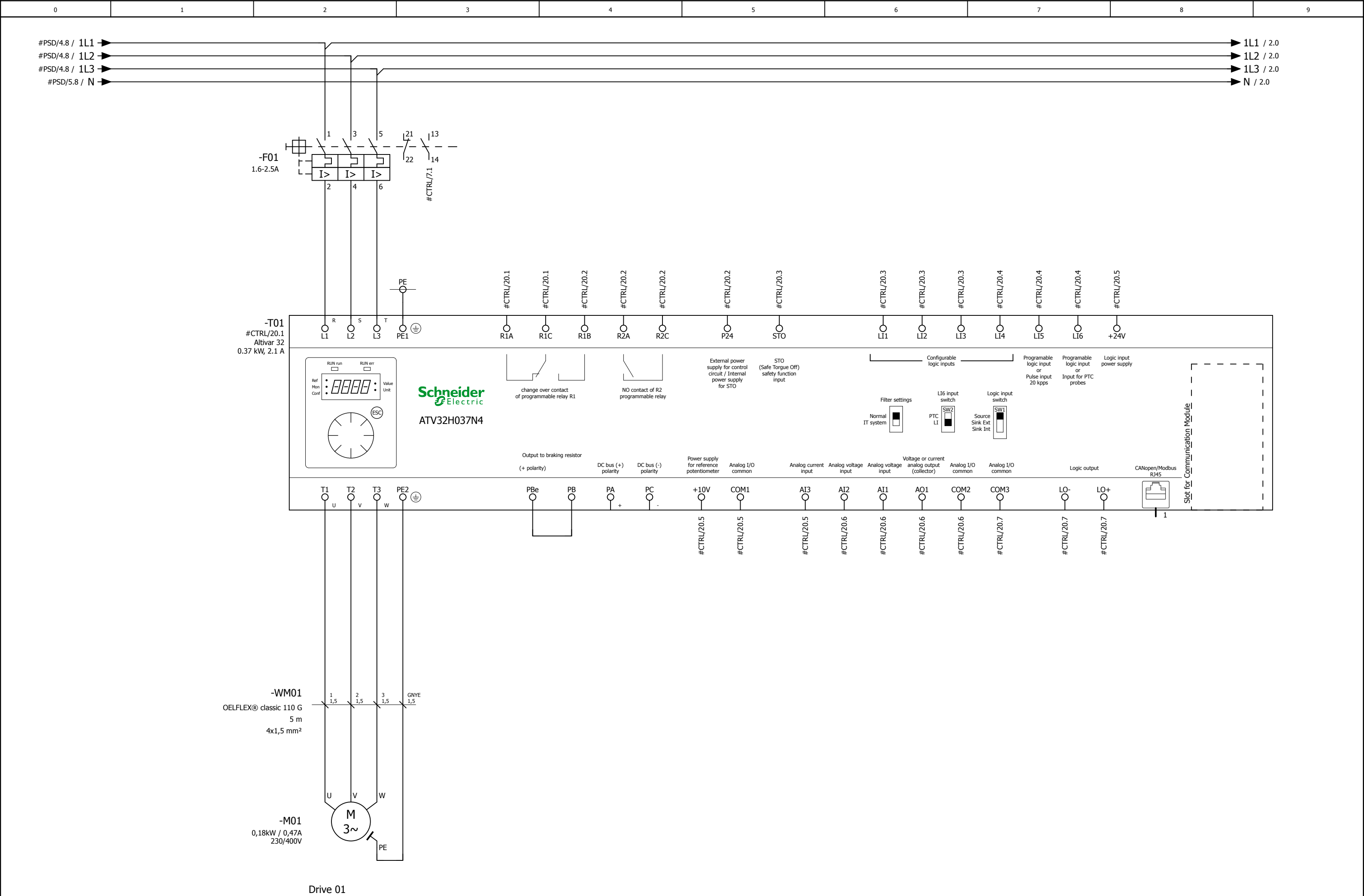


			Date	2015/02/17	Compact / Hardwired / Logic Controller M241	
			Ed.	HKR	TVDA	
			Appr			
Modification	Date	Name	Original		Replacement of	Replaced by

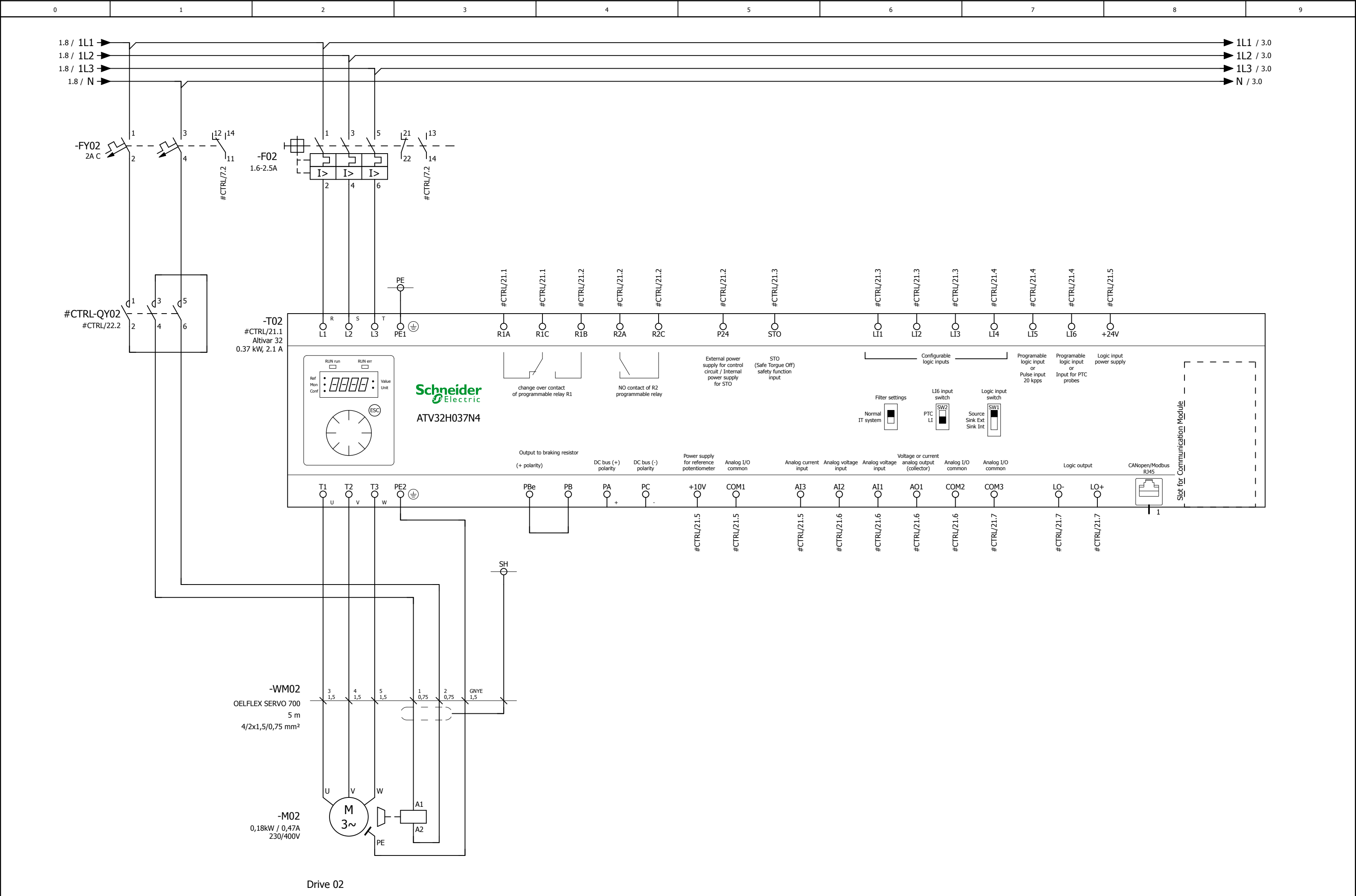


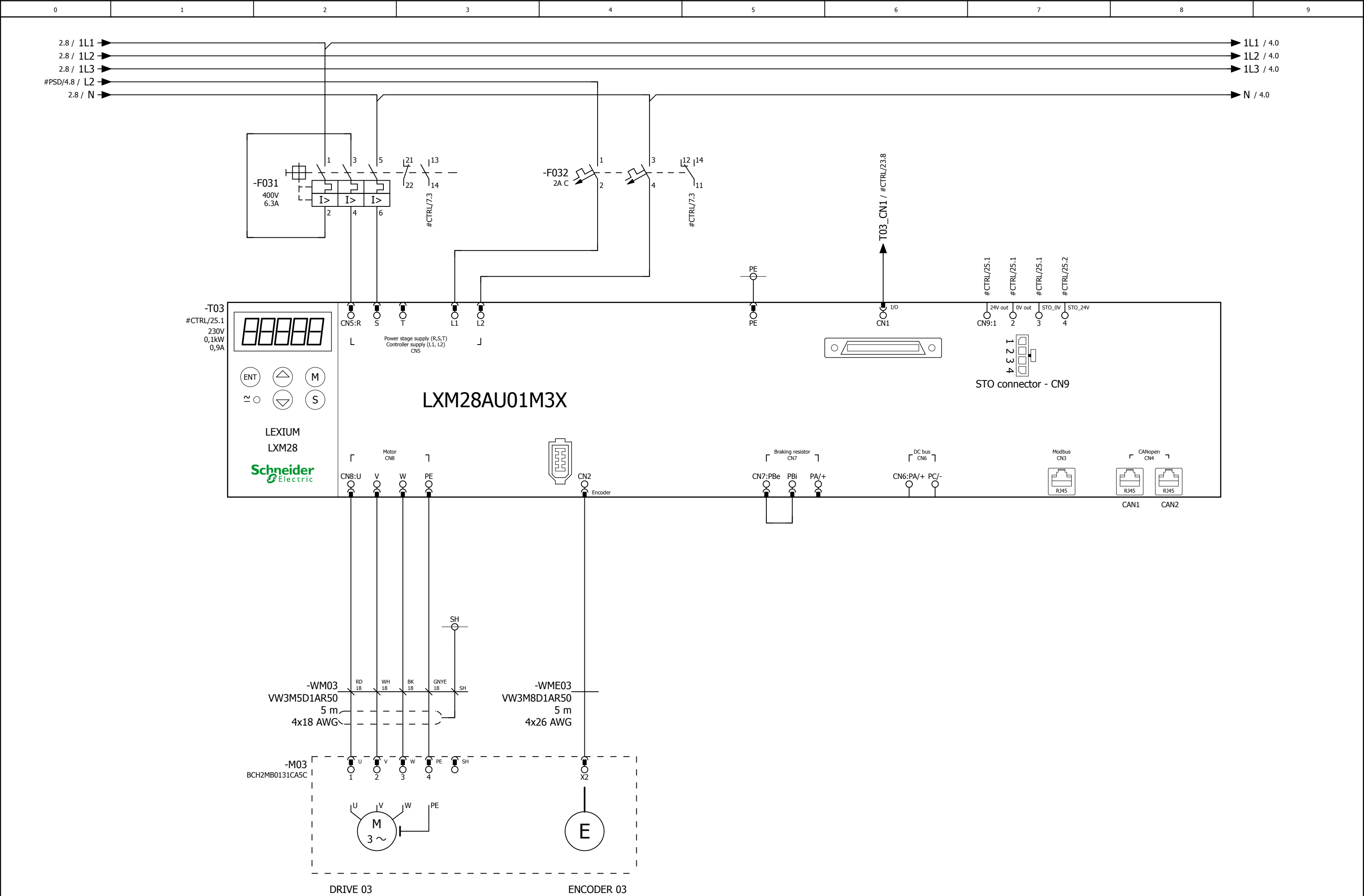
Drive 4 - LXM28	
Control Terminals - CN1 connection module	

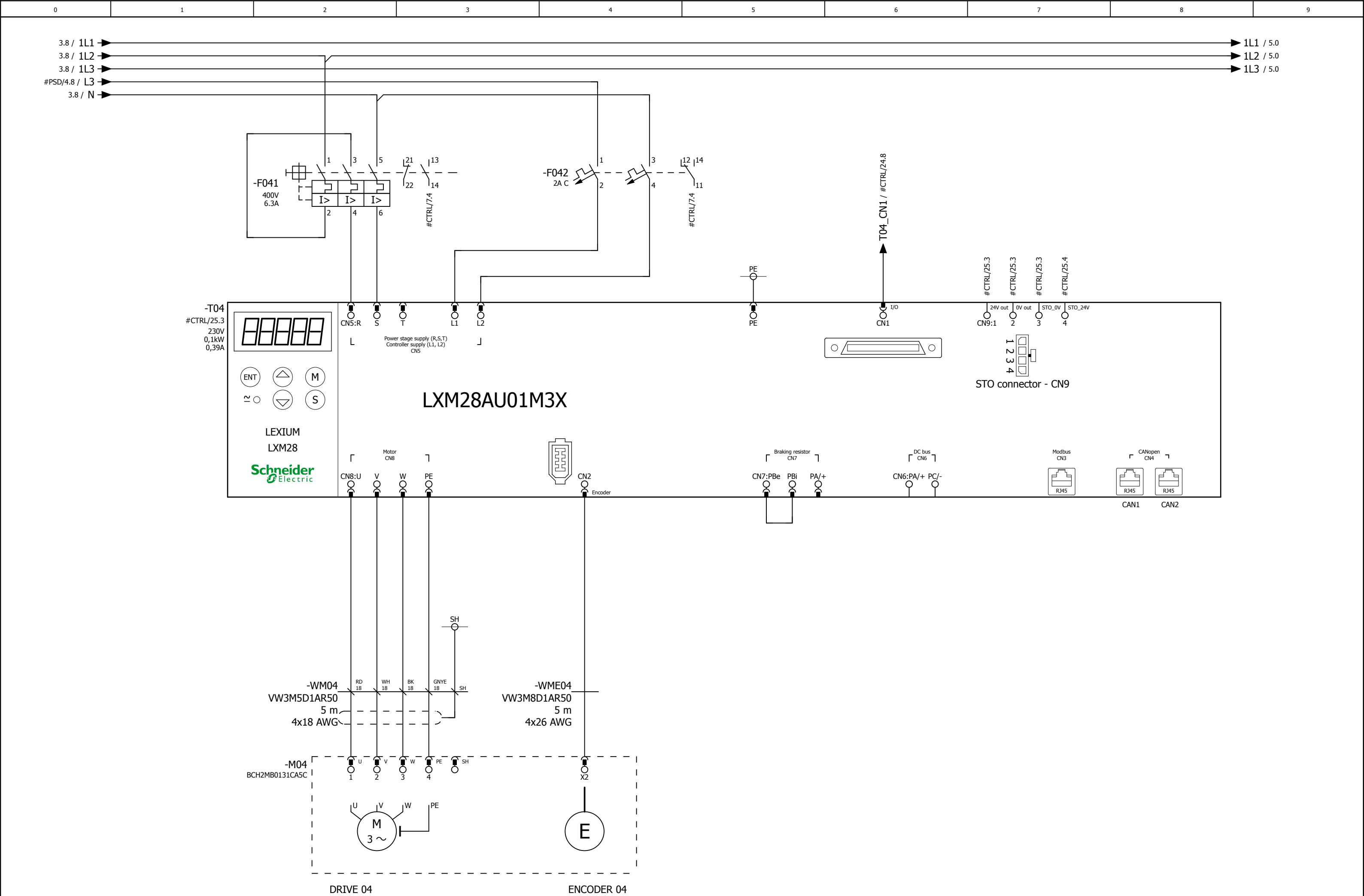
			=WIRD		+MC
			#CTRL		
	EIO0000001821.00	Page		24	
		=WIRD+MC#CTRL/24	of	25	

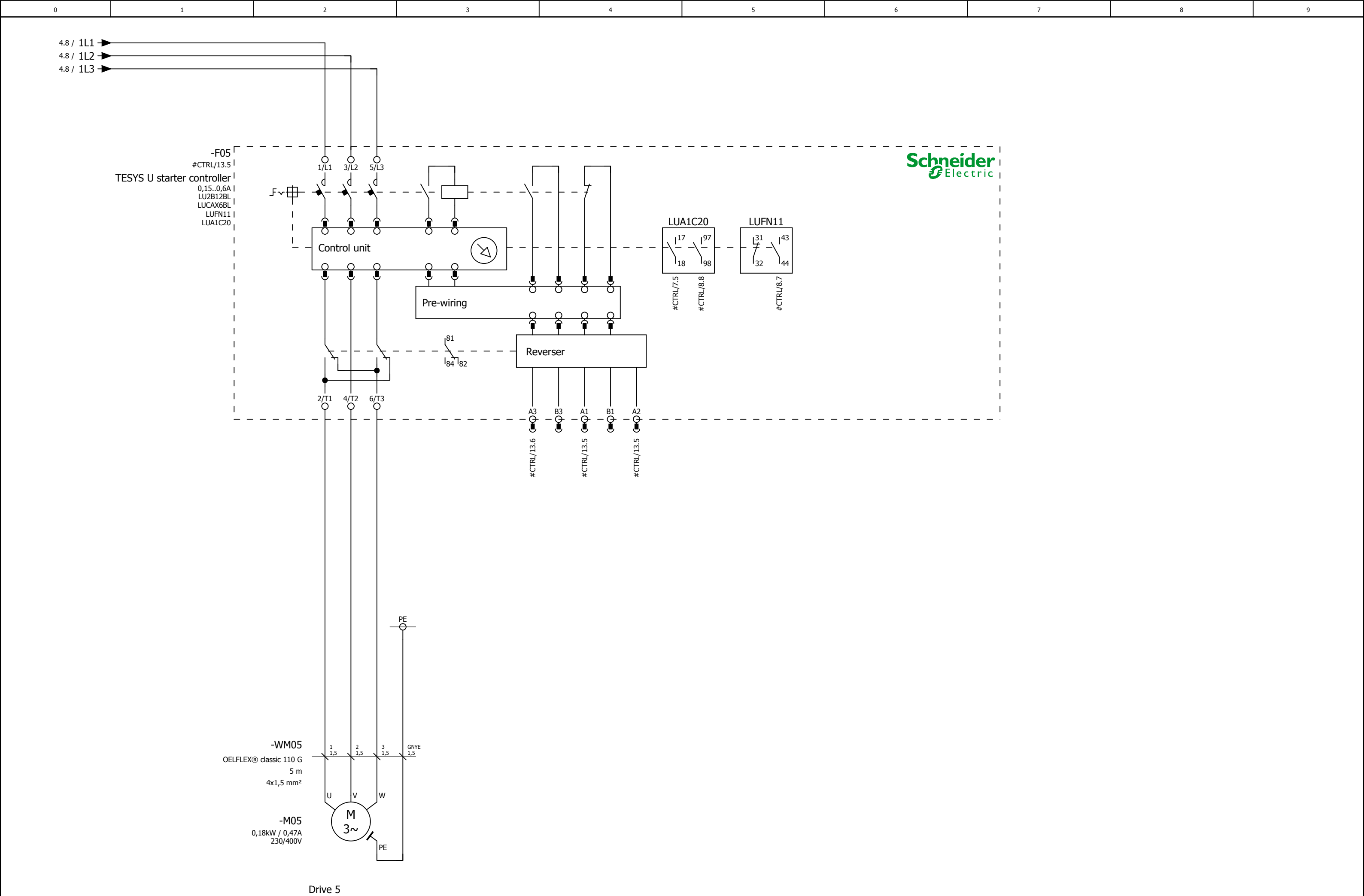


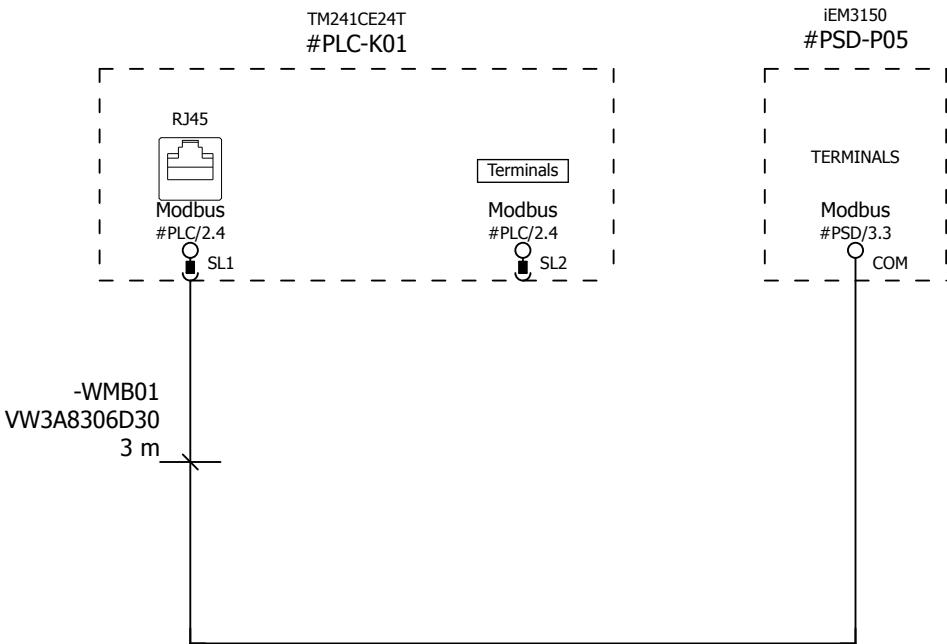
#CTRL/25				2	
			Date	2015/02/17	Compact / Hardwired / Logic Controller M241
			Ed.	HKR	
			Appr		TVDA
Modification	Date	Name	Original	Replacement of	Replaced by
				Schneider Electric	
				Drive 1 Variable speed drive Altivar 32	
				=WIRD +MC	
				#MOV	
				EIO0000001821.00	Page 1
				=WIRD+MC#MOV/1 of 5	











VW3A8603D30 - wiring		
RJ45	color	iEM3150
1	wh/gn	nc
2	gn	nc
3	wh/or	nc
4	bu	D1
5	wh/bu	D0
6	or	nc
7	wh/bn	nc
8	bn	GND