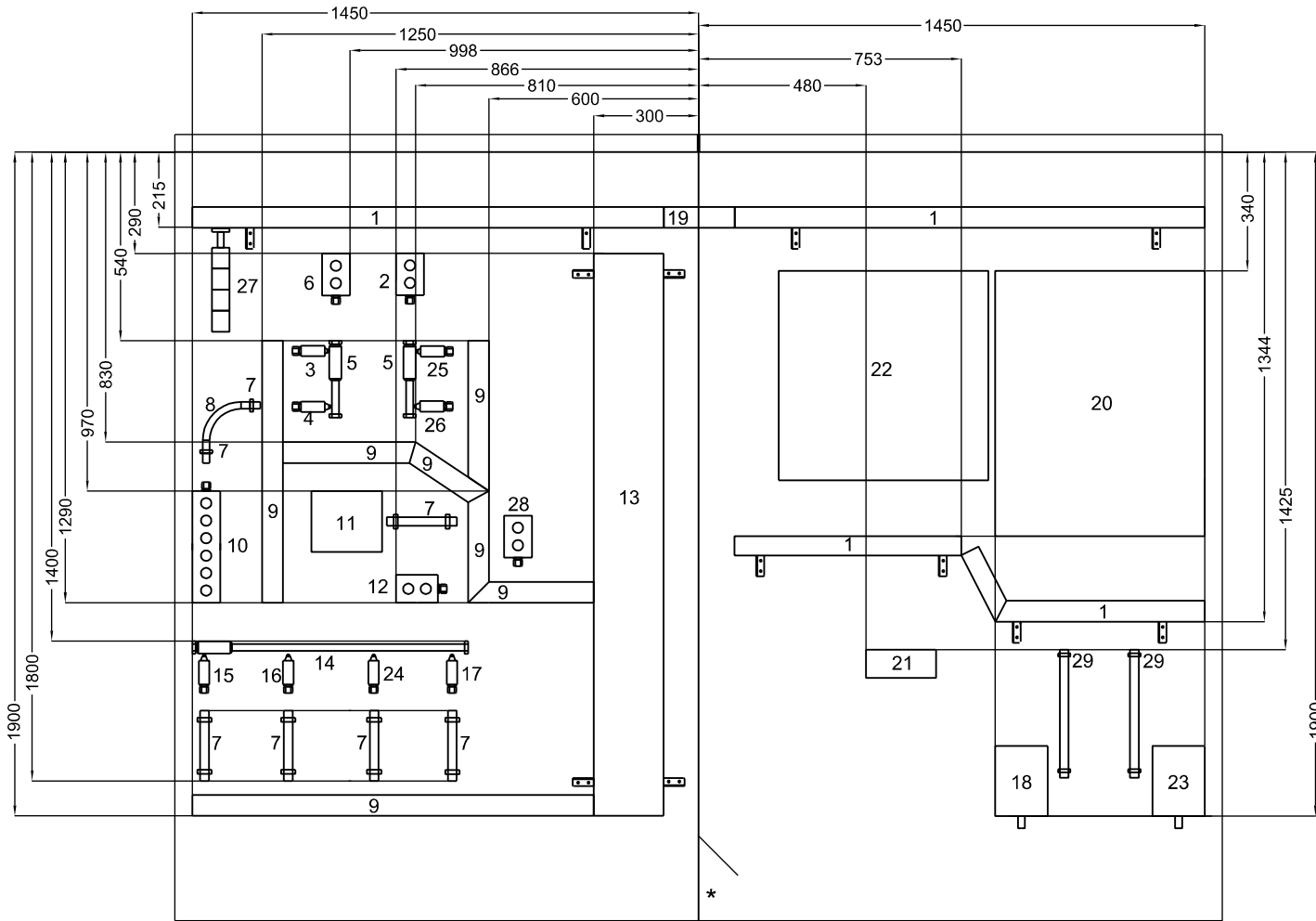


TEST PROJECT – INDUSTRIAL CONTROL

WSC2017_TP19_pre_EN





1. mesh tray
2. housing (MB3, MB4)
3. limit switch (S12)
4. limit switch (S13)
5. metal pipe ISO20
6. housing (MB1, MB2)
7. plastic tube VR20
8. 90° bow for plastic tube VR20
9. wall duct 60x60
10. housing (S6,S7,S8, S9, S10, P1)
11. housing (E1)
12. housing (R1,R2)
13. mesh tray
14. metal pipe ISO20
15. limit switch (S14)
16. limit switch (S15)
17. limit switch (S16)
18. motor (MA1)
19. 90° bend for mesh tray
20. control box 2 (600x760mm)
21. protective earth terminal (-X4)
22. control box 1 (600x600mm)
23. motor (MA2)
24. limit switch (S17)
25. limit switch (S18)
26. limit switch (S19)
27. steady light
28. housing (MB5, MB6)
29. metal tube 25mm

WALL INSTALLATION NOT IN SCALE

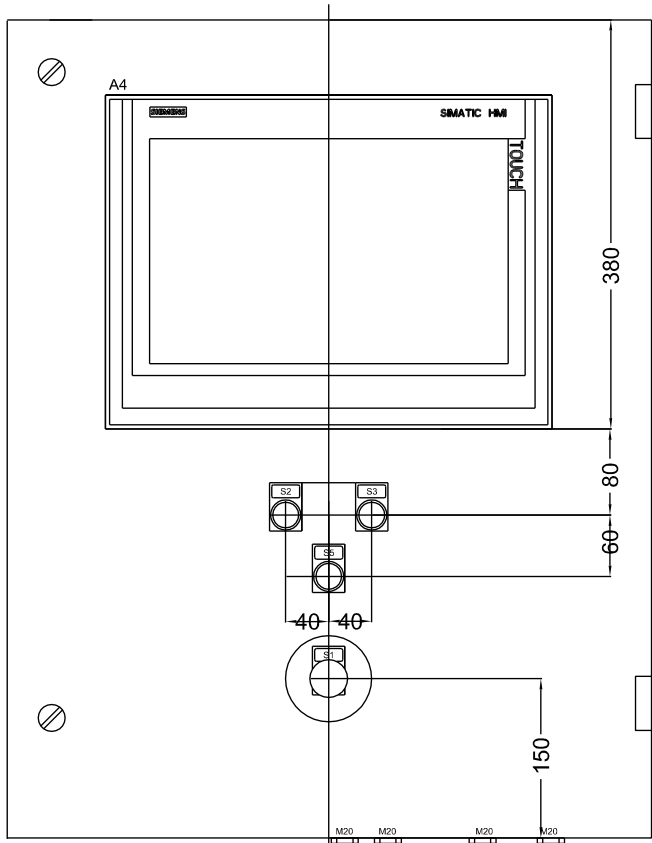
* All measurements from a horizontal and vertical line
ap 10 - 30mm from the end of the booth.

All devices, which are not in the mesuarements,
the mounting is up to the competitor

Test Project for the 44th WorldSkills
Competition in Abu Dhabi, United Arab Emirates 2017.
Copyright © 2017 WorldSkills International.
All Rights Reserved.

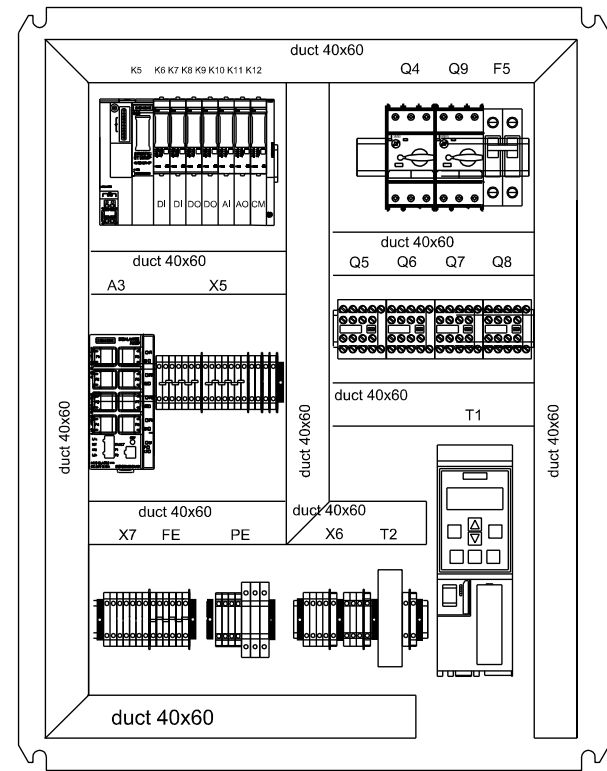


Skill: Industrial Control 19		
Scale: X:Y	Date: 08.04.2017	Paper: A3
Drawn / Design by: jarka		Drawing No: WSC2017_TP19_01_01_EN_A3
Description: Wall layout		Rev: 3.7 Page: 1 of 17



W6 W4 W3 W10 W12 W9
W16 W17 W18 W11 W13 W15

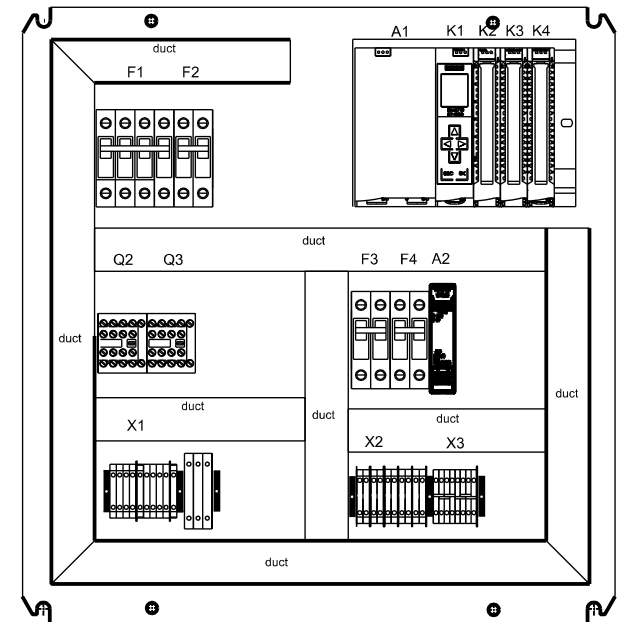
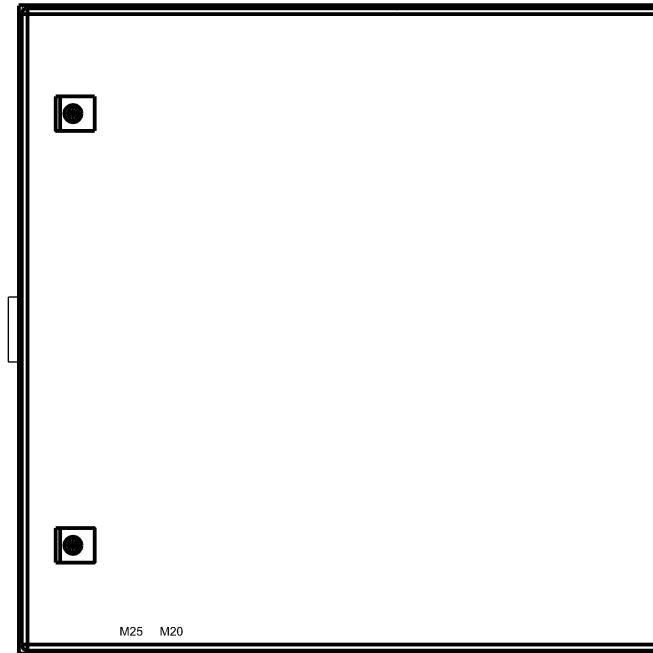
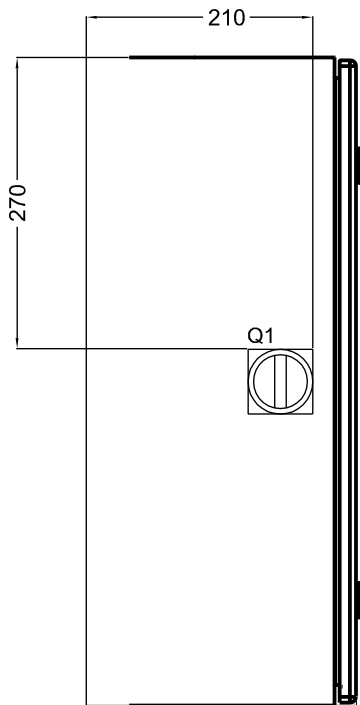
W2 W14 W7 W8




Test Project for the 44th WorldSkills
Competition in Abu Dhabi, United Arab Emirates 2017.
Copyright © 2017 WorldSkills International.
All Rights Reserved.



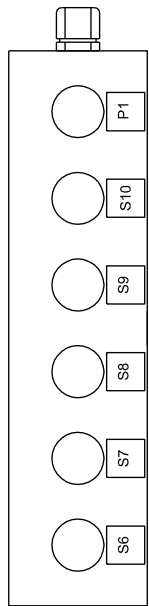
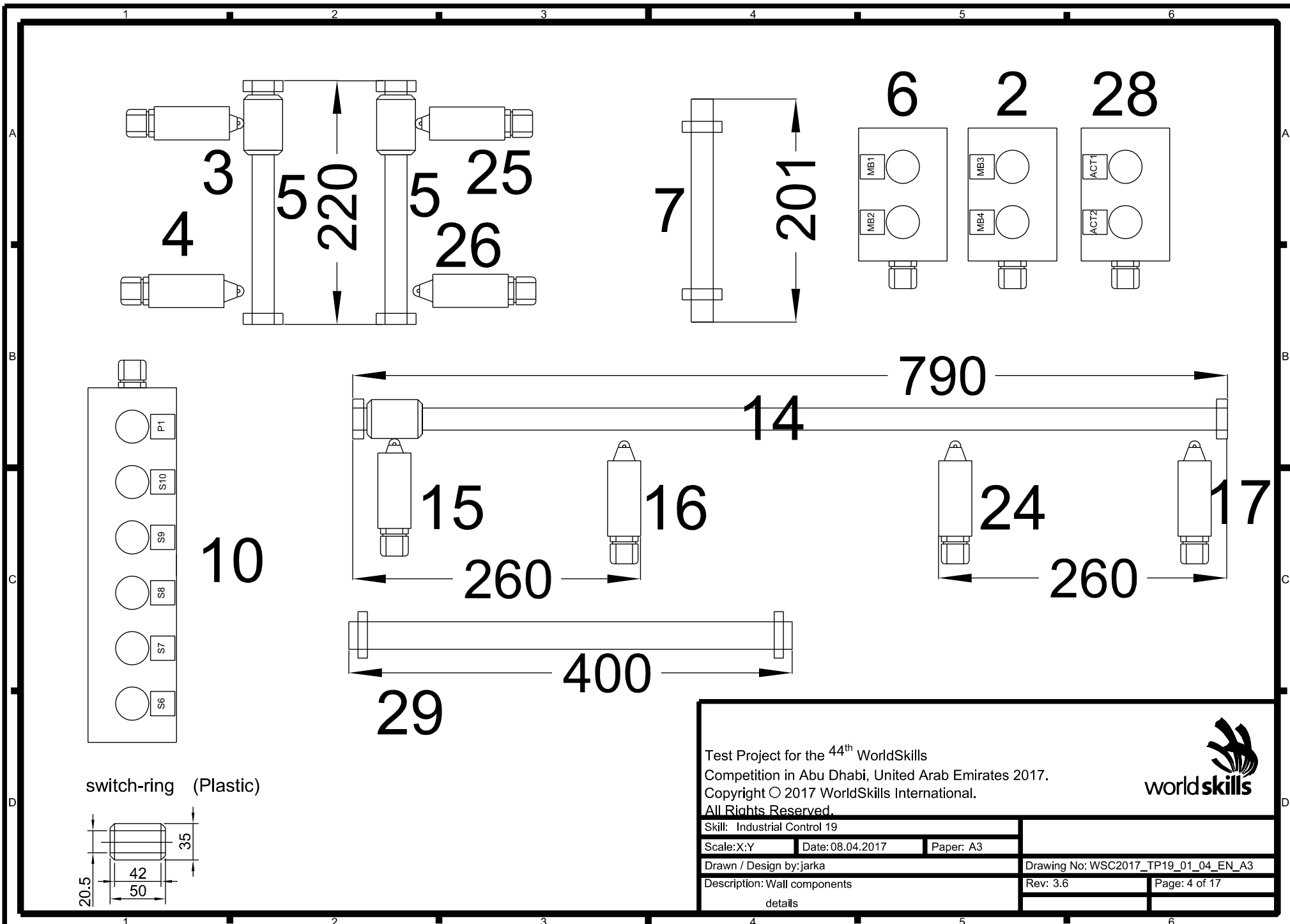
Skill: Industrial Control 19			
Scale: X:Y	Date: 08.04.2017	Paper: A3	
Drawn / Design by: jarka		Drawing No: WSC2017_TP19_01_02_EN_A3	
Description: Control box 2		Rev: 3.6	Page: 2 of 17
600x760x350mm			



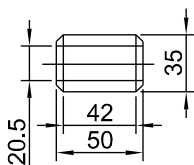
Test Project for the 44th WorldSkills
 Competition in Abu Dhabi, United Arab Emirates 2017.
 Copyright © 2017 WorldSkills International.
 All Rights Reserved.



Skill: Industrial Control 19		
Scale: X:Y	Date: 08.04.2017	Paper: A3
Drawn / Design by: jarka		Drawing No: WSC2017_TP19_01_03_EN_A3
Description: Control box 1 600x600x250mm		Rev: 3.5 Page: 3 of 17



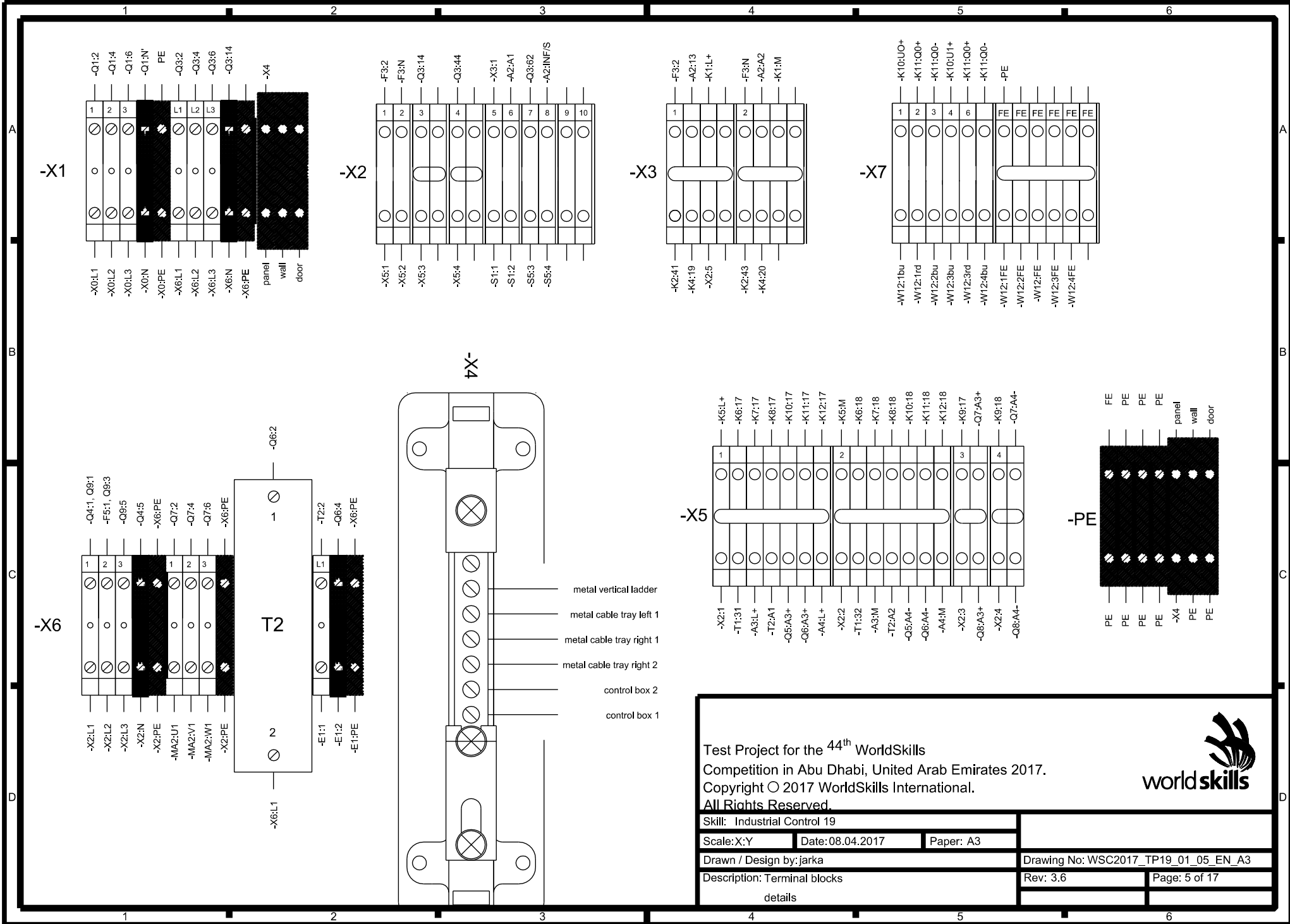
switch-ring (Plastic)



Test Project for the 44th WorldSkills
 Competition in Abu Dhabi, United Arab Emirates 2017.
 Copyright © 2017 WorldSkills International.
 All Rights Reserved.



Skill: Industrial Control 19				
Scale: X:Y	Date: 08.04.2017	Paper: A3		
Drawn / Design by: jarka			Drawing No: WSC2017_TP19_01_04_EN_A3	
Description: Wall components details			Rev: 3.6	Page: 4 of 17



Test Project for the 44th WorldSkills
 Competition in Abu Dhabi, United Arab Emirates 2017.
 Copyright © 2017 WorldSkills International.
 All Rights Reserved.

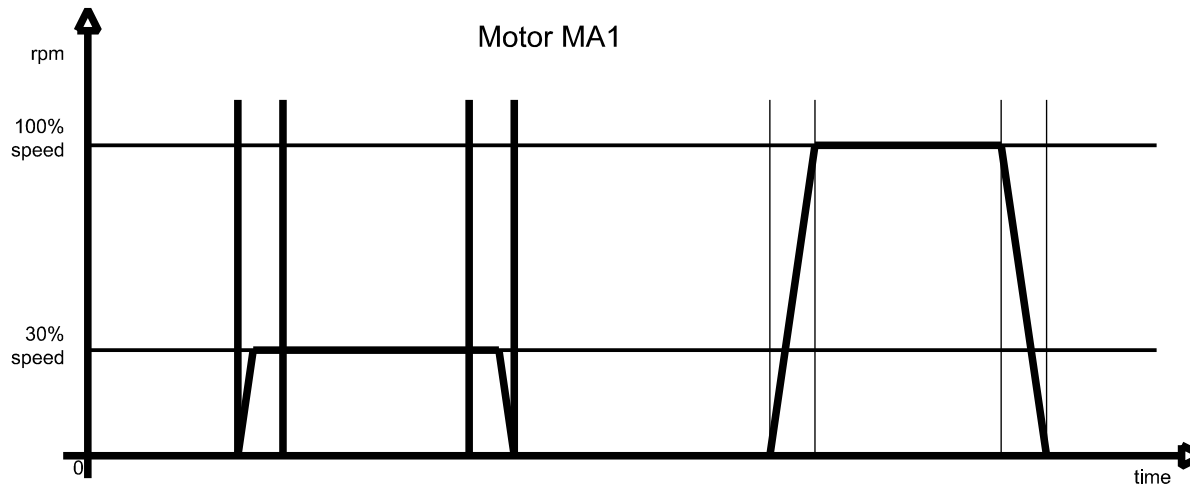
Skill: Industrial Control 19		
Scale: X:Y	Date: 08.04.2017	Paper: A3
Drawn / Design by: jarka		Drawing No: WSC2017_TP19_01_05_EN_A3
Description: Terminal blocks		Rev: 3.6
details		Page: 5 of 17



CABLE LIST

WSC 2017 ABU DHABI

Nr.	Cable type	intern		extern	Description
-W1	H07VV-F 5G2,5	-X1	----->	-X0	Power Supply 3x400V+N+PE
-W2	H07VV-F 5G1,5	-X1	----->	-X6	Power Supply 2x400V Control box 2
-W3	H05VV-F 7G0,75	-X2	----->	-X5	Power Supply 24V DC Control box 2
-W4	H05VV-F 7G0,75	-X2	----->	-S1, -S5	Emergency stop, Button quit.
-W5	H07V-K 6	-X2	----->	-X4	protective earth terminal control box1
-W6	Ethernet cable	-K1	----->	-A3	Ethernet cable
-W7	H07VV-F 3G1,5	-X6	----->	-E1	Heater
-W8	EMCMK 3x1,5/1,5	-T1	----->	-MA1	Motor 1
-W9	H07V-K 6	-X6	----->	-X4	protective earth terminal control box2
-W10	H05VV-F 5G0,25	-K12	----->	IO-Link Pos.10	IO-Link
W11.1	H05VV-F 3G0,75	-K7	----->	-S12	limit switch door is open
W11.2	H05VV-F 3G0,75	-K7	----->	-S13	limit switch door is closed
W11.3	H05VV-F 3G0,75	-K7	----->	-S14	Position switch left
W12	JAMAK 4x(2+1)x0,5+0,5	-K11	----->	-R1, R2	potentiometers
W13.1	H05VV-F 3G0,75	-K7	----->	-S15	position switch middle
W13.2	H05VV-F 3G0,75	-K7	----->	-S16	position switch right
W13.3	H05VV-F 4G0,75	-K9	----->	-MB1, -MB2	Valve open/close door
W14	H07VV-F 4G1,5	-X6	----->	-MA1	Motor 2
W15	H05VV-F 7G0,75	-K8	----->	pos.27	Steady light
W16.1	H05VV-F 3G0,75	-K7	----->	-S18	limit switch door 2 is open
W16.2	H05VV-F 3G0,75	-K7	----->	-S19	limit switch door 2 is closed
W16.3	H05VV-F 5G0,75	-K9	----->	-MB3, -MB4	Valve open/close door 2
W17	H05VV-F 3G0,75	-K7	----->	-S20	position switch middle right
W18	H05VV-F 5G0,75	-K9	----->	-MB5, -MB6	action 1, action 2

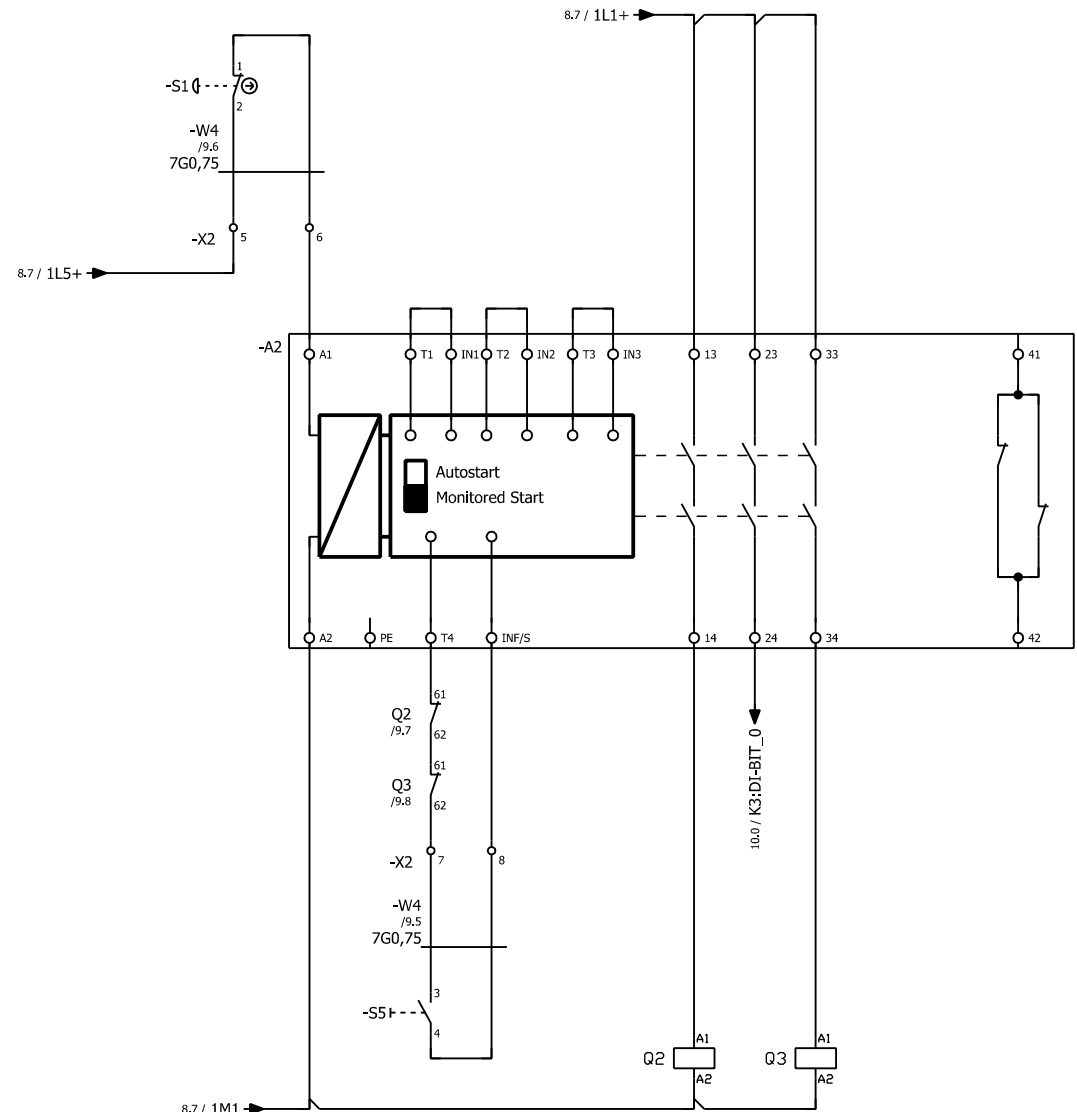
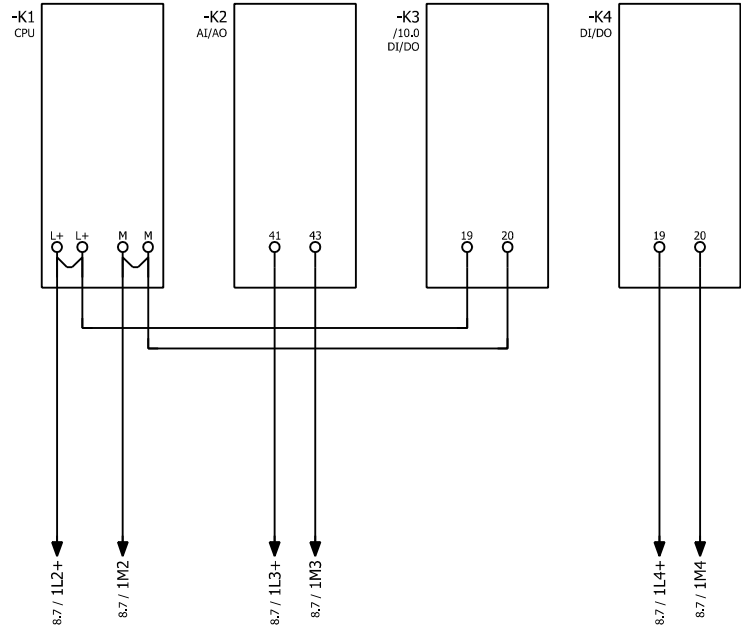


The changes in speed and the 0-speed will be reached in 2 seconds. The ramps must be programmed in the variable speed device (VSD) converter.

Test Project for the 44th WorldSkills
 Competition in Abu Dhabi, United Arab Emirates 2017.
 Copyright © 2017 WorldSkills International.
 All Rights Reserved.



Skill: Industrial Control 19			
Scale: X:Y	Date: 08.04.2017	Paper: A3	
Drawn / Design by: Andreas Puchner		Drawing No: WSC2017_TP19_07_02_EN_A3	
Description: MA1 Acceleration curves		Rev: 3.5	Page: 7 of 17
JARKA			



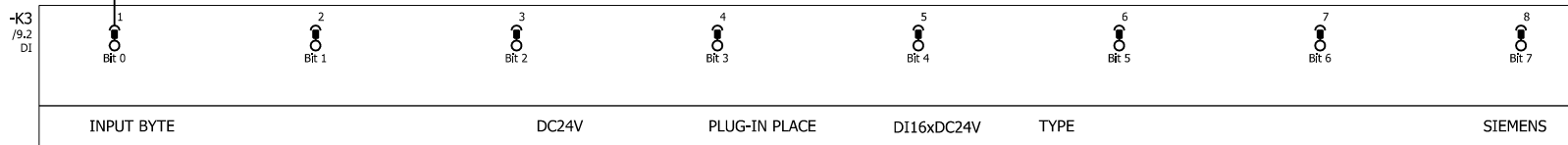
1	2	/8.2	1	2	/8.2
3	4	/8.2	3	4	/8.2
5	6	/8.2	5	6	/8.2
13	14	/8.2	13	14	/8.2
61	62	/9.6	61	62	/9.6
53	54	/8.8	53	54	/8.8
73	74	/8.8	73	74	/8.8

Power supply 24V DC

Emergency stop relay

				Control box 1			
Datum 08.04.2017							
Bearb. jarka							
Gepr.				WSC 2017 Abu Dhabi/UAE Skill 19: Industrial-Control			
Urspr.				Ersatz von		Ersetzt durch	
Änderung				Datum		Name	
						WSC2017_TP19_FI_01_09_EN_V3.1	
						Blatt 9	
						Blatt 17	

K3:DI-BIT_0/938

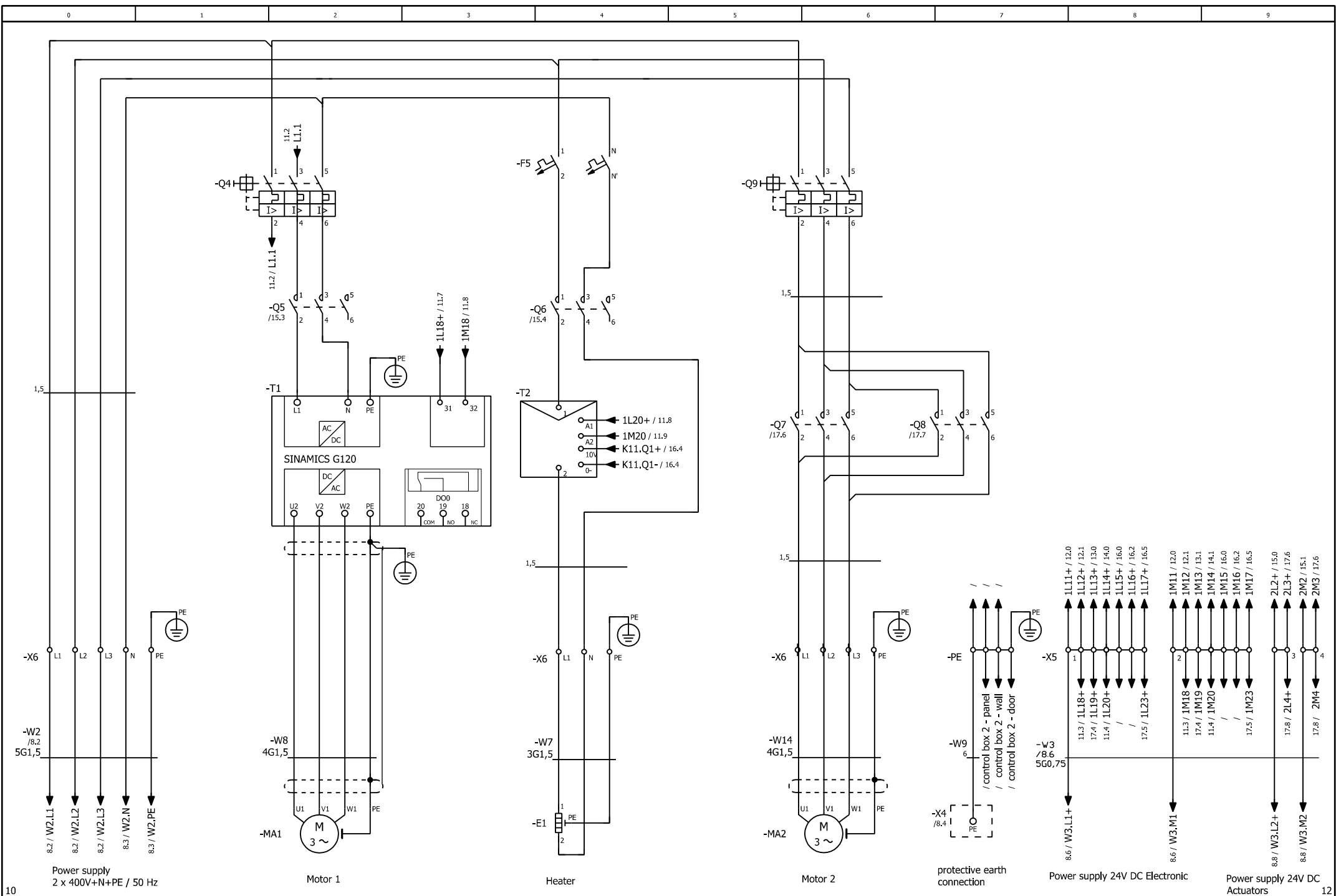


Emergency stop
not active

9

11

		Datum		03.04.2017						=	
		Bearb.		jarka						+	
		Gepr				WSC 2017 Abu Dhabi/UAE Skill 19: Industrial-Control				Blatt 10	
Änderung		Datum		Name		Urspr		Ersatz von		Ersetzt durch	
								WSC2017_TP19_FL_EN_V3.0		Blatt 17	



10

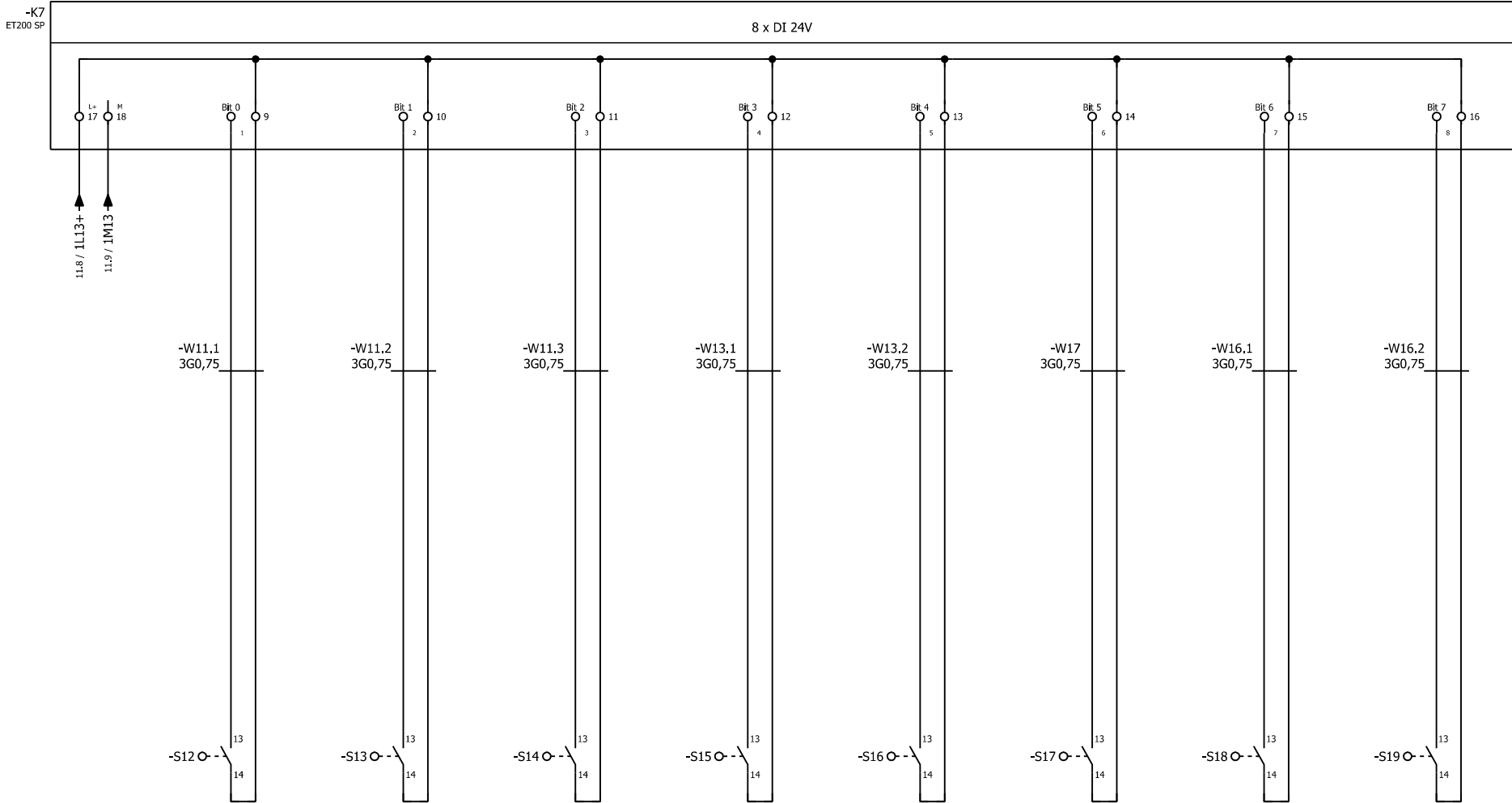
Datum	08.04.2017
Bearb.	JARKA
Gepr.	
Urspr	

WSC 2017 Abu Dhabi/UAE Skill 19; Industrial-Control
 Ersatz von _____ Ersetzt durch _____

Control box 2, Main Circuits

WSC2017_TP19_AT_EN_V3.0	Blatt	11
	Blatt	17

12

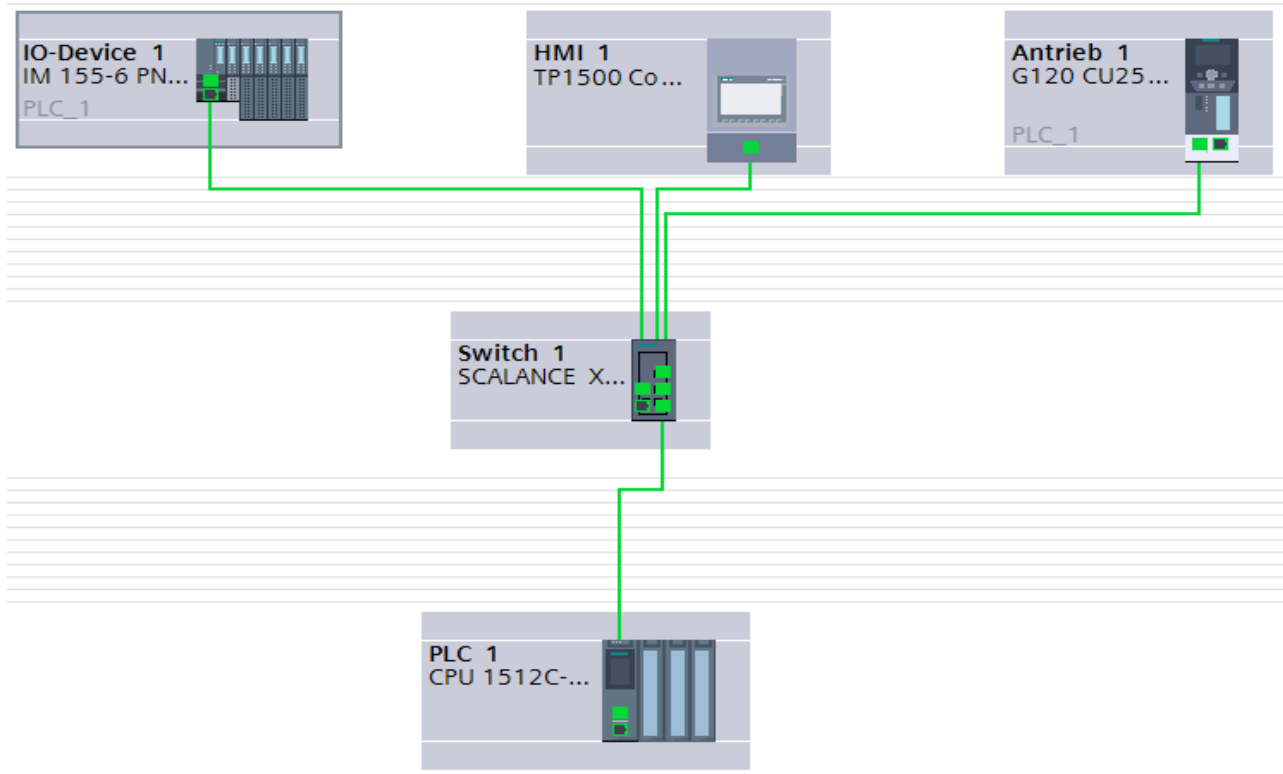


12	Power supply 24V DC -K7	limit switch door1 is open	limit switch door1 is closed	position switch left	position switch left middle	position switch right	position switch right middle	limit switch door 2 is open	limit switch door 2 is closed	14
						ET200SP		=		
								+		
				WSC 2017 Abu Dhabi/UAE Skill 19: Industrial-Control						Blatt 13
Änderung	Datum	Name	Urspr	Ersatz von	Ersetzt durch			WSC2017_TP19_FI_EN_V3.0		Blatt 17

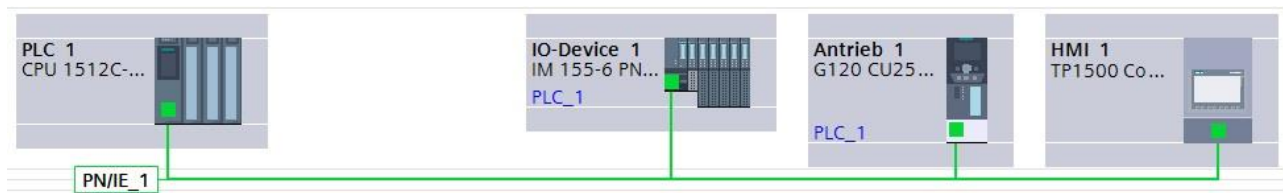


PROFINET CONNECTIONS

OVERVIEW TECHNOLOGY



OVERVIEW TOPOLOGY



SAFETY REPORT – COMMISSIONING

Competitor

Name, Country code /

Booth No.:

1. VISUAL INSPECTION:

The visual inspection includes:

Control box 1
 Control box 2
 Protective earth terminal
 Plant installation

2. MEASUREMENT:

2.1 LOW IMPEDANCE TESTING:

Preparation for testing: _____

Control box 1:

CEE- plug/PE	---	-X ₁ /PE	..... Ω
CEE- plug/PE	---	-X ₂ /PE	..... Ω
CEE- plug/PE	---	panel	..... Ω
CEE- plug/PE	---	side wall	..... Ω
CEE- plug/PE	---	door	..... Ω
CEE- plug/PE	---	-X ₄	..... Ω
CEE- plug/PE	---	S7-rack	..... Ω

Control box 2:

CEE- plug/PE	---	panel	..... Ω
CEE- plug/PE	---	side wall	..... Ω
CEE- plug/PE	---	door	..... Ω
CEE- plug/PE	---	-X ₄	..... Ω
CEE- plug/PE	---	-A ₁ /PE CPU-rack	..... Ω
CEE- plug/PE	---	-T ₁ Metal frame (VSD)	..... Ω
CEE- plug/PE	---	-T ₂ /PE	..... Ω
CEE- plug/PE	---	-A ₄ /PE (HMI)	..... Ω

Wall Installation:

CEE- plug/PE	---	metal cable tray right side	..... Ω
CEE- plug/PE	---	metal cable tray left side up	..... Ω
CEE- plug/PE	---	vertical ladder	..... Ω
CEE- plug/PE	---	Motor MA1	..... Ω
CEE- plug/PE	---	Motor MA2	..... Ω

Values corresponds the wire lengths and to connection resistances. -----(Y/N)

2.2. ISOLATION MEASUREMENT:

BEFORE THE INSULATION TEST , DISCONNECT PLC PSU's, VSD's AND IO-LINK CONTACTOR PARTS PHASE AND NEUTRAL WIRES !

Main circuit X1 (1,2,3,4,5) – -Q1: (write the lowest value)

-X1/PE	---	L1, L2, L3, N	..... MΩ
-X1/L1, L2, L3, N	---	L1, L2, L3, N	..... MΩ

Main circuit MOTOR 1 (L1,L2,L3,PE)

-W8/PE	---	L1, L2, L3,	..... MΩ
-W8/L1, L2, L3,	---	L1, L2, L3,	..... MΩ

Main circuit MOTOR 2 (L1,L2,L3,PE)

-X6/PE	---	L1, L2, L3,	..... MΩ
-X6/L1, L2, L3,	---	L1, L2, L3,N	..... MΩ

SAFETY REPORT – COMMISSIONING

Allowed only in the presence of an expert !!!

2.3. TESTING: RESIDUAL CURRENT DEVICE (RCD):

function OK

function not OK

2.4. VOLTAGE MEASUREMENT:

L1-X1	---	PE-X1	..... V
L2-X1	---	PE-X1	..... V
L3-X1	---	PE-X1	..... V
L1-X1	---	L2-X1	..... V
L1-X1	---	L3-X1	..... V
L2-X1	---	L3-X1	..... V

2.5. ROTATIONAL FIELD MEASUREMENT – X1:

Rotating field is left-handed (CCW)

Rotating field is right-handed (CW)

2.6. EMERGENCY STOP FUNCTION:

OK

not OK

For the accuracy

Signature by Competitor

Signature by Expert

C.C.

Signature by Expert

C.C.

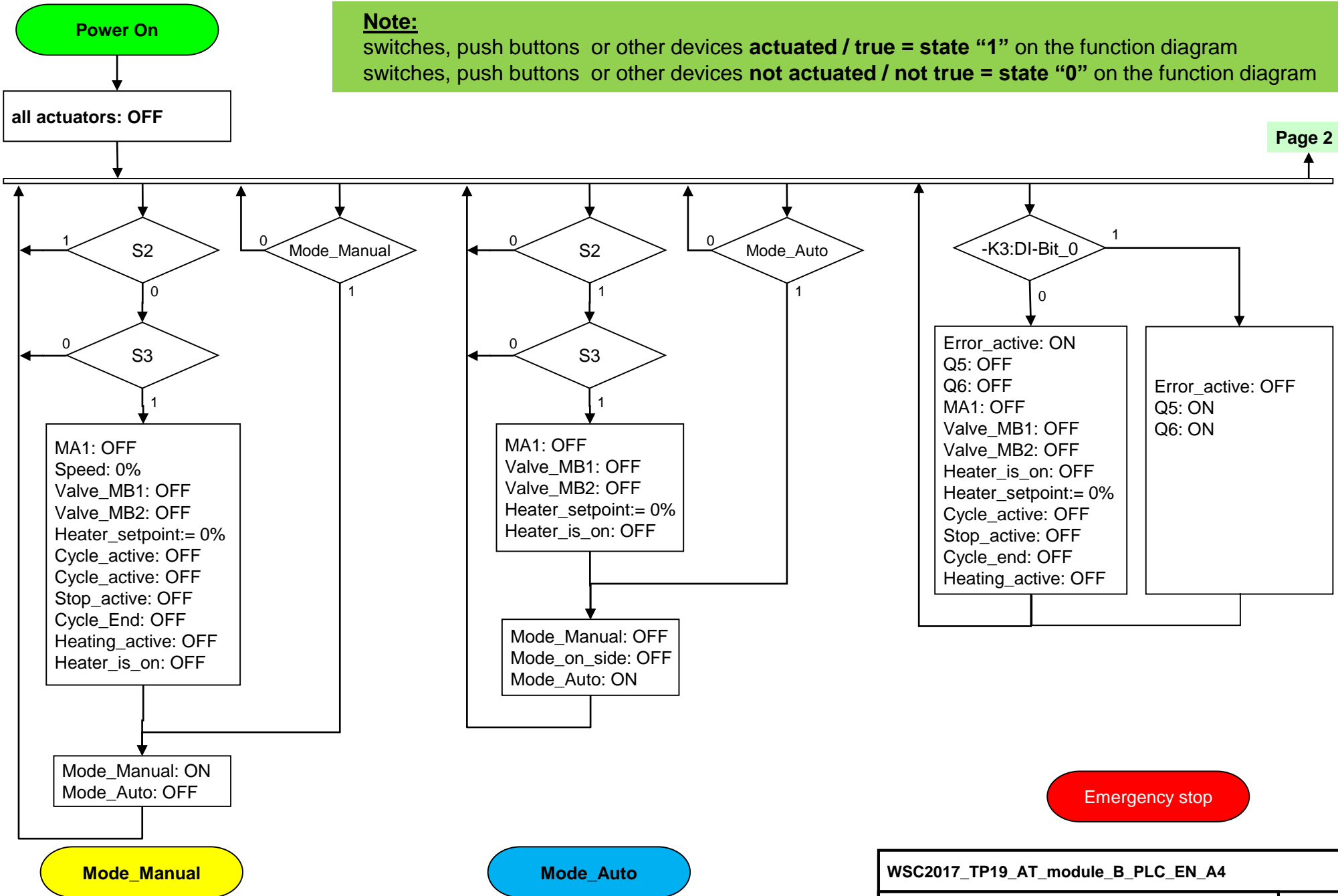
Date: _____

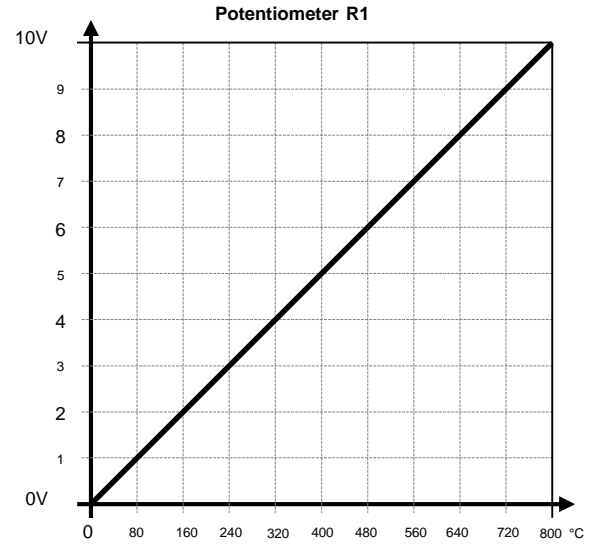
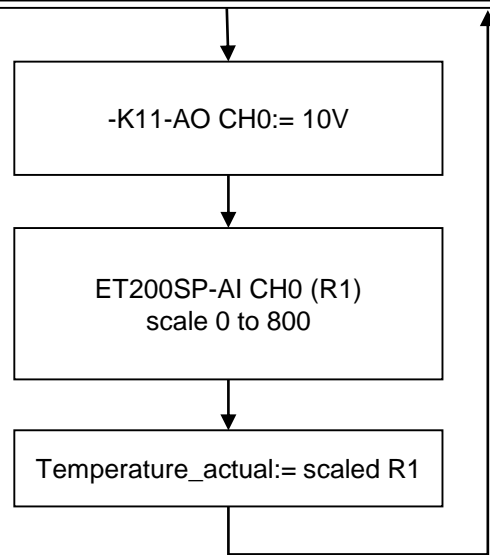
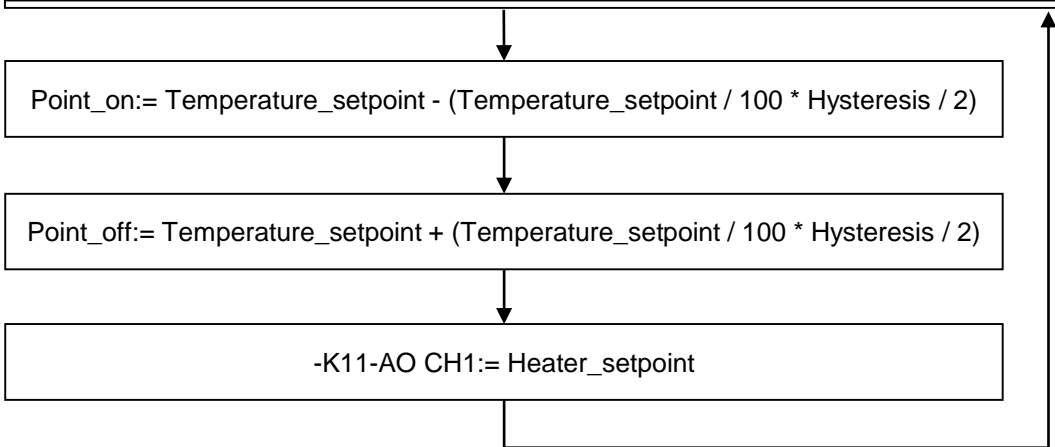
Signature by Expert

C.C.

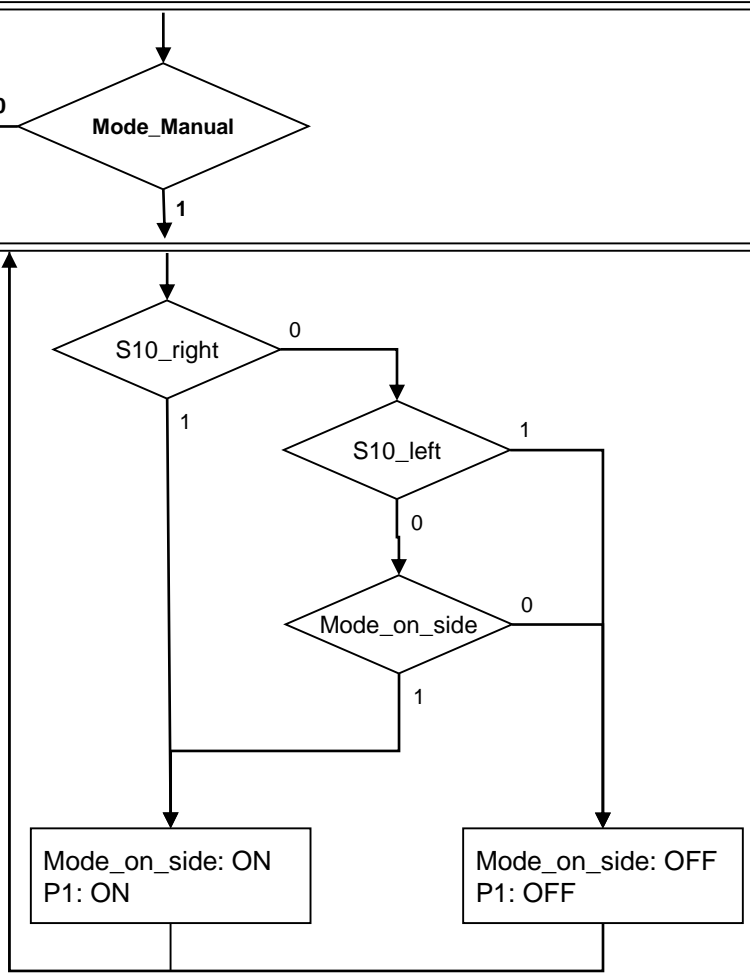
Note:

switches, push buttons or other devices **actuated / true = state "1"** on the function diagram
switches, push buttons or other devices **not actuated / not true = state "0"** on the function diagram

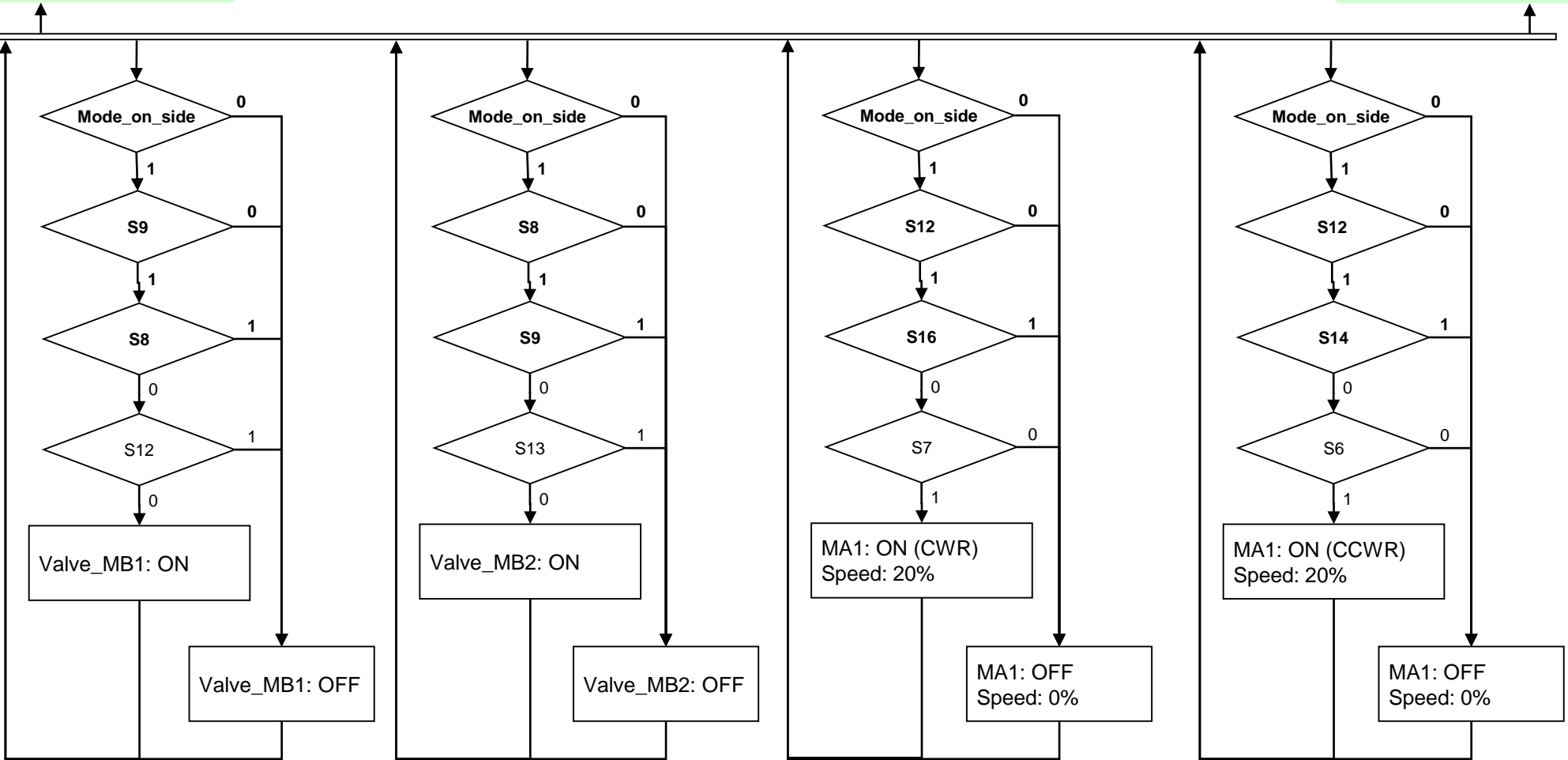




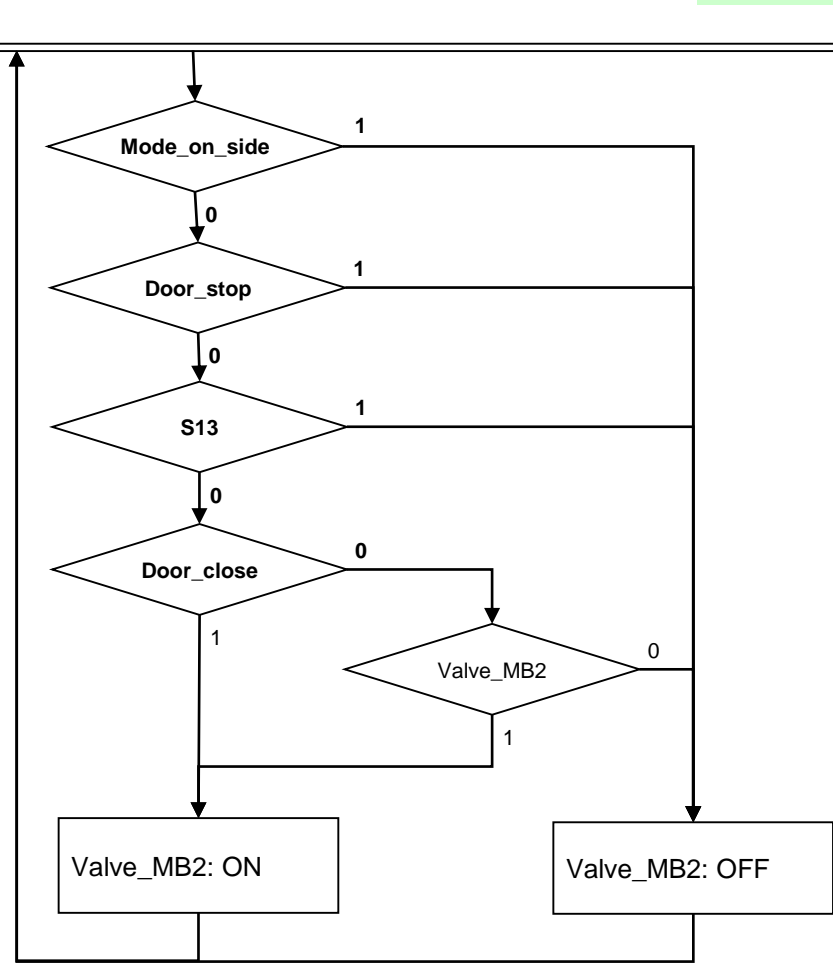
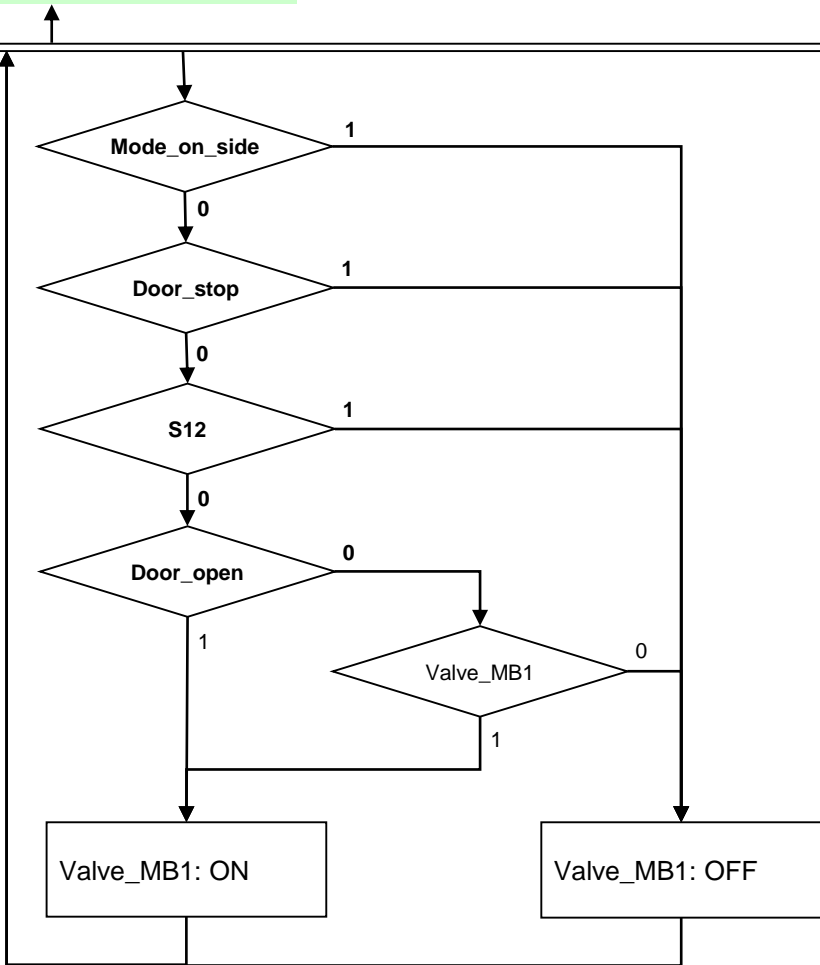
This page is not in use



Mode_on_side

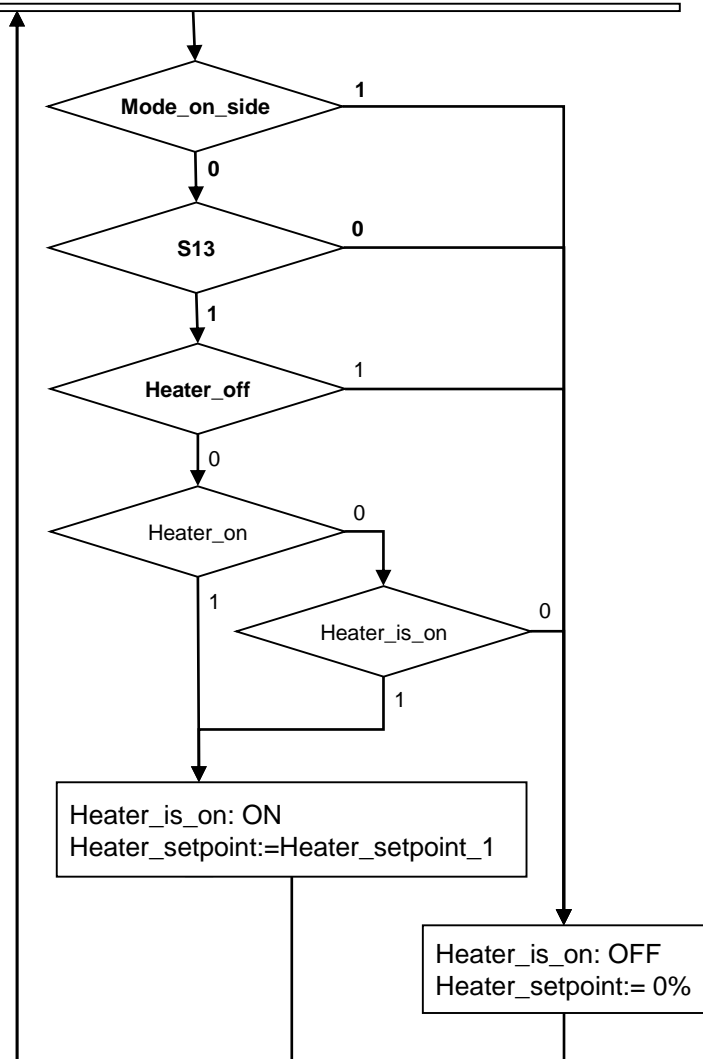
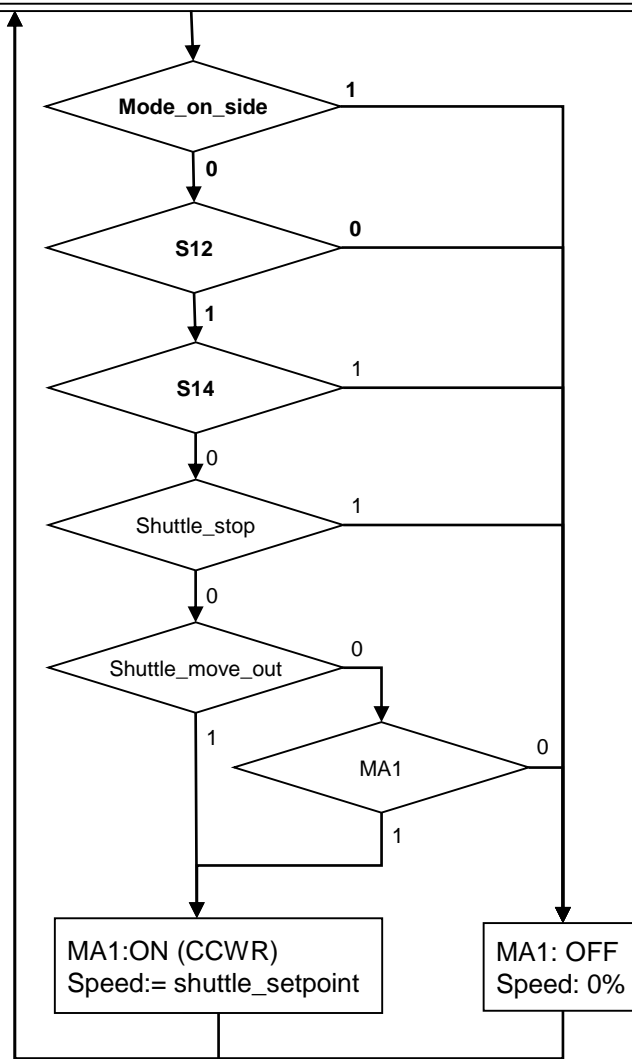
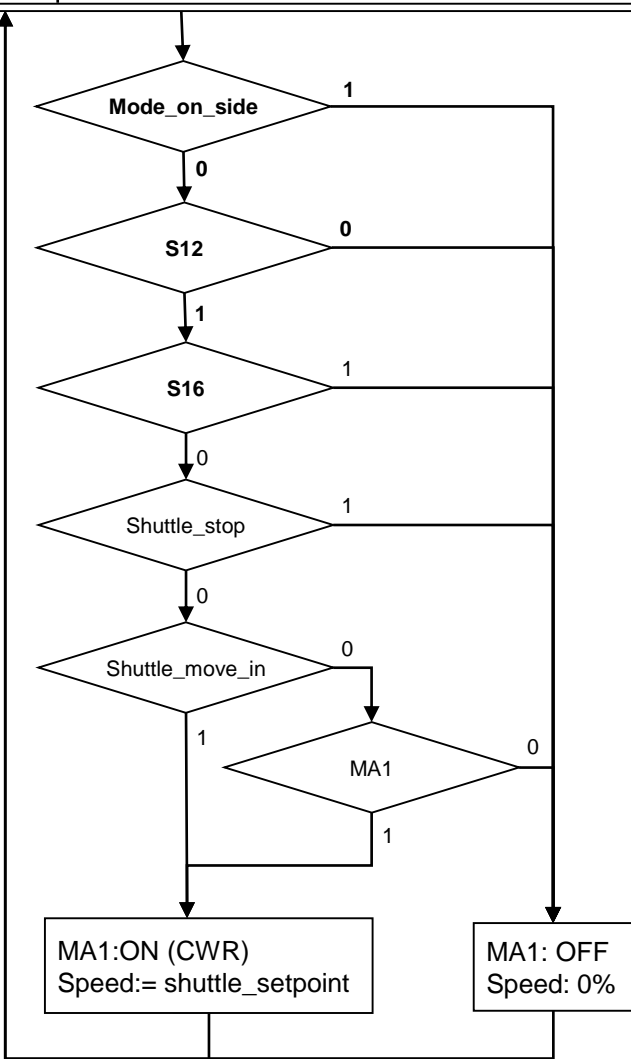


Mode_on_side: open door close door shuttle move inside shuttle move outside



Mode_Manual: open door

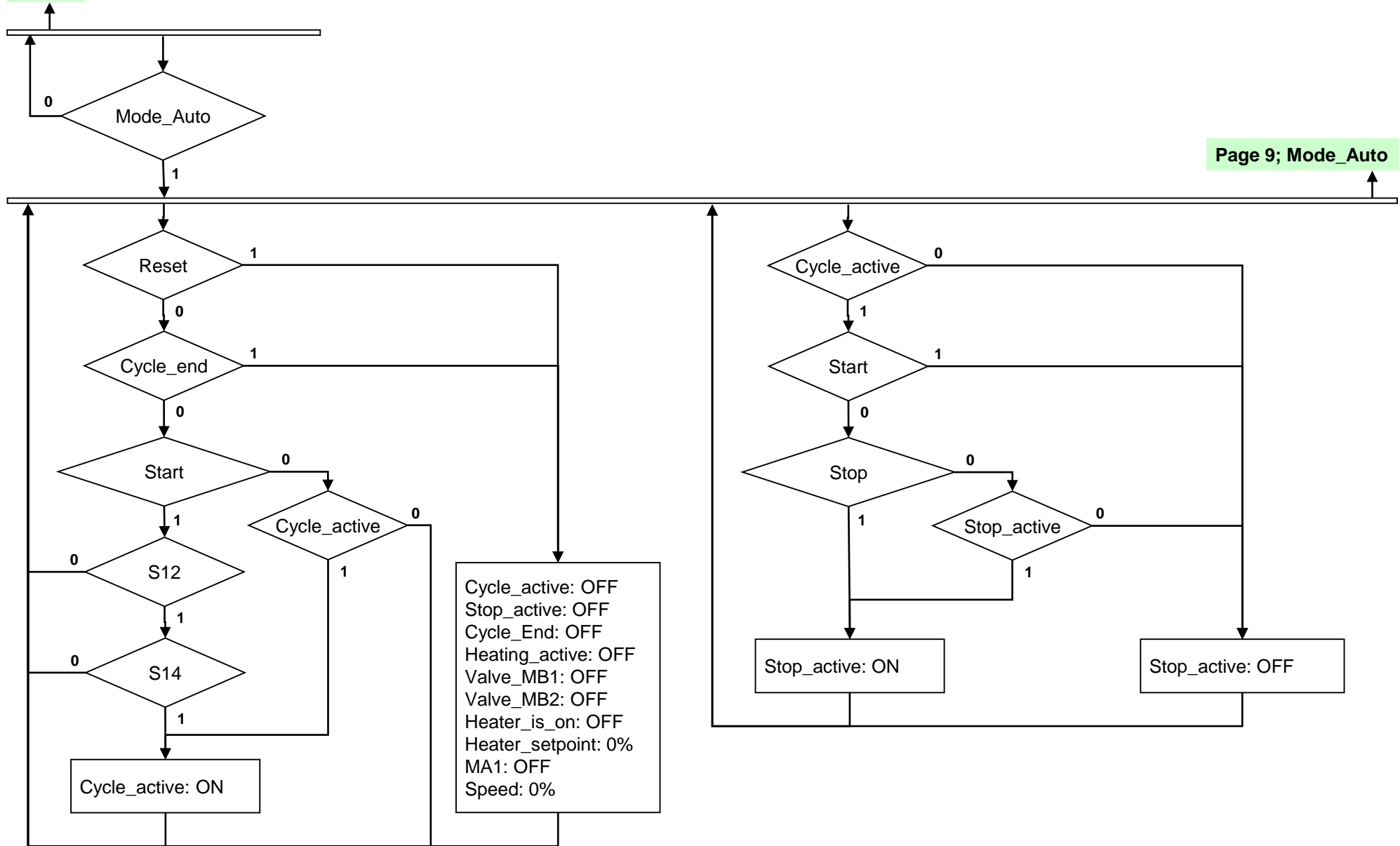
close door



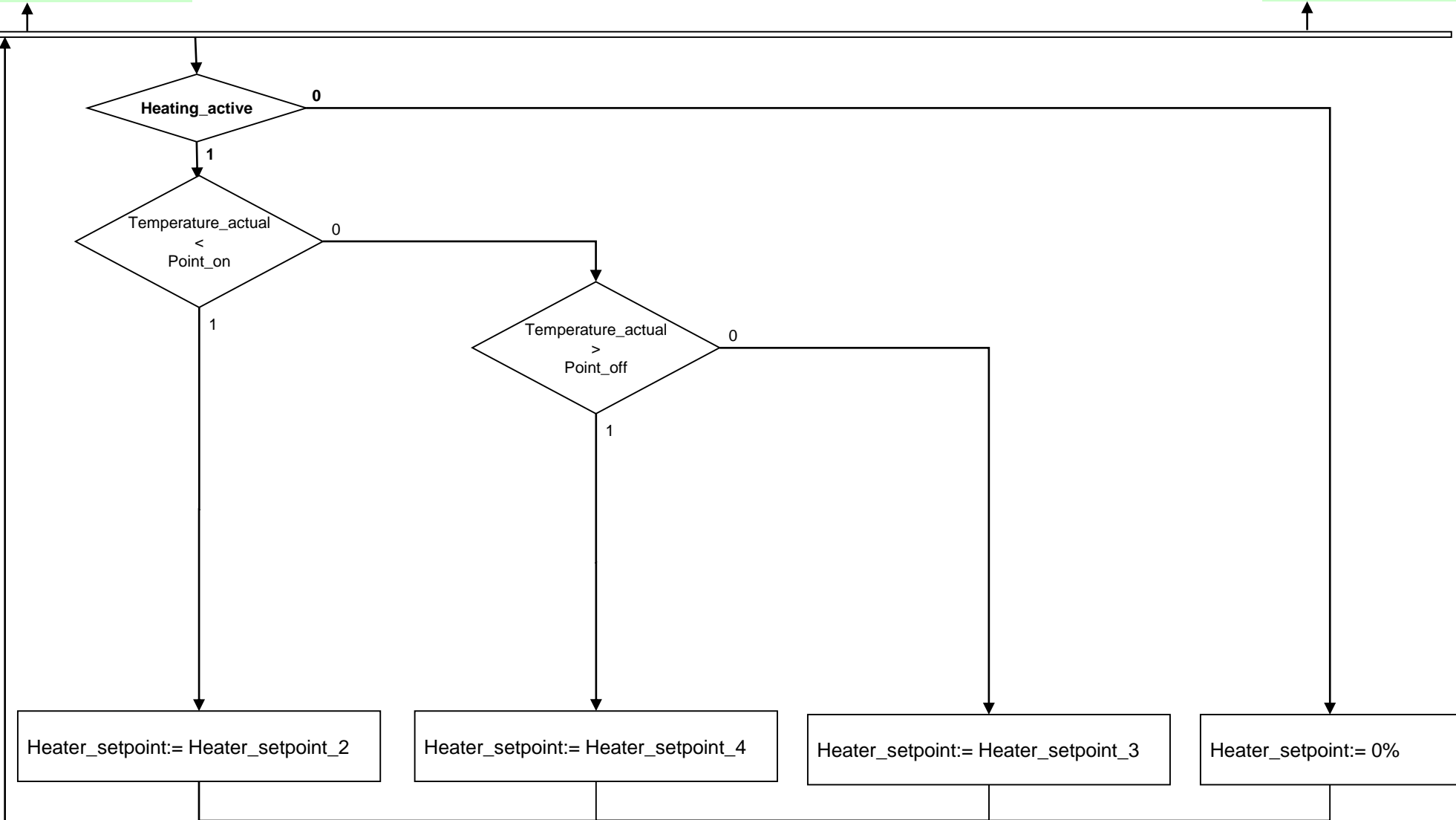
Mode_Manual: shuttle move inside

shuttle move outside

heater on/off

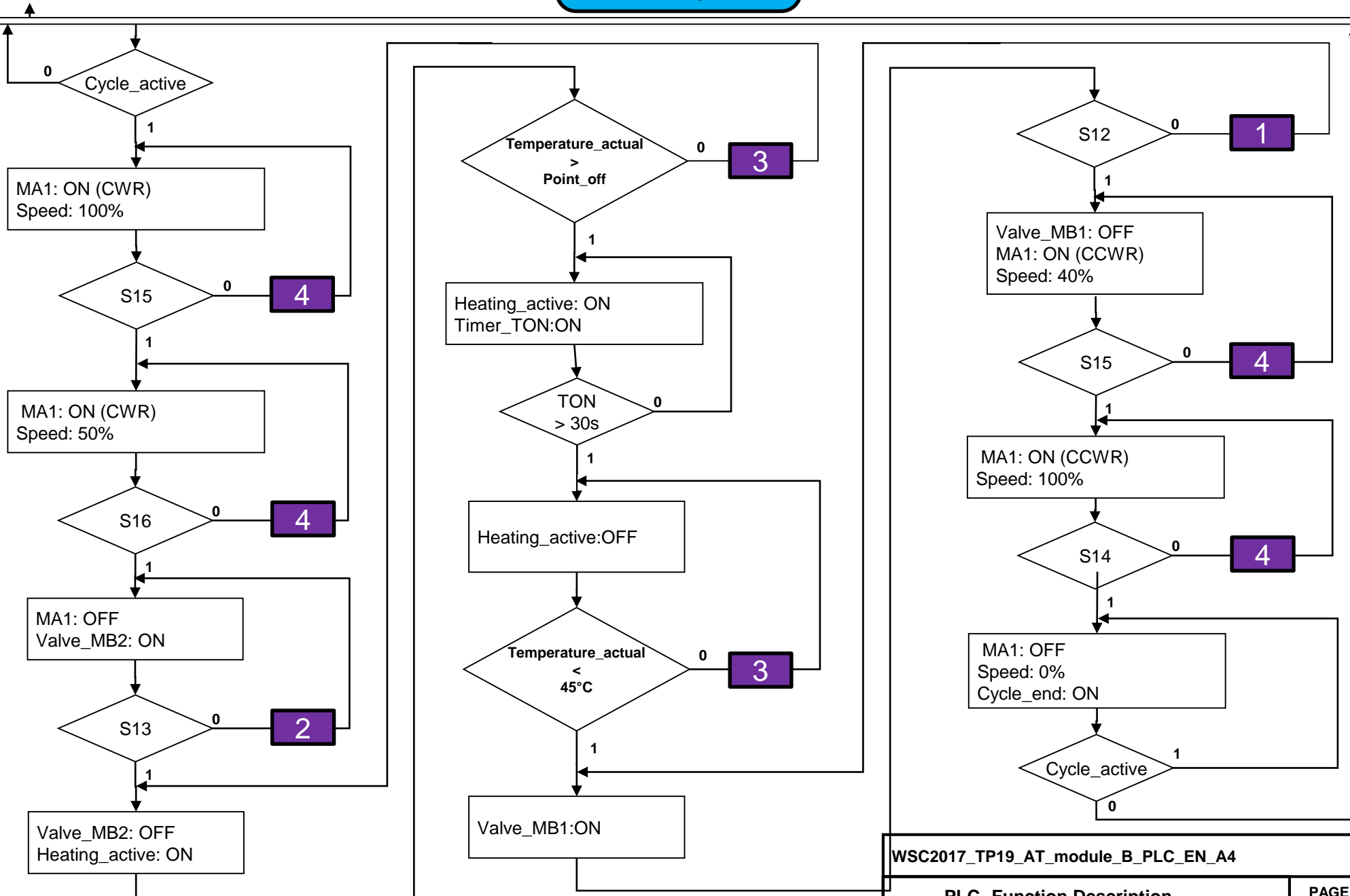


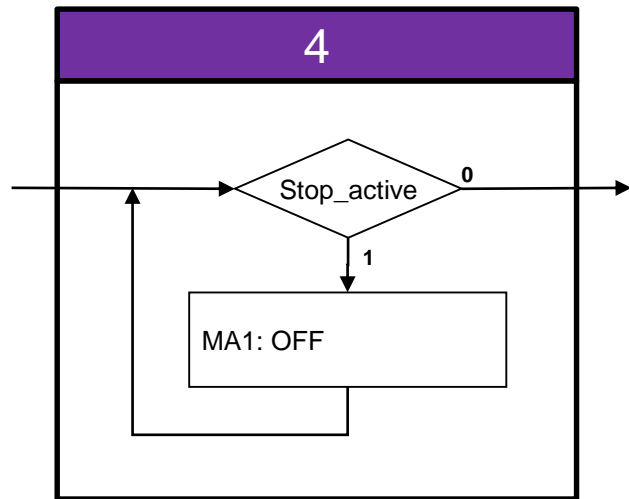
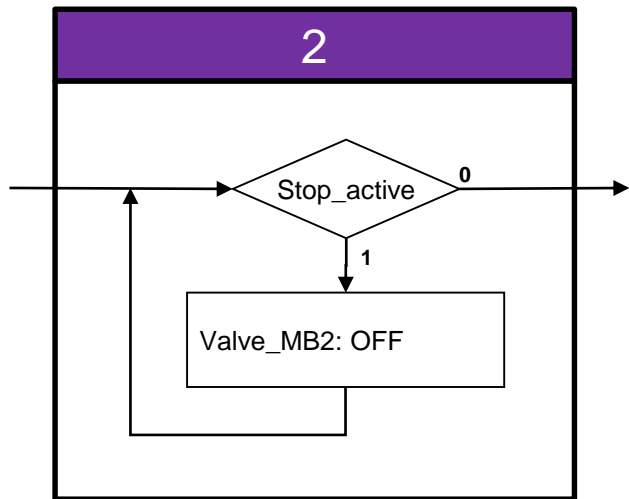
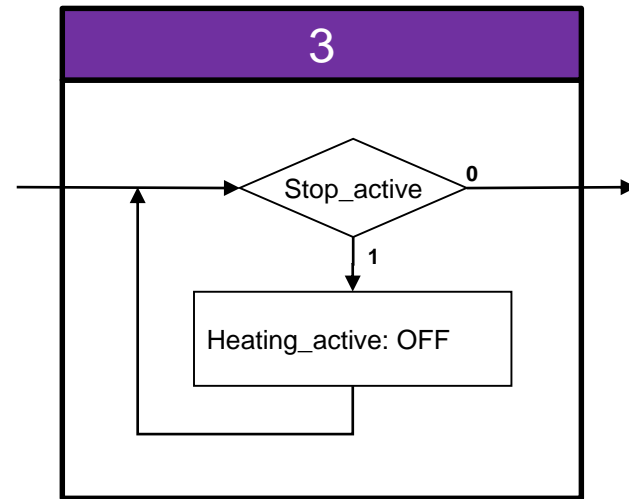
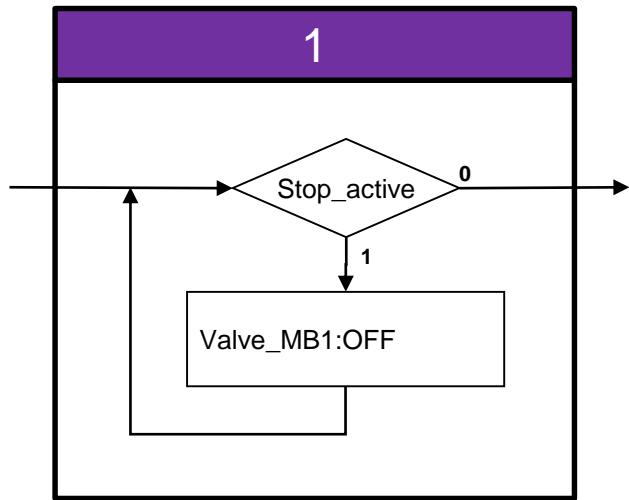
Mode_Auto: Cycle_active Stop_active



Mode_Auto:

Heater 2 point control





Mode_Auto: Cycle interrupt with Stop- button