



BALAI PENGEMBANGAN TALENTA INDONESIA
PUSAT PRESTASI NASIONAL
SEKRETARIAT JENDERAL
KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI

**MERDEKA
BELAJAR**



KISI-KISI

LOMBA KOMPETENSI SISWA SMK TINGKAT NASIONAL TAHUN 2023



BIDANG LOMBA

Sistim Kendali Industri
(Industrial Control)

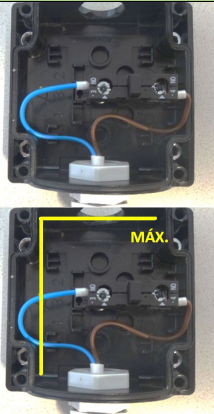
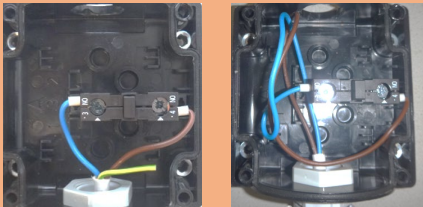
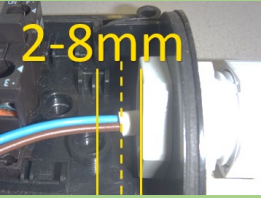
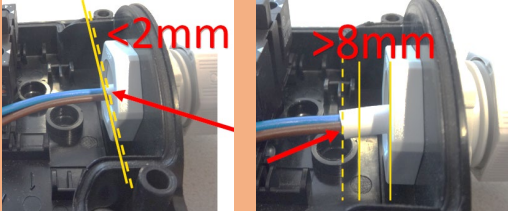
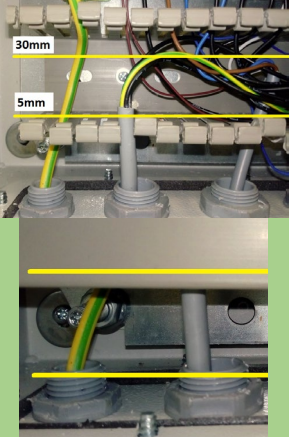
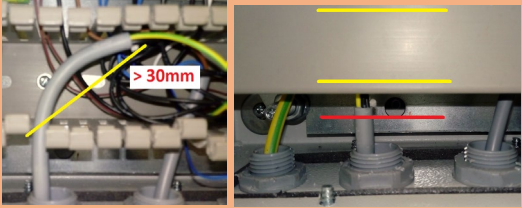


MERDEKA BERPRESTASI
Talenta Vokasi Menginspirasi

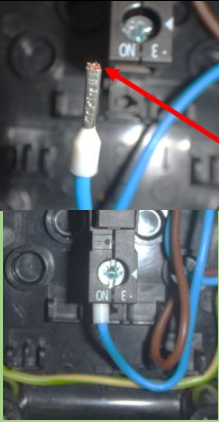
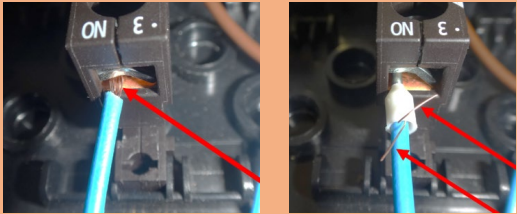
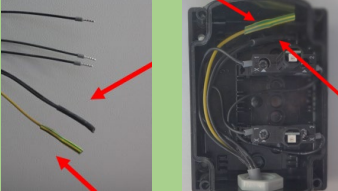
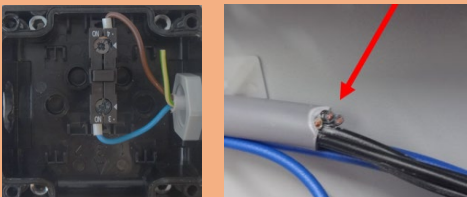
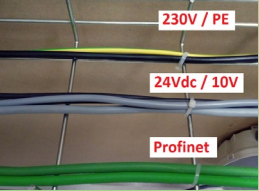
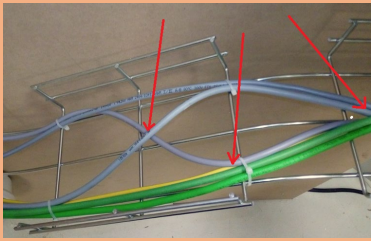



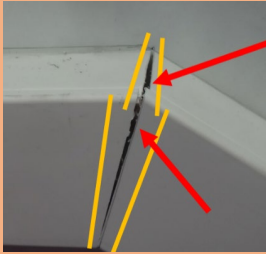
Test Project



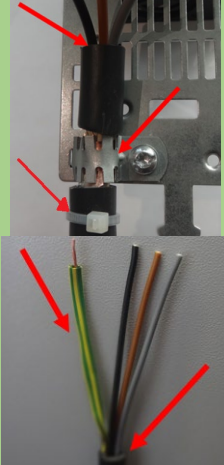
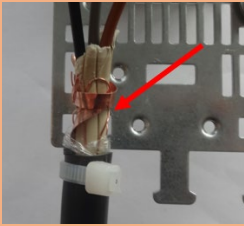
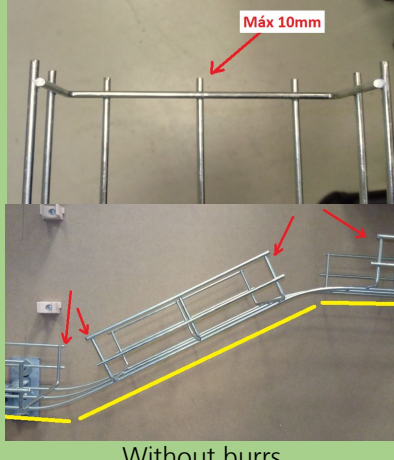

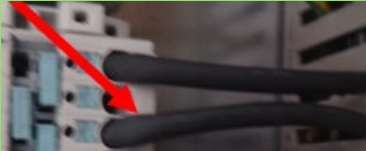
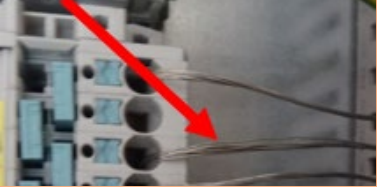
Industrial Control





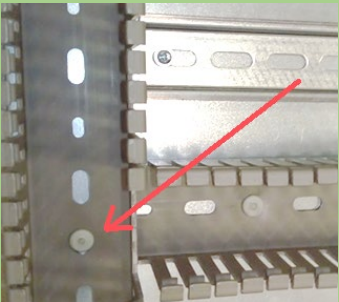
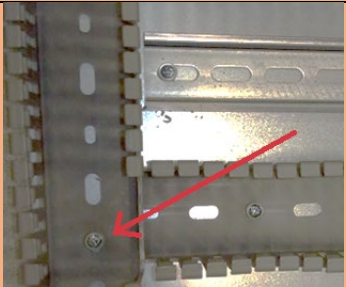
Industrial Control

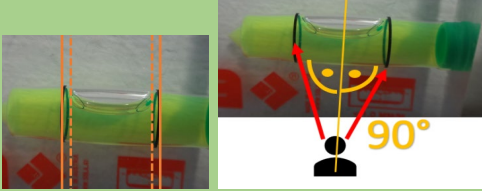
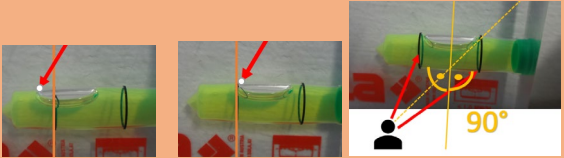

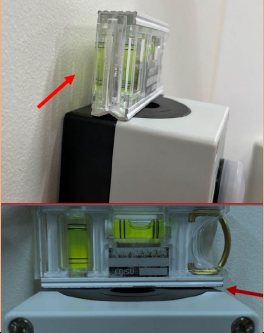



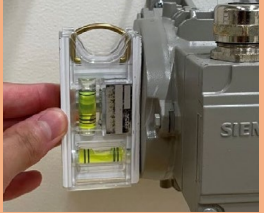
Professional Practice – Main Project



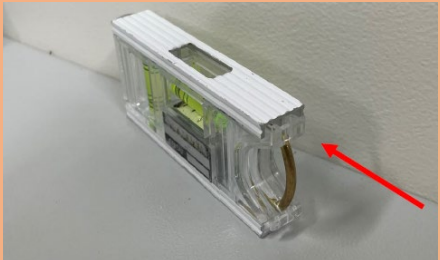





Topic / Criterion	Good / OK	Bad / Not OK
<p>PP_1</p> <p>Device – Wire length</p>		
<p>PP_2</p> <p>Device - Cable sheath</p>		
<p>PP_3</p> <p>Control box - cable sheath</p>		
<p>PP_4</p> <p>Wiring - Control box</p>		





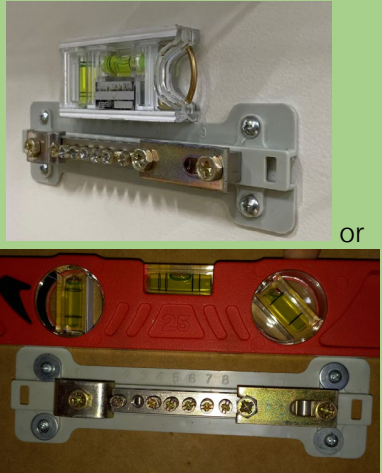

<p>PP_5</p> <p>Wire connecting</p>	 <p>Copper visible but no more than 2mm outside</p>	
<p>PP_6</p> <p>Wire not used</p>	 <p>With Heat shrink</p>	
<p>PP_7</p> <p>Mesh tray - cable separation</p>	 <p>Separated on three groups. Which one on which side is competitor's choice. Cables should aligned and be fixed to the mesh tray with cable ties each 200mm</p> <p>Only can exits crossing of cables when in or leaving the mesh tray.</p>	
<p>PP_8</p> <p>Cable straight</p>	 <p>Cables should aligned and be fixed with cable ties as it enters on the mesh tray</p>	
<p>PP_9</p> <p>Duct cut</p>	 <p>Maximum aperture = Thickness of a credit card.</p>	


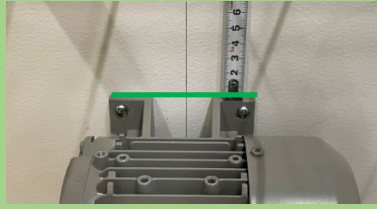







<p>PP_10</p> <p>Duct cable holes</p> <p>Hole < 2xCable(s) diameter</p>		
<p>PP_11</p> <p>VSD cable shield</p>		
<p>PP_12</p> <p>Cable tray end an angle</p>		
<p>PP_13</p> <p>Shield</p>		








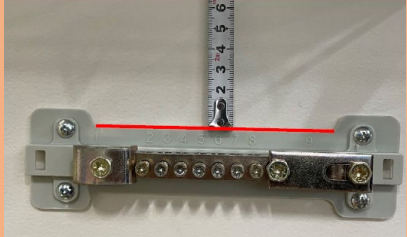


<p>PP_14</p> <p>Labelling</p>	 	 
<p>PP_15</p> <p>Plastic Ducts Fixing (with plastic rivets)</p>		 <p>Don't fix plastic ducts with metal screws.</p>

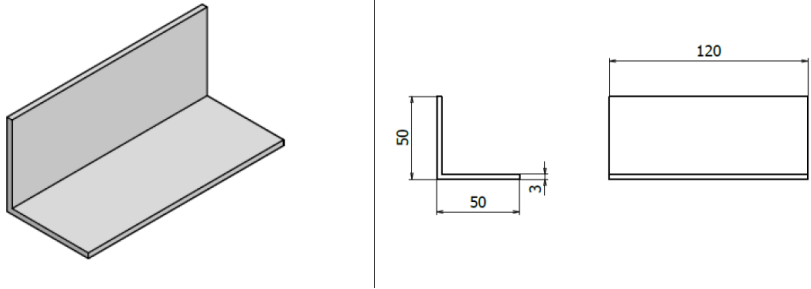
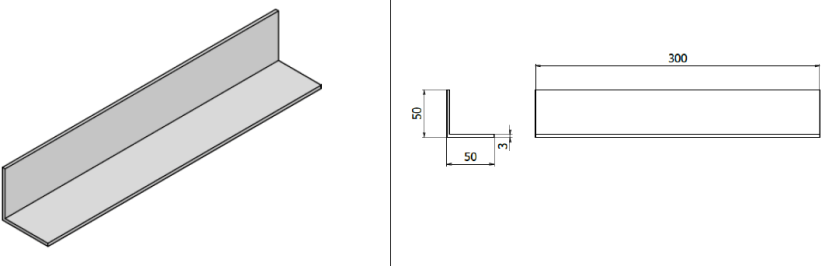
Good Practices on Measurement Assesment.		
Level Standard	OK	Not OK
Level control Air bubble can't touch on the lines		
Housing	<ul style="list-style-type: none"> . Set the level close to the wall . Set the level to flat side 	<ul style="list-style-type: none"> . Gap from the wall . Uneven side 
Limit Swich	<ul style="list-style-type: none"> . Set the level close to the wall 	<ul style="list-style-type: none"> . Gap from the wall 
Motor	<ul style="list-style-type: none"> . Measure on the base plate 	<ul style="list-style-type: none"> . No other parts of motor 

		
Control Box	<p>. Set the level close to the wall</p> 	<p>. Gap from the wall</p> 
Mesh tray	<p>. Set the level close to the wall . Set with angle</p> 	<p>. Gap from the wall</p>  
Wall ducts	<p>. Set the level close to the wall</p> 	<p>. Gap from the wall</p> 
Pipe	<p>. Set the level close to the wall . Set with angle</p>	<p>. Gap from the wall</p>

		
ET200eco	<ul style="list-style-type: none"> . Set the level close to the wall . Set the level to flat side 	<ul style="list-style-type: none"> . Gap from the wall . Uneven side 
Earth terminal	<ul style="list-style-type: none"> . Set the level close to the wall . Measure the base 	<ul style="list-style-type: none"> . Measure the cover 
Measurement Standard	OK	Not OK

<p>Housing</p>		
<p>Motor</p>	<p>. Measure on the motor base plate</p>  	<p>. No other parts of motor</p> 
<p>Control Box</p>		<p>. Gap from the wall</p> 
<p>Mesh tray</p>	<p>. Set with angle</p>  	

<p>Pipe (Clip)</p>	<p>. No switch ring until end of C1</p>  	
<p>ET200eco</p>	 	
<p>Earth Terminal</p>	 	
<p>HMI</p>	<p>. Door line</p> 	

<p>Small angle</p>	
<p>Large angle</p>	

Test Project

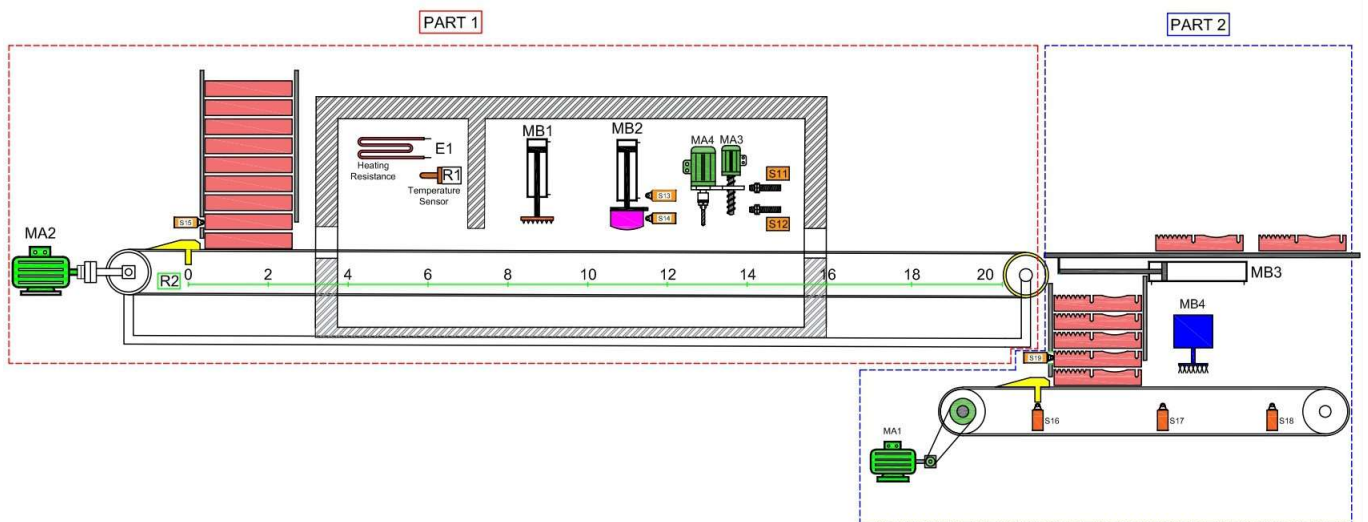
Industrial Control

Module A - Main Project

Submitted by: Lodi Joyo Siswanto

Module A – Main Project

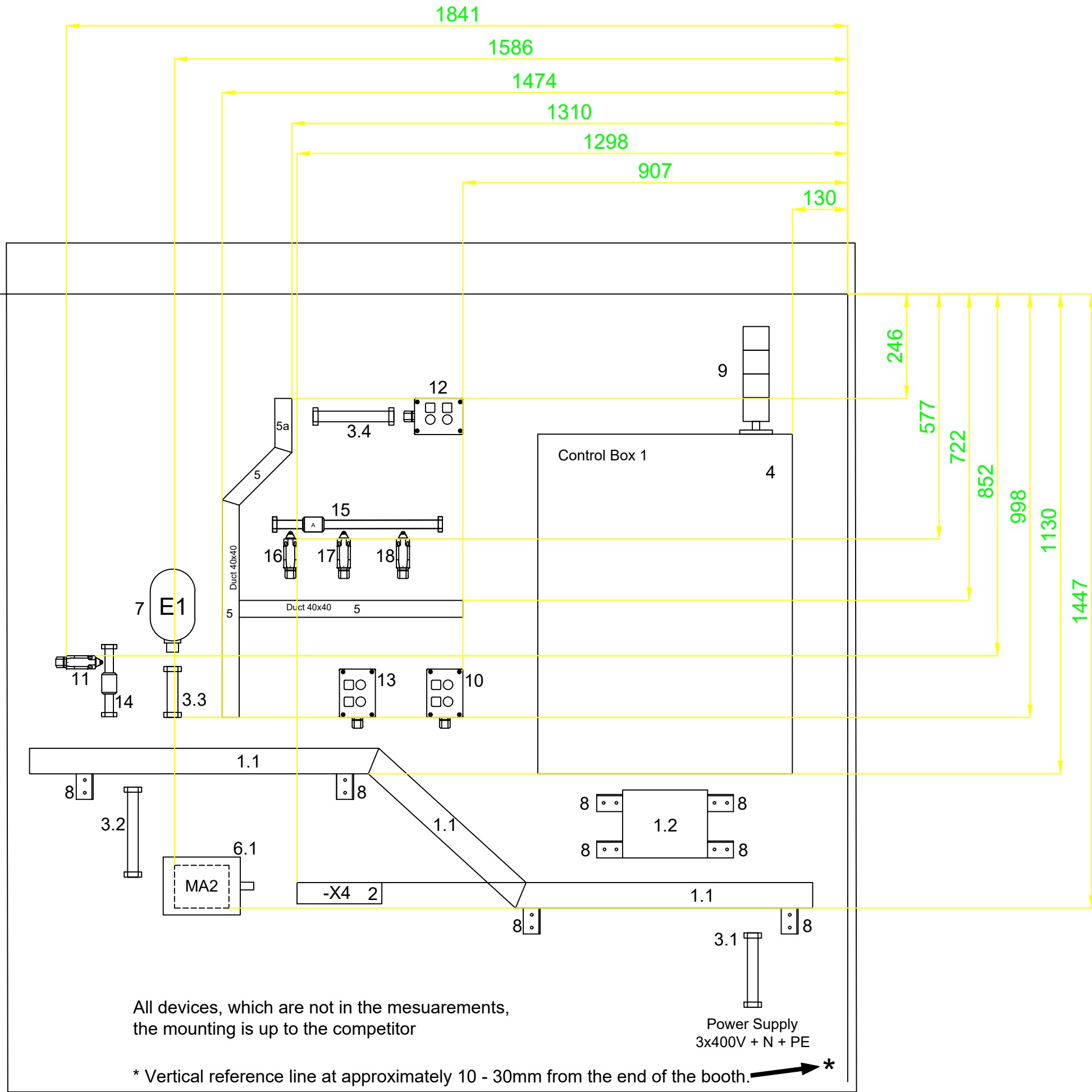
With the attached mounting layout and its electrical diagrams it is intended to simulate the operation of the following production machine.



Legend:

- | | |
|-------------------------------------|---|
| MA1: Belt 2 motor | R2: Belt 1 Position |
| MA2: Belt 1 motor | S11: MA3 Platform UP |
| MA3: Vertical movement motor | S12: MA3 Platform DOWN |
| MA4: Drilling motor | S13: MB2 Cylinder is UP |
| MB1: Valve/Cylinder | S14: MB2 Cylinder is DOWN |
| MB2: Valve/Cylinder | S15: Sensor Pieces available |
| MB3: Valve/Cylinder | S16: Belt 2 – Left position switch |
| MB4: Kleaning Product Valve | S17: Belt 2 – Middle position switch |
| E1: Heating Resistance | S18: Belt 2 – Right position switch |
| R1: Temperature sensor | S19: Sensor Pieces available |

↑
Horizontal Reference
line at approximately
1900mm from the floor



- 1.1 - Mesh tray horizontal
- 1.2 - Mesh tray vertical
- 2 - Protective earth terminal (X4)
- 3.1 - Plastic tube VR20
- 3.2 - Plastic tube VR20
- 3.3 - Plastic tube VR20
- 3.4 - Plastic tube VR20
- 4 - Control Box (600x800)
- 5 - Duct 40x40mm
- 5a - Duct 40x40mm
- 6.1 - Motor MA4
- 7 - Heater E1
- 8 - Wall Brackets
- 9 - Housing (P10, P11, P12, P13)
- 10 - Housing (S13, MB2)
- 11 - Limit switch (S15)
- 12 - Housing (S19, MB4)
- 13 - Housing (MA4, MB1)
- 14 - Metal pipe ISO 20
- 15 - Metal pipe ISO 20
- 16 - Limit switch (S16)
- 17 - Limit switch (S17)
- 18 - Limit switch (S18)

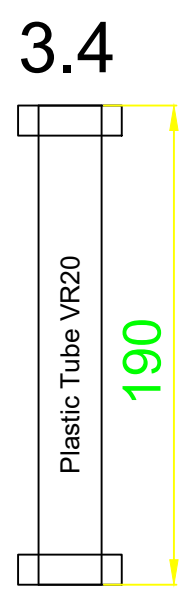
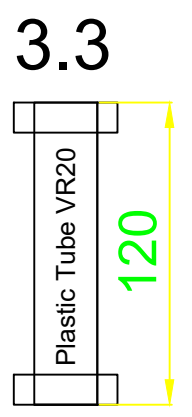
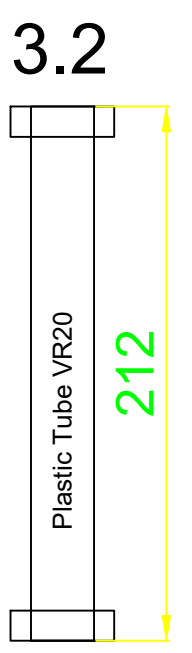
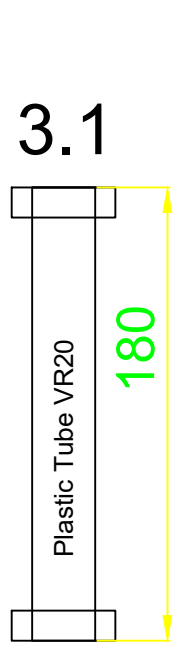
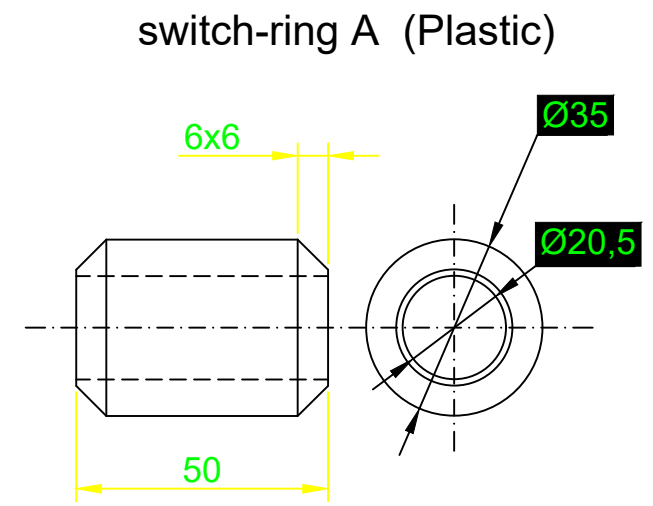
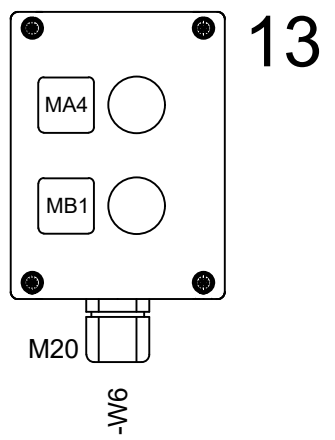
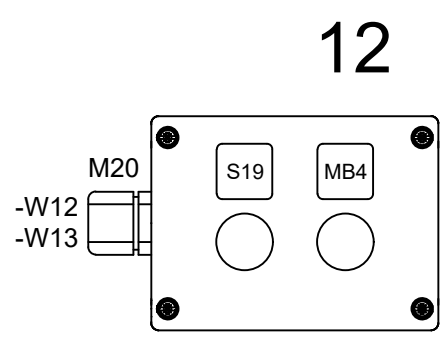
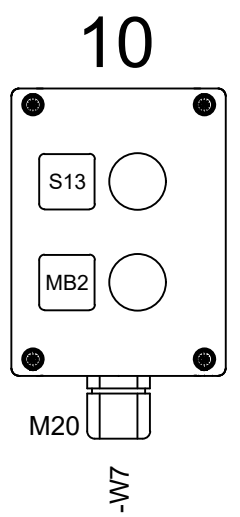
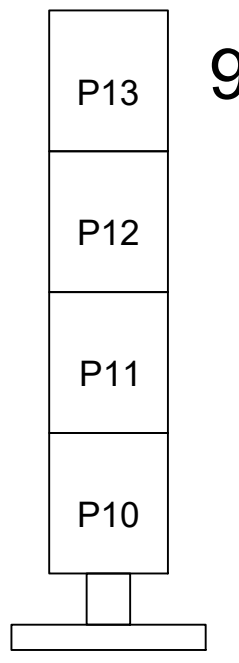
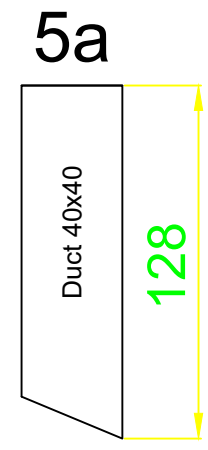
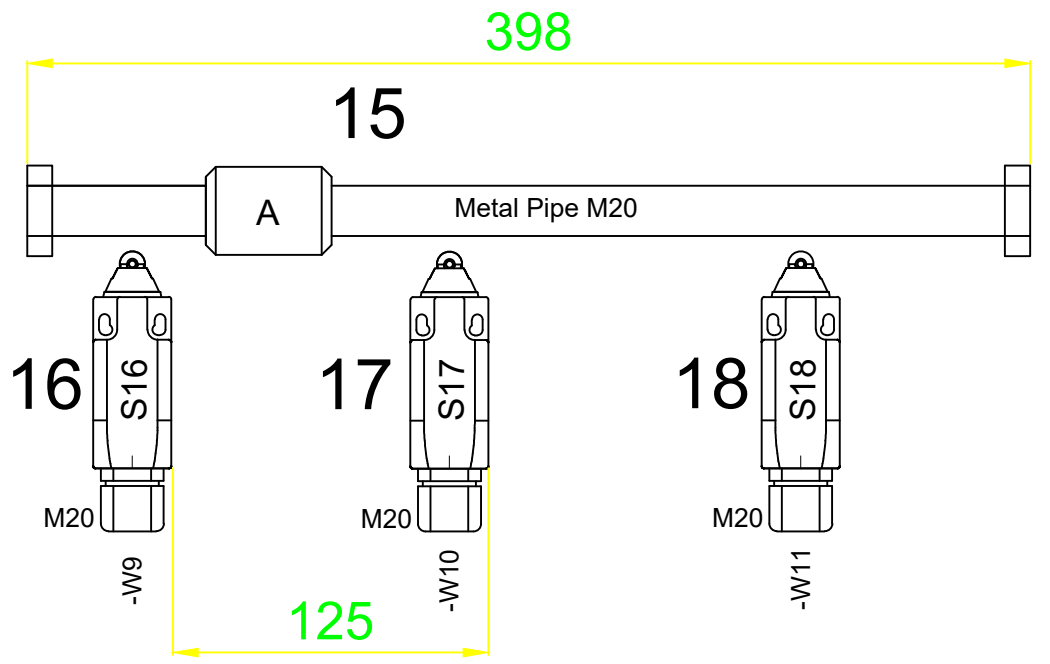
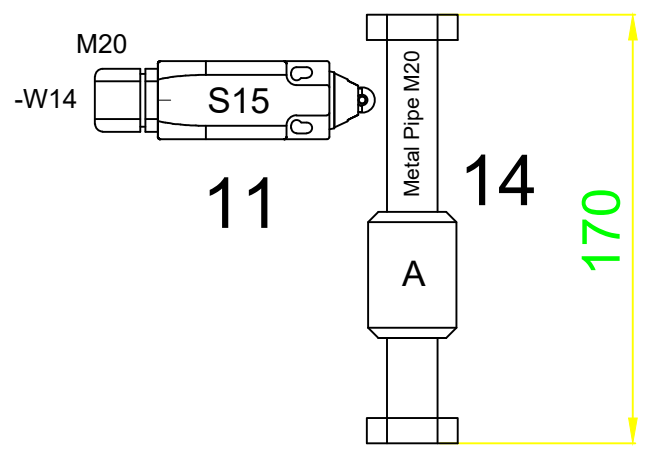
WALL INSTALLATION
NOT ALL IN SCALE


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

* Vertical reference line at approximately 10 - 30mm from the end of the booth. → *

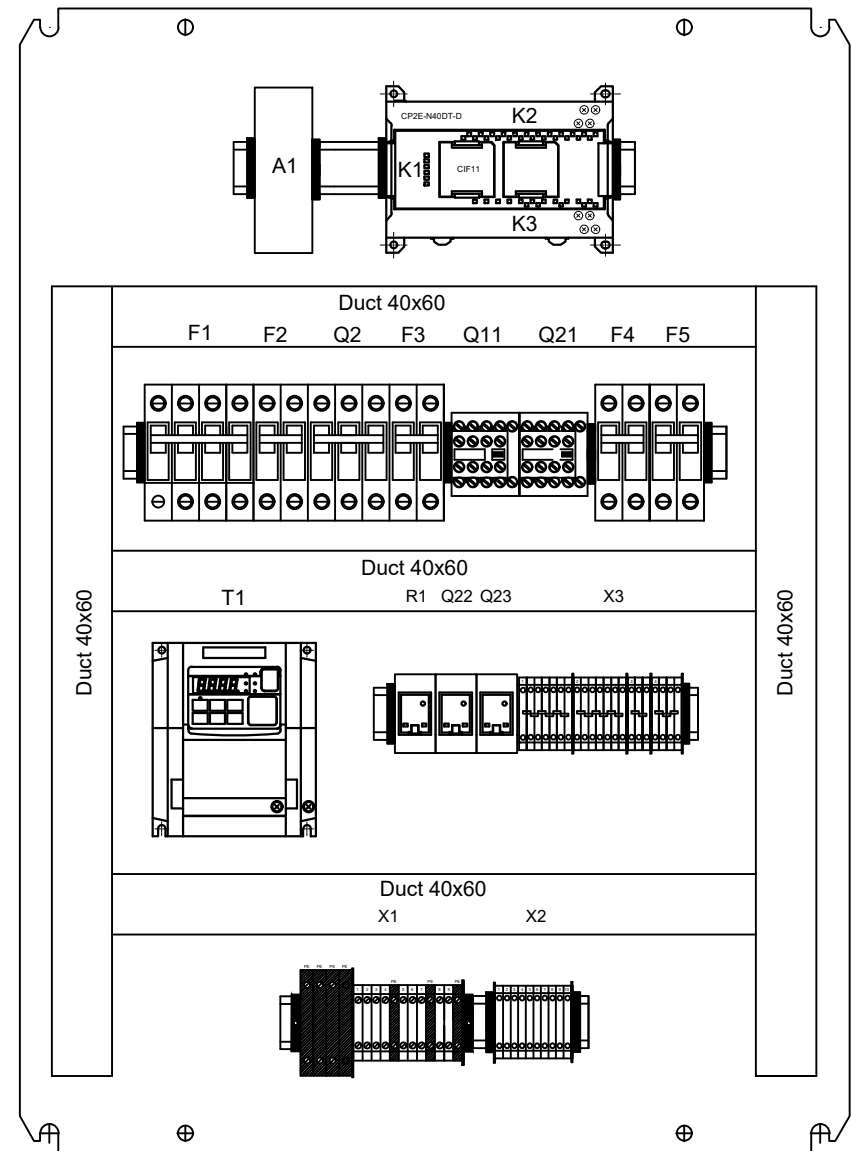
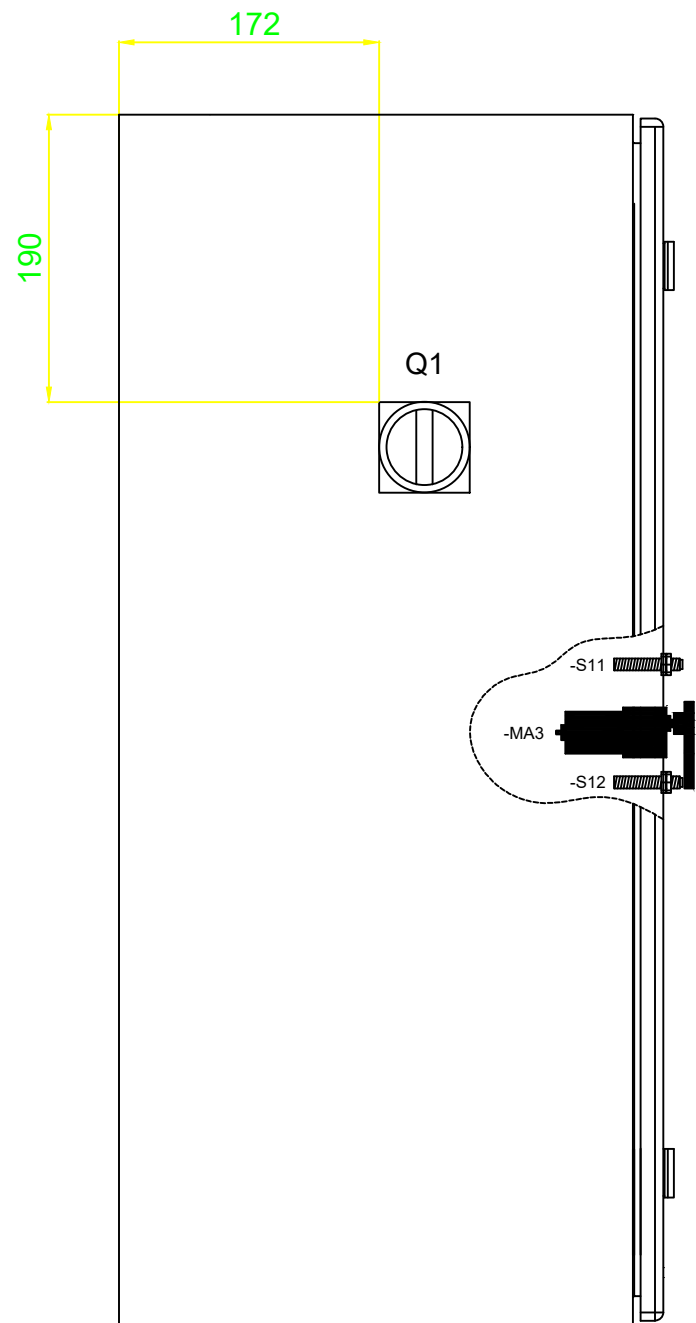
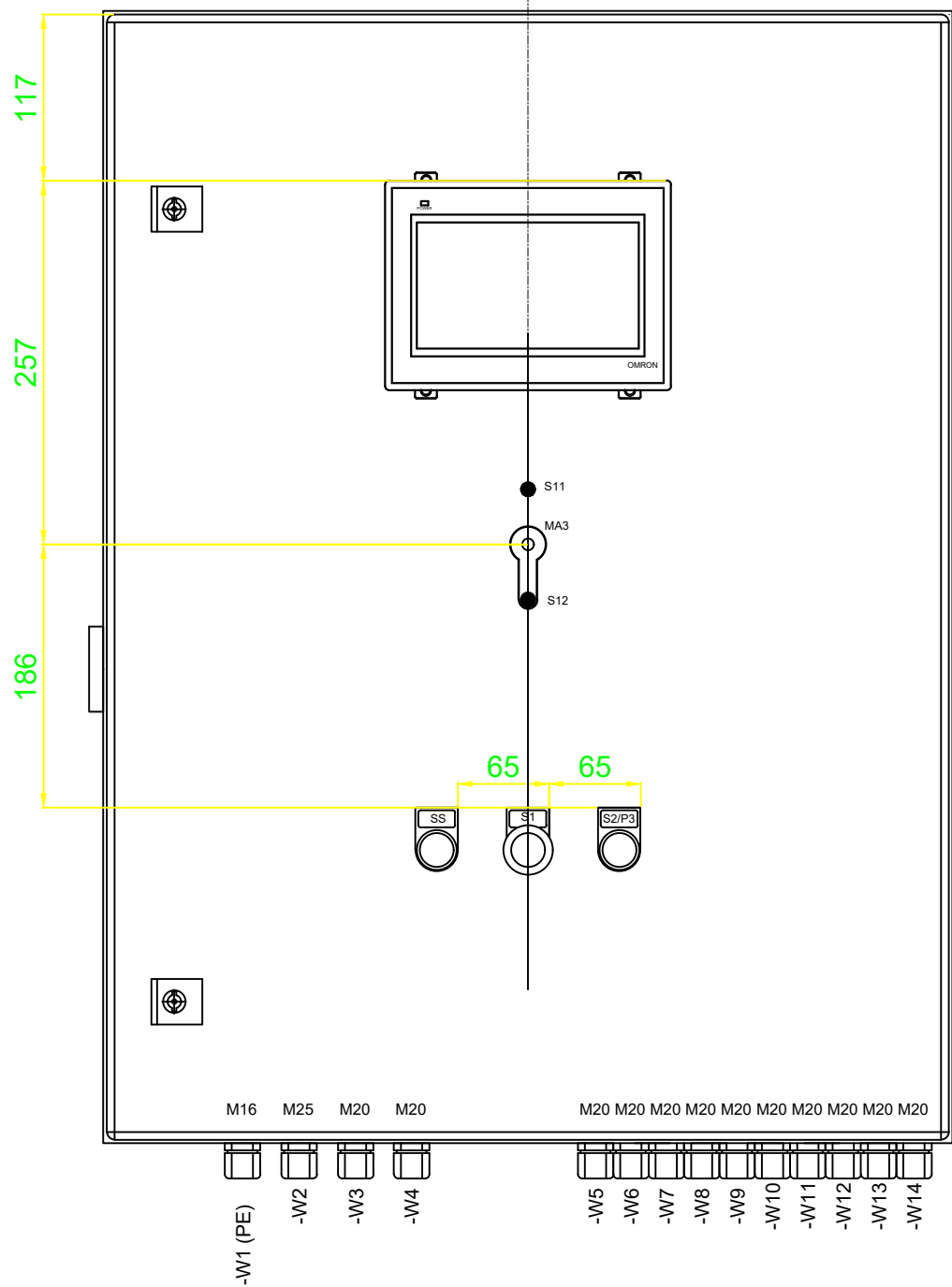
Power Supply
3x400V + N + PE

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	Design by: Lodi Juyo Siswanto			
	Last Update: 17/02/2023	Scale: --/--	Paper: A3	Page: 1 / 13
	Drawing Number: LKSN_2023_TP19_PT_MODULE1			Rev:
	Description: LAYOUT			Projection:



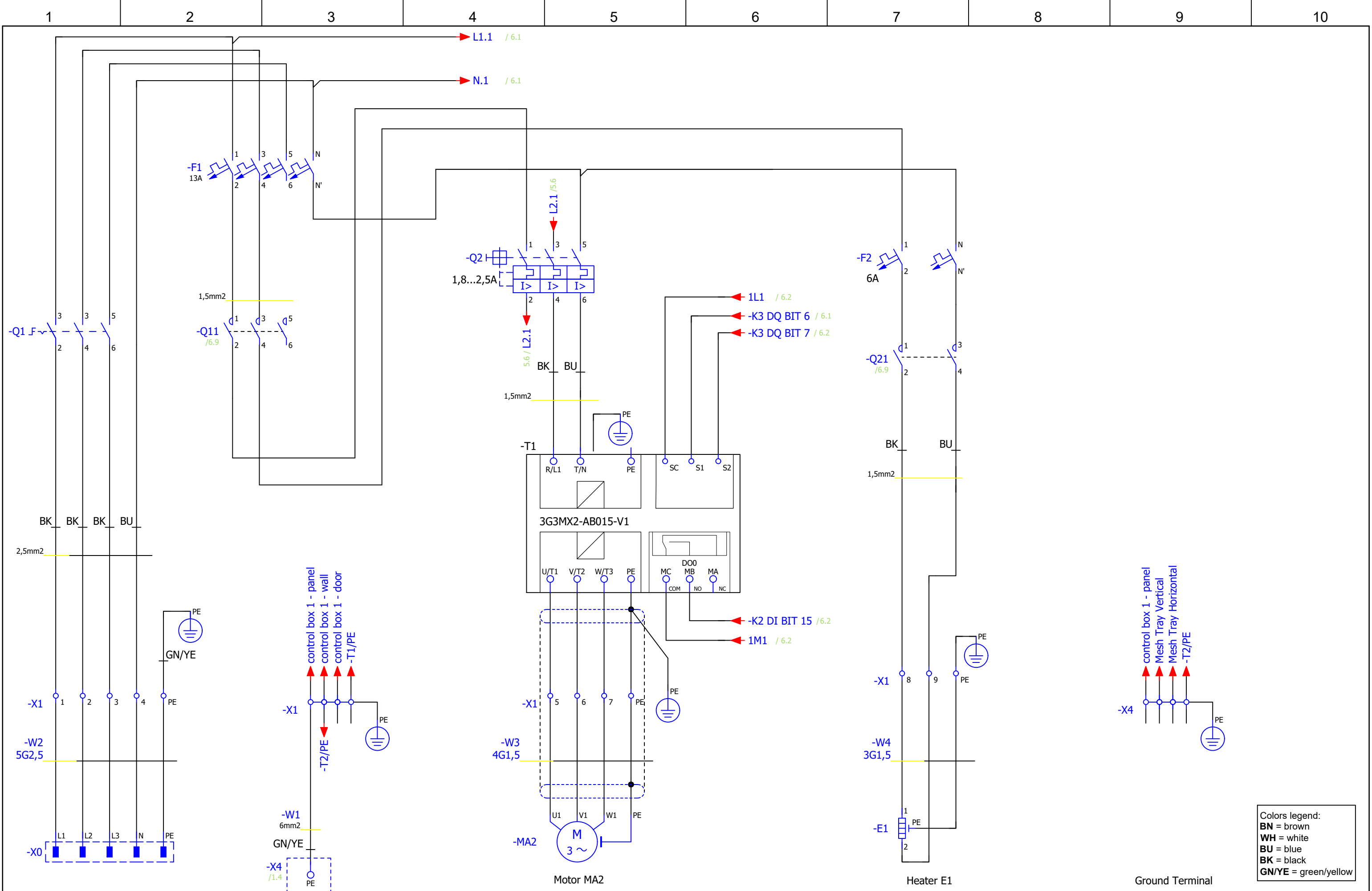
 LKS Nasional BALI - 2023 Test Project for the LKS NASIONAL 2023 Copyright ©TutorialPLC 2023 All Rights Reserved	Skill: 19 - Industrial Control			
	Design by: Lodi Joyo Siswanto			
	Last Update: 17/02/2023	Scale: --/--	Paper: A3	Page: 2 / 13
	Drawing Number: LKSN_2023_TP19_PT_MODULE1			Rev:
	Description: HOUSINGS, LIMIT-SWITCHES, PIPE'S			Projection:

Pos.4



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Skill: 19 - Industrial Control			
Design by: Lodi Joyo Siswanto			
Last Update: 17/10/2023	Scale: --/--	Paper: A3	Page: 3 / 13
Drawing Number: LKSN_2023_TP19_PT_MODULE1			Rev:
Description: CONTROL BOX 1 LAYOUT			Projection:



Power supply
3 x 380V + N + PE / 50 Hz

Protective conductor connection



Test Project for the
LKS NASIONAL 2023
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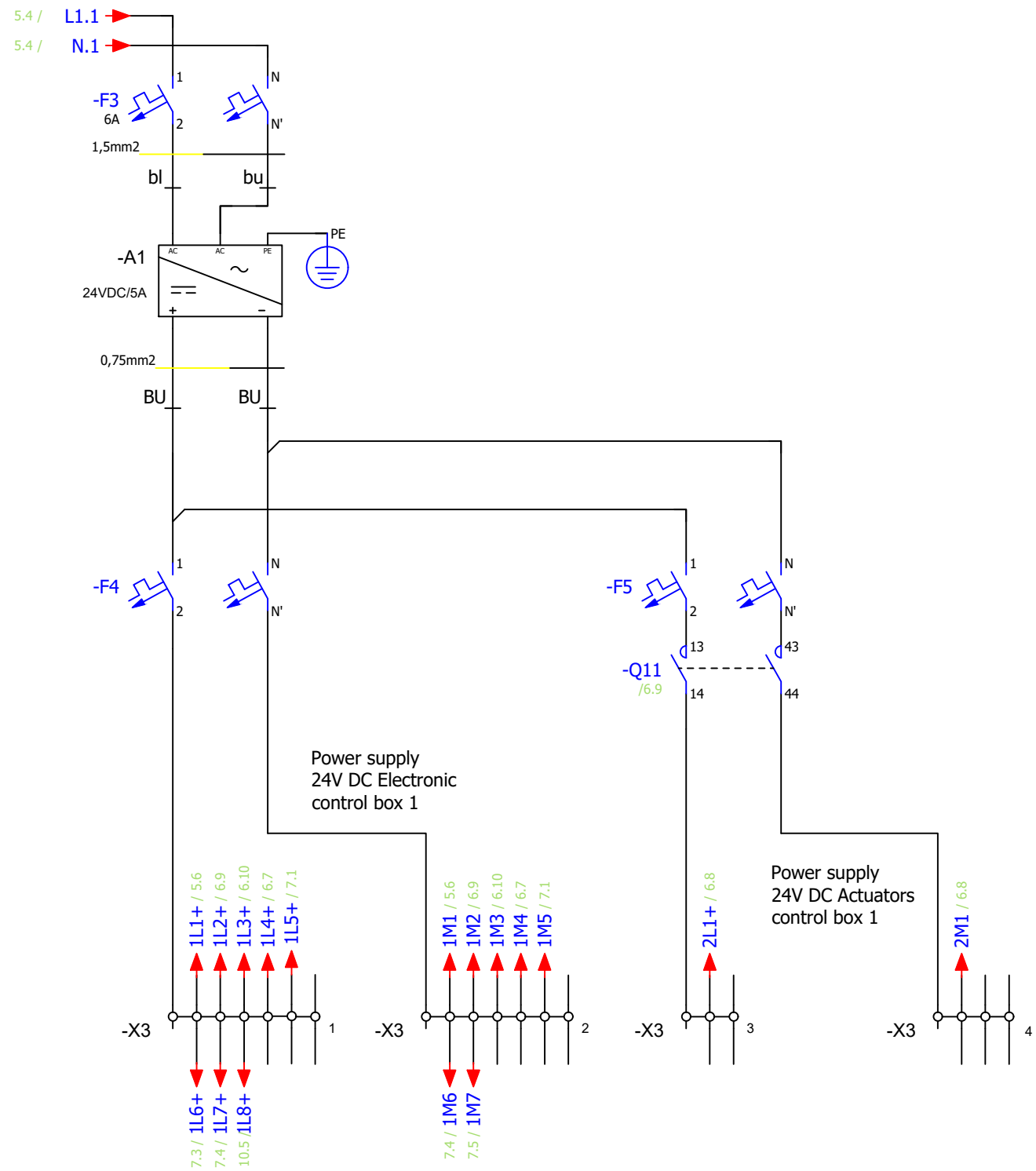
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Draw by:
Lodi Joyo S

Date:
17-02-2023
Scale:
-/-

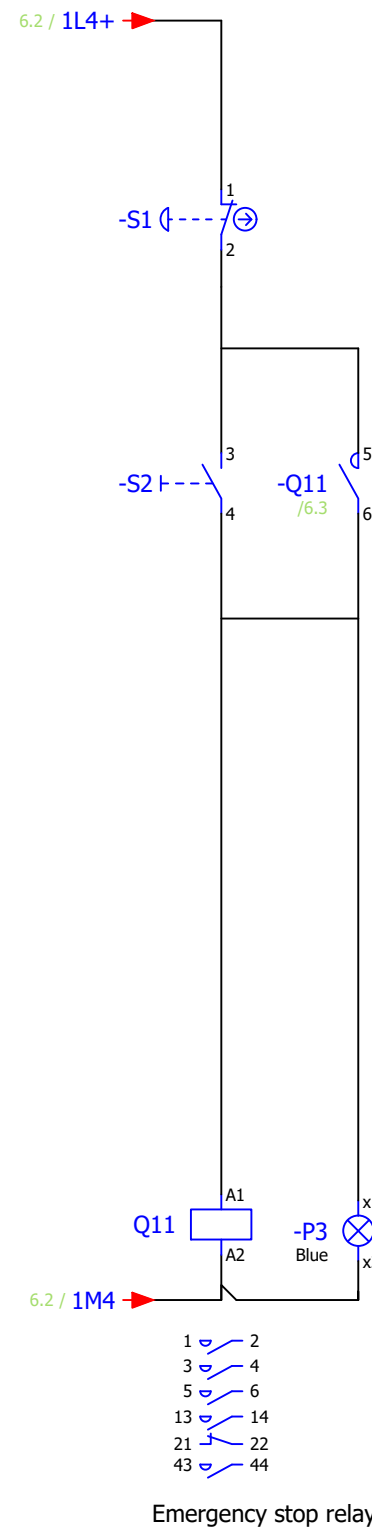
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Pages:
4/13

Colors legend:

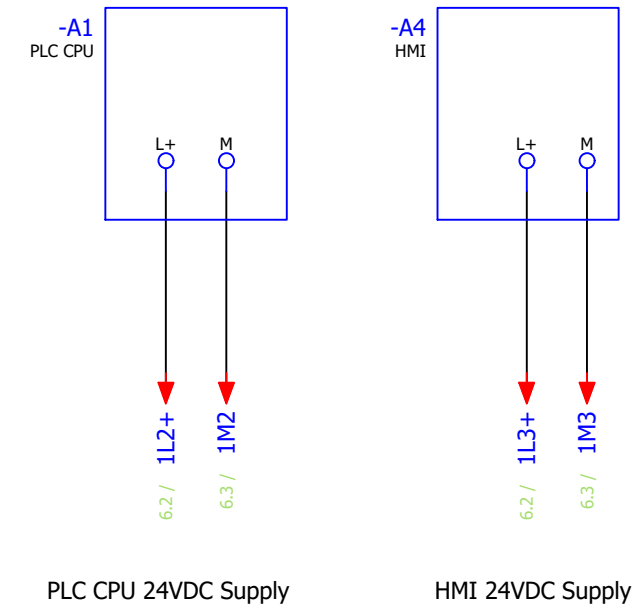
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WH	= white
BU	= blue
BK	= black
GN/YE	= green/yellow



Power supply 24V DC Electronic Control box 1

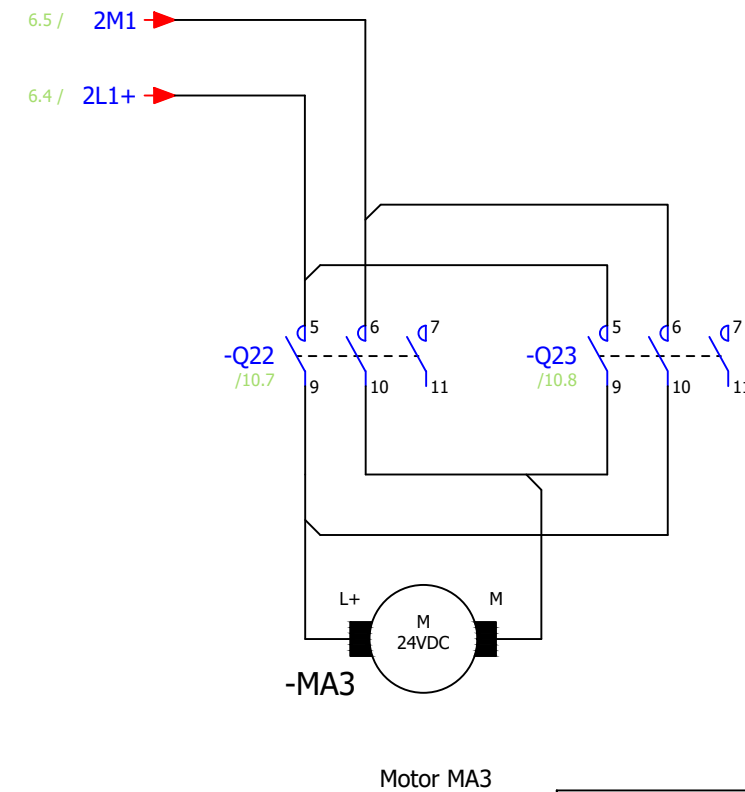


Emergency stop relay



PLC CPU 24VDC Supply

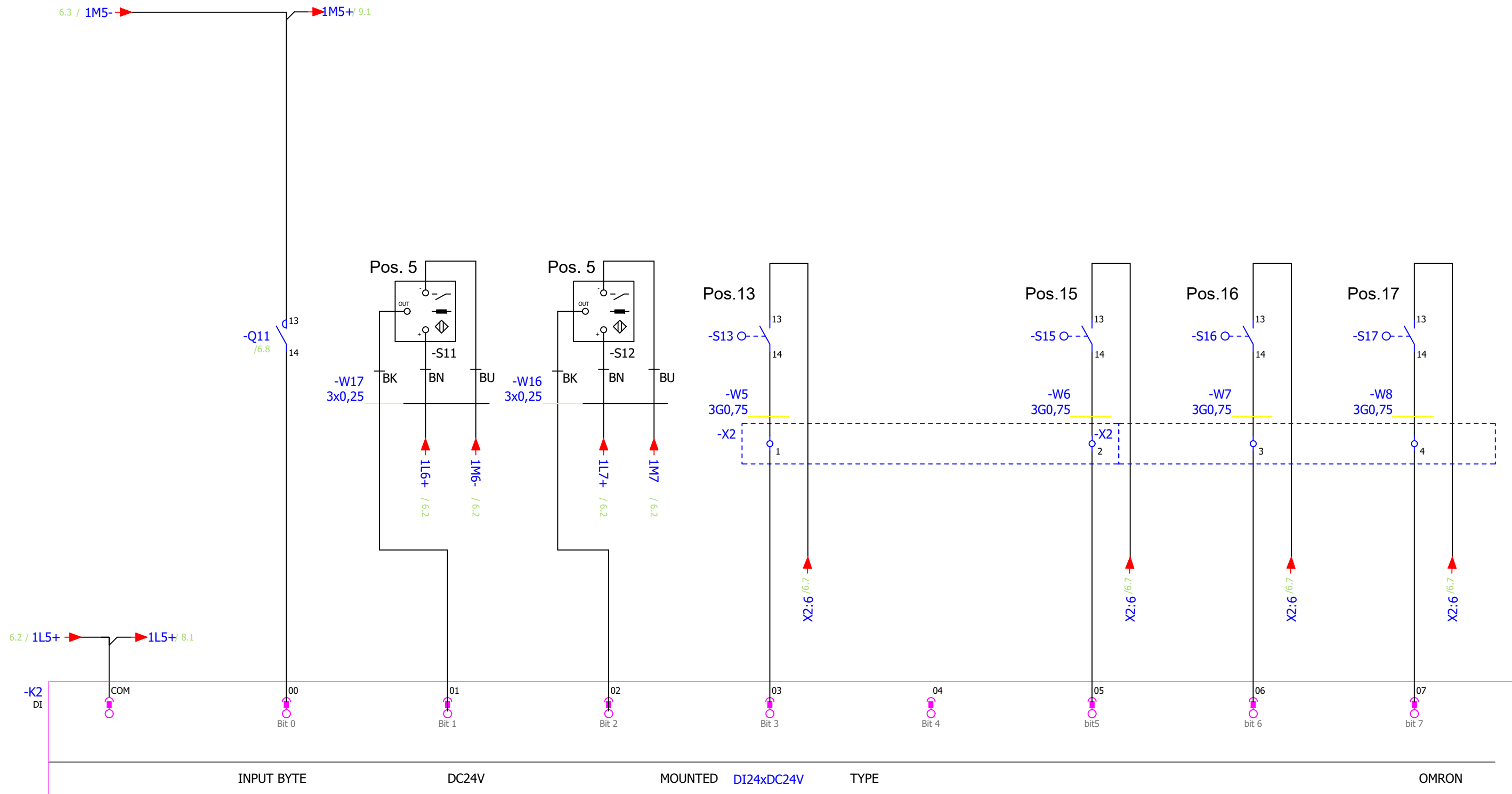
HMI 24VDC Supply



Motor MA3

Colors legend:
BN = brown
WH = white
BU = blue
BK = black
GN/YE = green/yellow

Master ON S11 - Inductive Sensor S12 - Inductive Sensor



Colors legend:
BN = brown
WH = white
BU = blue
BK = black
GN/YE = green/yellow

6.9 / 1L1+ →

Pos.11

Pos.11

-S18 ○

-S19 ○

-W9
3G0,75

-W10
3G0,75

-X2

-SS Left

-SS Right

X2:6 /6,7

X2:6 /6,7

-T1 MB /7,8

7.1 / 1L5+ →

→ 1L5+10.2

-K2
DI

COM

08

09

10

11

12

13

14

15

Bit 8

Bit 9

Bit 10

Bit 11

Bit 12

bit 13

bit 14

bit 15

INPUT BYTE

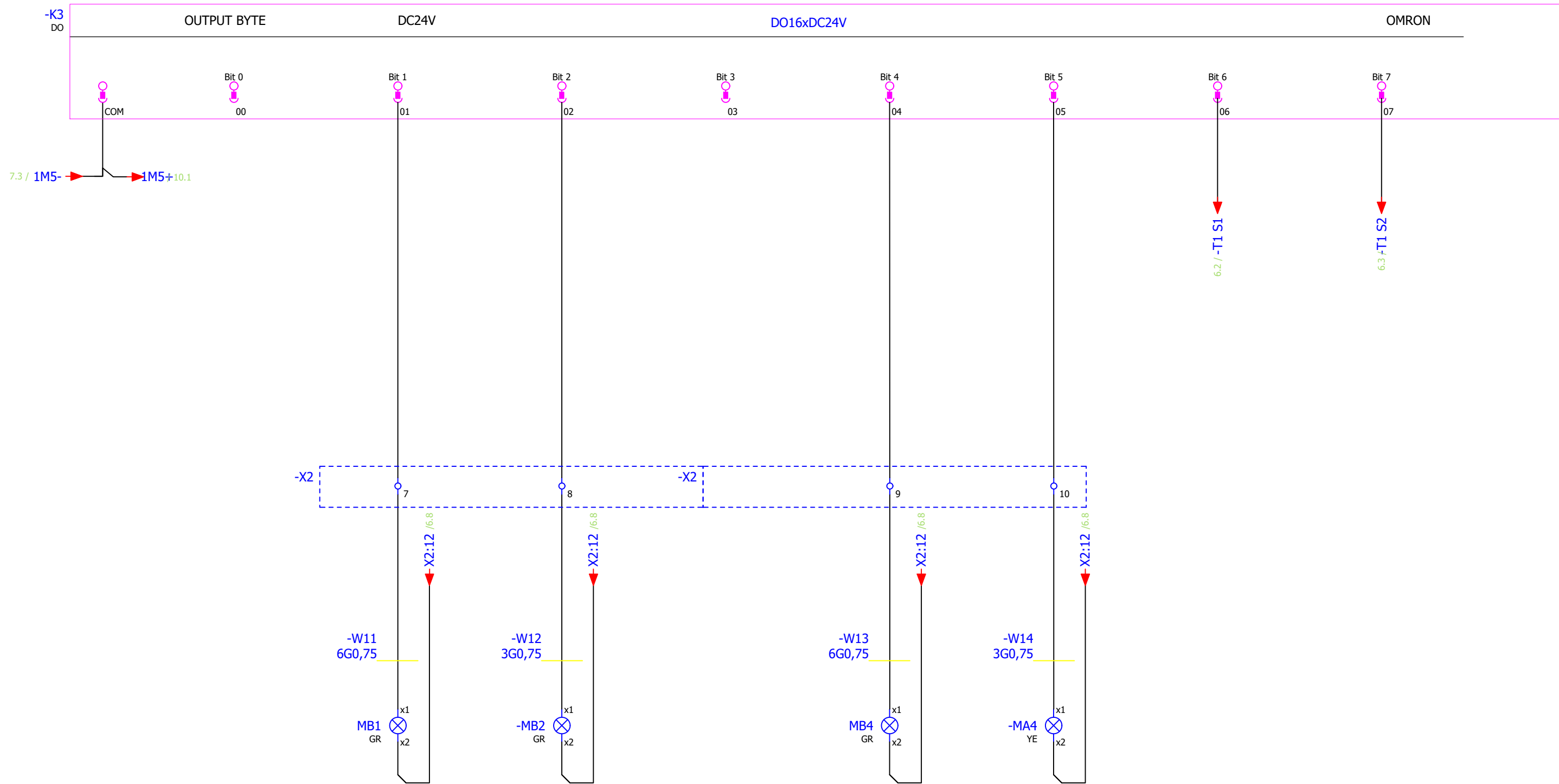
DC24V

MOUNTED DI24xDC24V

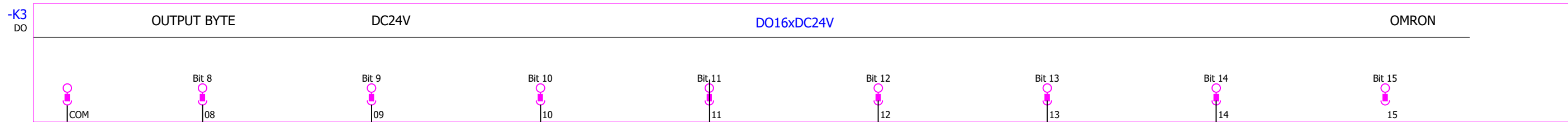
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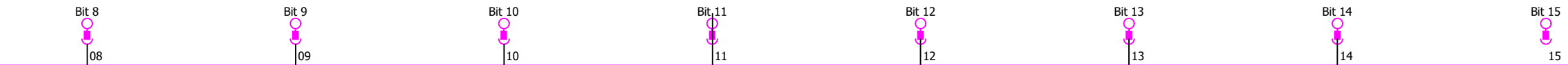
Colors legend:
BN = brown
WH = white
BU = blue
BK = black
GN/YE = green/yellow



Colors legend:
BN = brown
WH = white
BU = blue
BK = black
GN/YE = green/yellow



9.1 / 1M5-

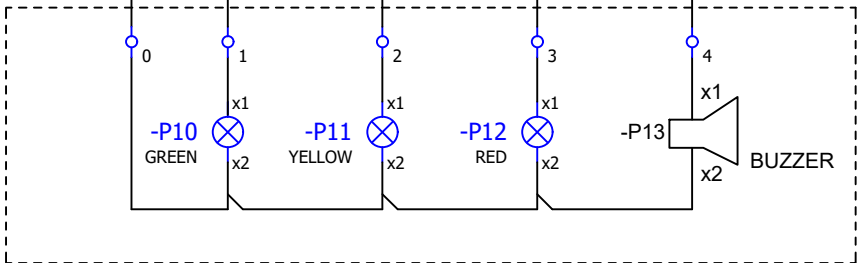
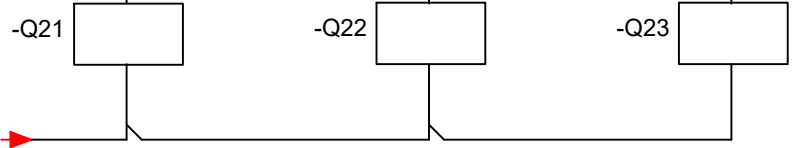


1L8+/6.2

-W15
6G0,75

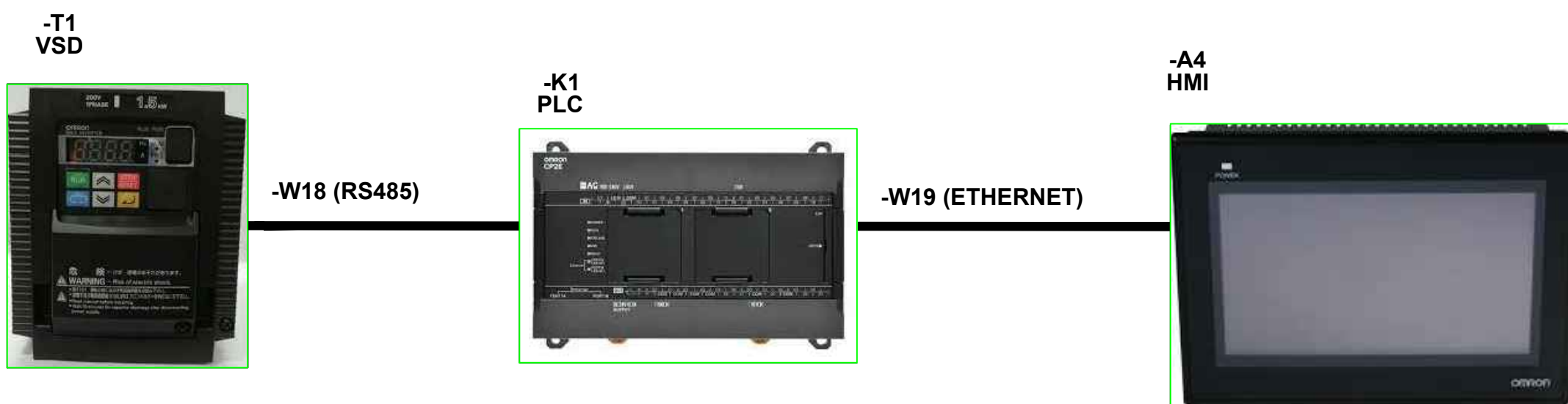
Pos.9

1L5+/8.2



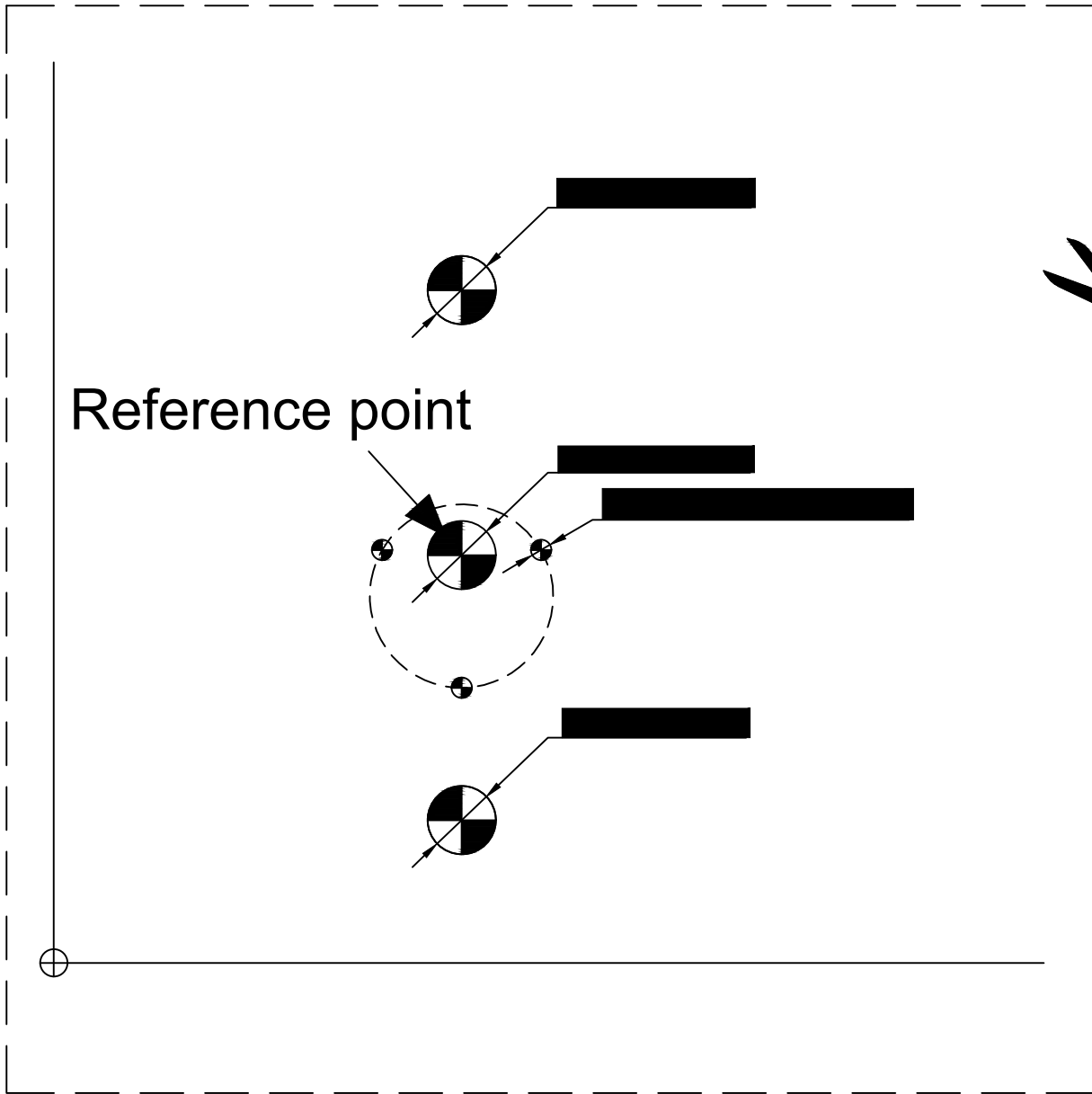
Lamp P10 Lamp P11 Lamp P12 Buzzer

Colors legend:
BN = brown
WH = white
BU = blue
BK = black
GN/YE = green/yellow



Motor MA3

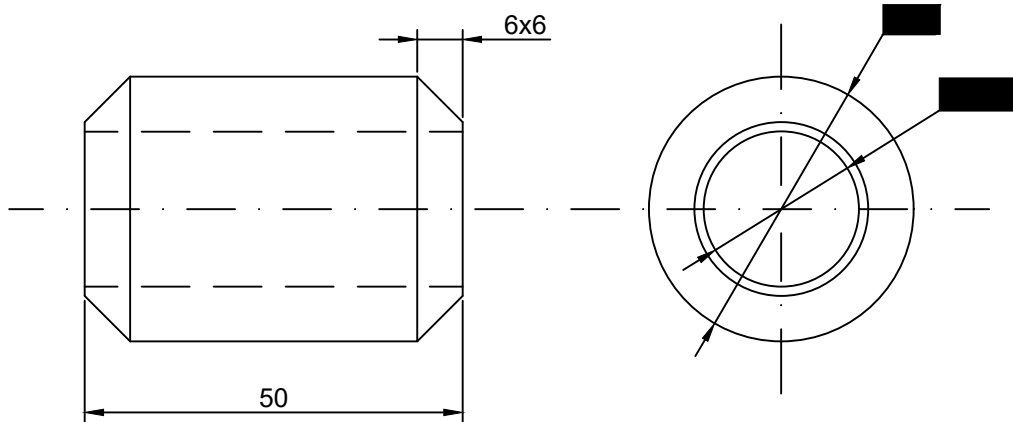
Template to mark the center of the holes

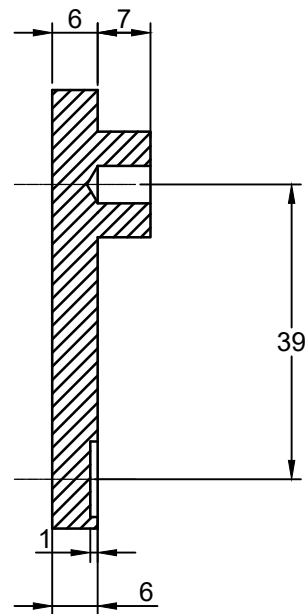
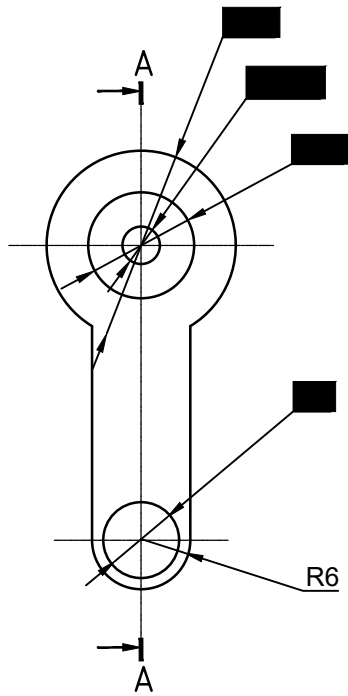


Note: Print this sheet on dimension A4

switch-ring short (B)

Made in plastic, nylon or teflon





PLC - INPUTS

<u>INPUT</u>	<u>ADDRESS</u>	<u>SYMBOL</u>	<u>FUNCTION</u>
I 0	Q11	MASTER ON
I 1	S11	MA3 Platform UP
I 2	S12	MA3 Platform UP
I 3	S13	MB2 Cylinder is UP
I 4		
I 5	S15	Sensor Pieces available
I 6	S16	Belt 2 – Left position switch
I 7	S17	Belt 2 – Middle position switch
I 8	S18	Belt 2 – Right position switch
I 9	S19	Sensor Pieces available
I 10		
I 11	SS LEFT	Manual Mode
I 12		
I 13	SS RIGHT	Auto Mode
I 14		
I 15	T1 MB	Inverter Signal

PLC - OUTPUTS

<u>OUTPUT</u>	<u>ADDRESS</u>	<u>COLOR</u>	<u>SYMBOL</u>	<u>FUNCTION</u>
Q 0			
Q 1	GREEN	MB1	Valve/Cylinder
Q 2	GREEN	MB2	Valve/Cylinder
Q 3			
Q 4	GREEN	MB4	Valve/Cylinder
Q 5	YELLOW	MA2	Belt 1 motor
Q 6		-T1 S1	Signal For Inverter
Q 7		-T1 S2	Signal For Inverter
Q 8		Q21	
Q 9		Q22	MA3 CW
Q 10		Q23	MA3 CCW
Q 11	GREEN	P10	
Q 12	YELLOW	P11	
Q 13	RED	P12	
Q 14	BUZZER	P13	
Q 15			

SAFETY REPORT – COMMISSIONING

Competitor

Name / Country code /

Booth No.:

1. Visual Inspection (mark with ✓)	
<input type="checkbox"/>	Control box 1 (Complete, all ducts closed and all equipment's identified)
<input type="checkbox"/>	Control box 2 (Complete, all ducts closed and all equipment's identified)
<input type="checkbox"/>	Protective earth terminal (all metal cable tray connected to X4, and control boxes panel, side wall and doors connected to the earth)
<input type="checkbox"/>	Plant Installation All devices and housings fixed and all equipment's identified
<input type="checkbox"/>	Power Supply OFF Power socket (-X0) is disconnect (OFF)
2. Low Impedance Testing	
Preparation for testing → Equipment low impedance test value: Ω	
Control Box 1	Control Box 2
- X0 / PE → -X1/PE Ω	- X0 / PE → -X3/PE Ω
- X0 / PE → Panel Ω	- X0 / PE → Panel Ω
- X0 / PE → Side Wall Ω	- X0 / PE → Side Wall Ω
- X0 / PE → Door Ω	- X0 / PE → Door Ω
- X0 / PE → T2 Metal Frame Ω	
- X0 / PE → VSD Metal Frame Ω	
Wall Installation:	
- X0 / PE → - X4 Ω	
- X0 / PE → Horizontal Metal Cable Tray Ω	
- X0 / PE → Vertical Metal Cable Tray Ω	
- X0 / PE → Motor MA1 Frame Ω	
- X0 / PE → Motor MA2 Frame Ω	
3. Power and Commissioning	
Allowed only in the presence of an expert group	
Competitor must wear safety glasses, long sleeves and insulation gloves during testing and voltage test.	
3.1 - Testing: Residual Current Device (RCD) by Test Button	
<input type="checkbox"/> Function OK	<input type="checkbox"/> Function Not OK
Turn OFF: -Q1 / -F1 / -Q2 / -Q3 / -F2 / - F3, on the Control Box 1	
Plug in Power Socket (X0)	
Turn Power ON, on the distribution cabinet	
3.2 - Voltage Measurement –X1:	
- X1 / L1 → - X1 / N V	
- X1 / L2 → - X1 / N V	
- X1 / L3 → - X1 / N V	
- X1 / L1 → - X1 / L2 V	
- X1 / L1 → - X1 / L3 V	

- X1 / L2 --> - X1 / L3 V

3.3 – Emergency Function:

Turn ON: -Q1 / -F1 / -Q2 / -Q3 / -F2 / - F3 / -F4 and -A1 on the Control Box 1

<input type="checkbox"/> Press S2 → -Q11 and –Q12 turns ON	<input type="checkbox"/> Press S1_A / S1_B → -Q11 and –Q12 turns OFF
--	--

For the accuracy

Signature by Competitor

Date: __ / __ / ____

Signature by Expert

C.C ____

Signature by Expert

C.C ____

Signature by Expert

C.C ____

Test Project

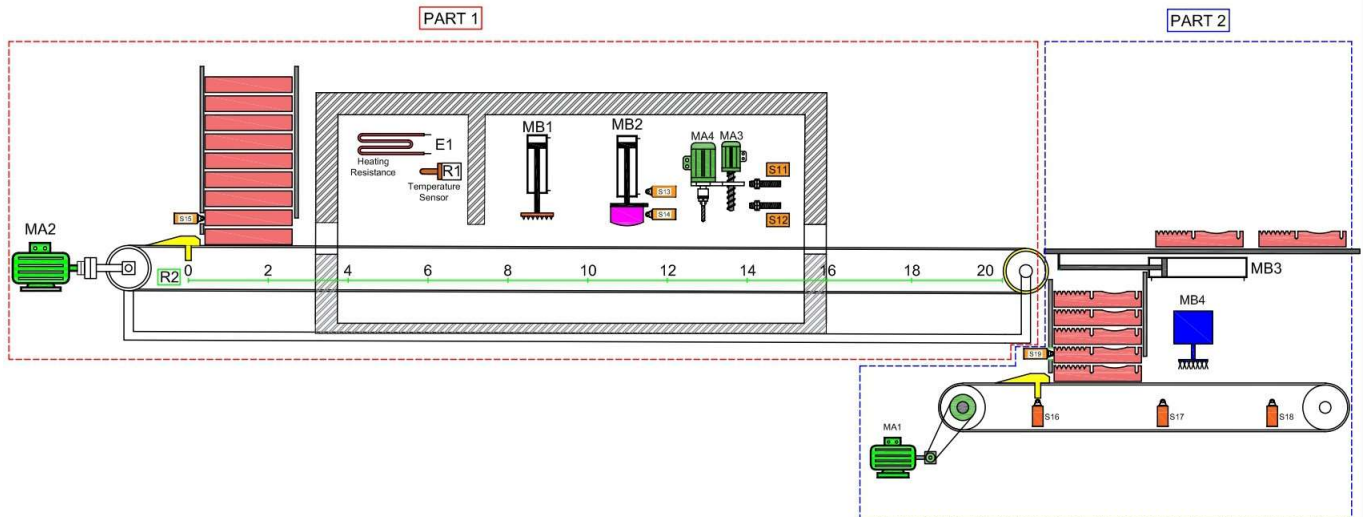
Industrial Control

Module B - Programming

Submitted by: Lodi Joyo Siswanto

Module B – Programming

On this projects intended to simulate the operation of the following production machine:



Legend:

MA1: Belt 2 motor

MA2: Belt 1 motor

MA3: Vertical movement motor

MA4: Drilling motor

MB1: Valve/Cylinder

MB2: Valve/Cylinder

MB3: Valve/Cylinder

MB4: Cleaning Product Valve

E1: Heating Resistance

R1: Temperature sensor

R2: Belt 1 Position

S11: MA3 Platform UP

S12: MA3 Platform DOWN

S13: MB2 Cylinder is UP

S14: MB2 Cylinder is DOWN

S15: Sensor Pieces available

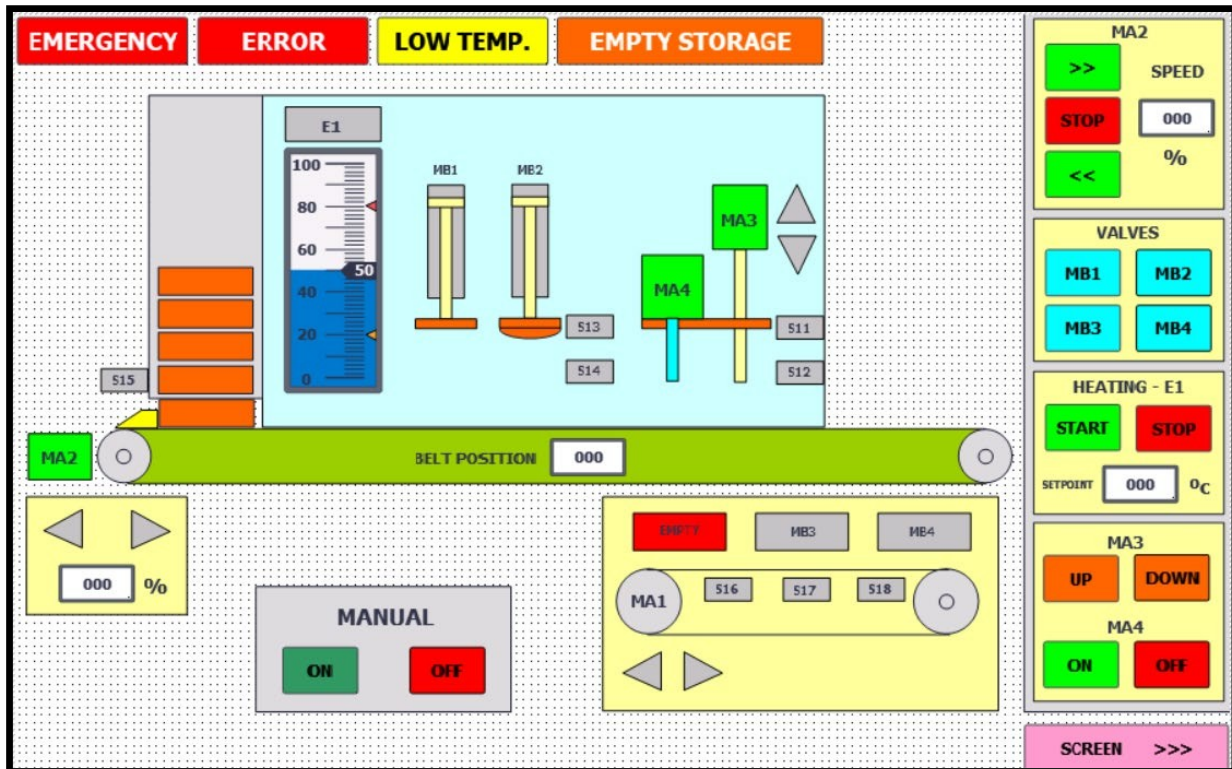
S16: Belt 2 - Left position switch

S17: Belt 2 - Middle position switch

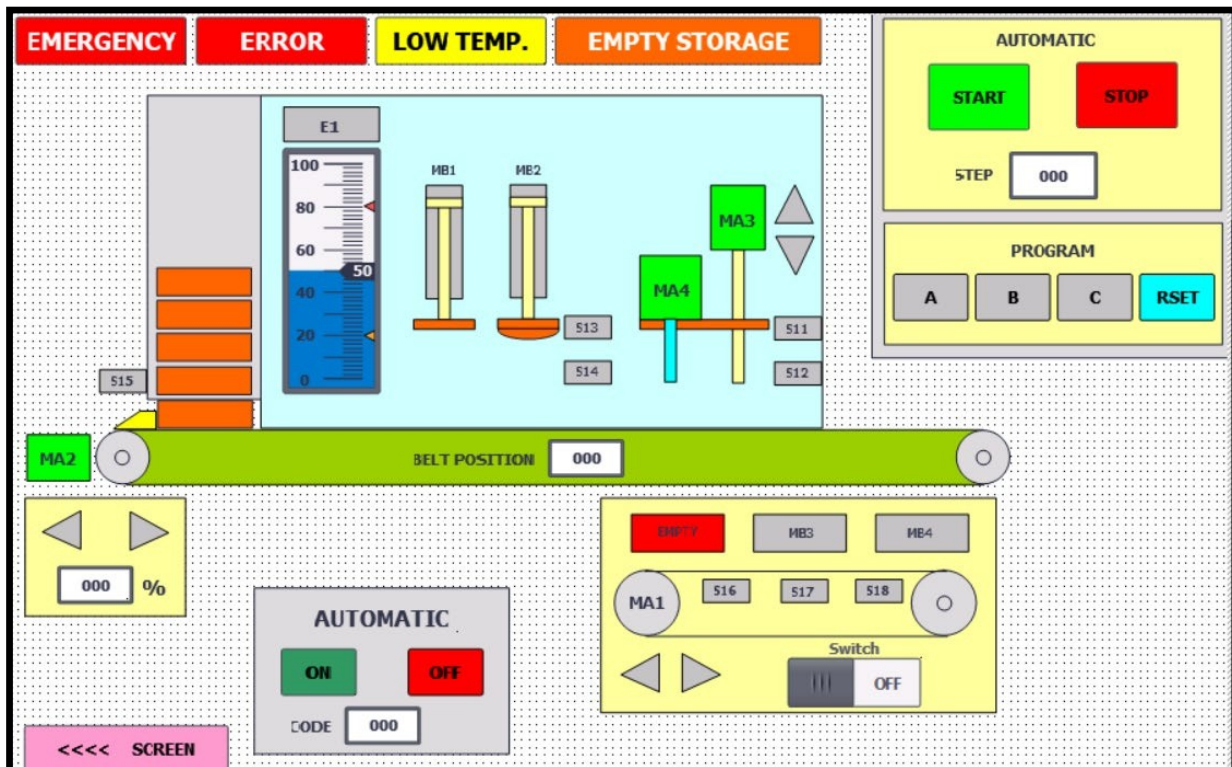
S18: Belt 2 - Right position switch

S19: Sensor Pieces available

HMI – Screen “MANUAL”

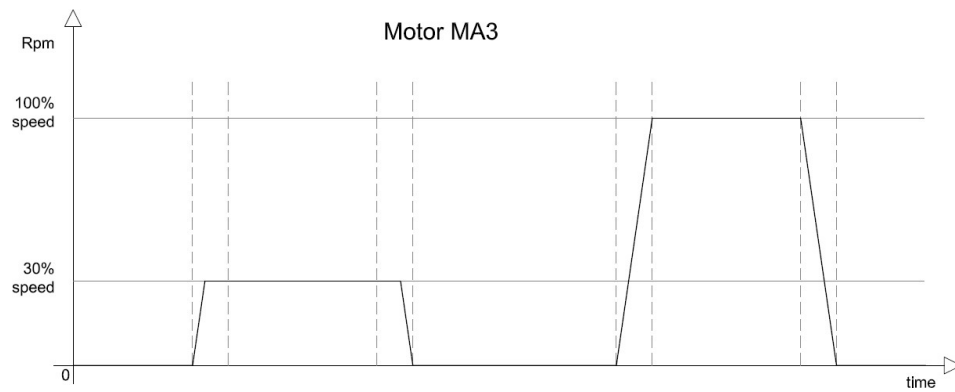


HMI – Screen “AUTOMATIC”



VSD

The changes in speed and the 0-speed will be reached in 1 second.
The ramps must be programmed in the variable speed device (VSD).



PLC Inputs/Outputs

SYMBOL	TYPE	COMMENT
EMERG STOP	BOOL	PLC - Input (-K3)
S15	BOOL	PLC - Input (-K3)
ERROR	BOOL	PLC - Input (-K3 Bit 2)
MB1	BOOL	PLC - Output (-K3
MB2	BOOL	PLC - Output (-K3
MB3	BOOL	PLC - Output (-K3
P4	BOOL	PLC - Output (-K3
P5	BOOL	PLC - Output (-K3
MA1_RIGHT (Q13)	BOOL	PLC - Output (-K3)
MA1_LEFT (Q14)	BOOL	PLC - Output (-K3)
E1_OUT (T2_A1)	BOOL	PLC - Output (-K3) Output configured as PWM output (base frequency 15Hz)
R1 (K2:AI_CH0)	INT	PLC - Analog Input (-K2)
K2:AO_CH0	INT	PLC - Analog Output (-K2)
S11	BOOL	ET200SP - Input (-K6)
S12	BOOL	ET200SP - Input (-K6)
S13	BOOL	ET200SP - Input (-K6)
S14	BOOL	ET200SP - Input (-K6)
P10	BOOL	ET200SP - Output (-K7)
P11	BOOL	ET200SP - Output (-K7)
P12	BOOL	ET200SP - Output (-K7)
P13	BOOL	ET200SP - Output (-K7)
R2 (K8:AI-U_CH0)	INT	ET200SP - Input (-K8)
K9:AQ-U_CH0	INT	ET200SP - Output (-K9)
MA3_UP (Q15)	BOOL	ET200SP - IO-Link/Input (-K10)
MA3_DOWN (Q16)	BOOL	ET200SP - IO-Link/Input (-K10)
S5	BOOL	Sirius Act Module- Input (-A5)
S4	BOOL	Sirius Act Module - Input (-A5)
S3_L	BOOL	Sirius Act Module - Input (-A5)
S3 R	BOOL	Sirius Act Module - Input (-A5)
P1	BOOL	Sirius Act Module - Output (-A5)
P2	BOOL	Sirius Act Module - Output (-A5)
S16	BOOL	ET200Eco - Input (-A6)
S17	BOOL	ET200Eco - Input (-A6)
S18	BOOL	ET200Eco - Input (-A6)
S19	BOOL	ET200Eco - Input (-A6)
MB4	BOOL	ET200Eco - Output (-A6)


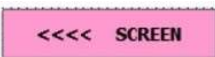
MA2 SPEED	REAL	VSD (by Profinet) (-T1)
MA2_RIGHT	BOOL	VSD (by Profinet) (-T1)
MA2_LEFT	BOOL	VSD (by Profinet) (-T1)

Control HMI/PLC Variables

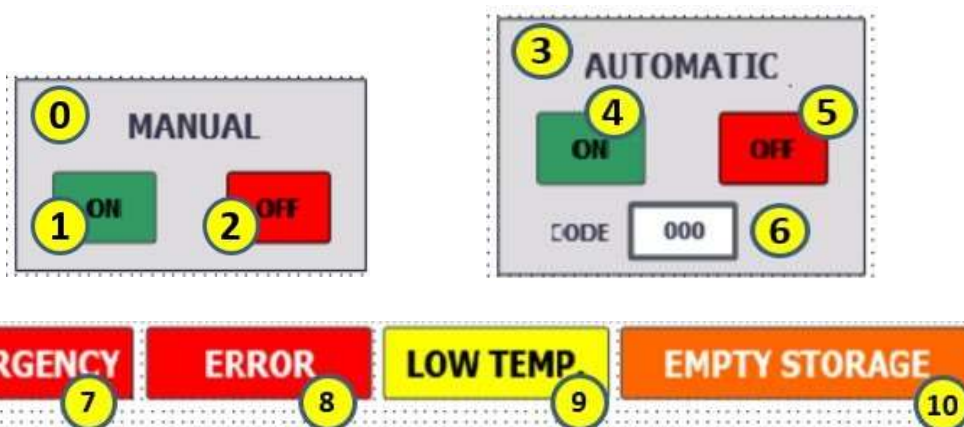
SYMBOL	TYPE	COMMENT
AUTOMATIC	BOOL	PLC-Variable
MANUAL	BOOL	PLC-Variable
MANUAL_ON_SW	BOOL	PLC-Variable
MANUAL_OFF_SW	BOOL	PLC-Variable
AUTOMATIC_ON_SW	BOOL	PLC-Variable
AUTOMATIC OFF SW	BOOL	PLC-Variable
CODE	INT	PLC-Variable
LOW_TEMP	BOOL	PLC-Variable
E1_ON	BOOL	PLC-Variable
SETPOINT	INT	PLC-Variable
HYSTERESIS	INT	PLC-Variable
TEMPERATURE	INT	PLC-Variable
POINT_ON	INT	PLC-Variable
POINT_OFF	INT	PLC-Variable
MA2_SW_R	BOOL	PLC-Variable
MA2_STOP	BOOL	PLC-Variable
MA2 SW L	BOOL	PLC-Variable
MA2_SPEED_HMI	BOOL	PLC-Variable
MB1_SW	BOOL	PLC-Variable
MB2_SW	BOOL	PLC-Variable
MB3_SW	BOOL	PLC-Variable
MB4_SW	BOOL	PLC-Variable
BELT_POSITION	INT	PLC-Variable
BELT POSITION ACTUAL	INT	PLC-Variable
E1_START	BOOL	PLC-Variable
E1_STOP	BOOL	PLC-Variable
E1_SETPOINT	INT	PLC-Variable
MA3_UP_SW	BOOL	PLC-Variable
MA3_DOWN_SW	BOOL	PLC-Variable
MA4	BOOL	PLC-Variable
MA4_ON_SW	BOOL	PLC-Variable
MA4_OFF_SW	BOOL	PLC-Variable
START_SW	BOOL	PLC-Variable
STOP_SW	BOOL	PLC-Variable

PROG_A_SW	BOOL	PLC-Variable
PROG_A	BOOL	PLC-Variable
PROG_B_SW	BOOL	PLC-Variable
PROG_B	BOOL	PLC-Variable
PROG C SW	BOOL	PLC-Variable
PROG_C	BOOL	PLC-Variable
RESET_SW	BOOL	PLC-Variable
CYCLE_ACTIVE	BOOL	PLC-Variable
STEP	INT	PLC-Variable
PAUSE	BOOL	PLC-Variable
PART_B_SW	BOOL	PLC-Variable
START AUT	BOOL	PLC-Variable

Activate Screens

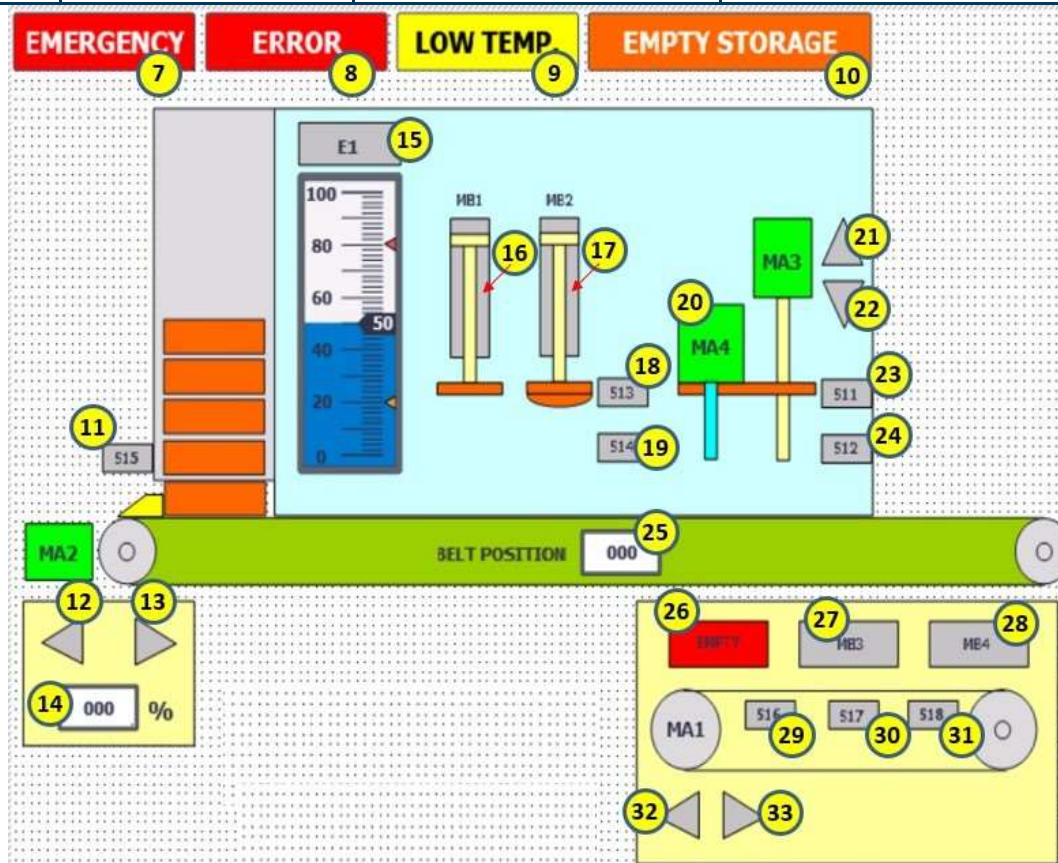
POSITION/PICTURE	VARIABLE	ACTION	COMMENT
	----	Button Event	Activate Screen "AUTOMATIC"
	----	Button Event	Activate Screen "MANUAL"

Details: Screen MANUAL/AUTOMATIC



POSITION	VARIABLE	ACTION	COMMENT
0	MANUAL	Background Control Colour	State "0 " = colour = GRAY State "1 " = colour = GREEN
1	MANUAL_ON_SW	Button Event	Set Bit while Key pressed
2	MANUAL_OFF_SW	Button Event	Set Bit while Key pressed
3	AUTOMATIC	Background Control Colour	State "0 " = colour = GRAY State "1 " = colour = GREEN
4	AUTOMATIC_ON_SW	Button Event	Set Bit while Key pressed
5	AUTOMATIC_OFF_SW	Button Event	Set Bit while Key pressed

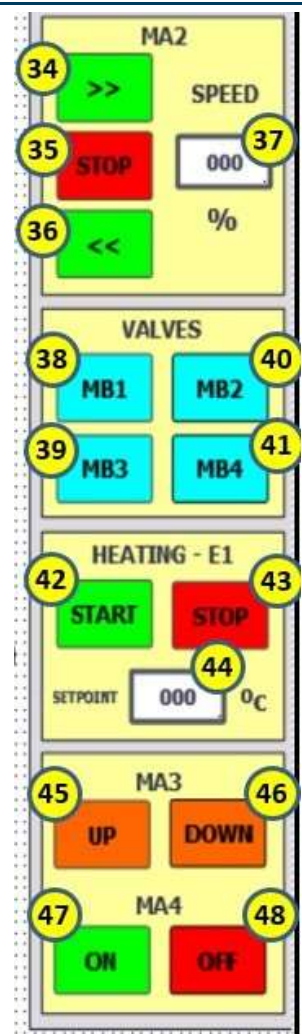
6	CODE	Input/output field	Range: 0 to 9999
7	EMERG_STOP	Text field Visibility	State "0" = Visible State "1" = Invisible
8	ERROR	Text field Visibility	State "1" = Visible State "0" = Invisible
9	LOW_TEMP	Text field Visibility	State "1" = Visible State "0" = Invisible
10	S15	Text field Visibility	State "0" = Visible State "1" = Invisible

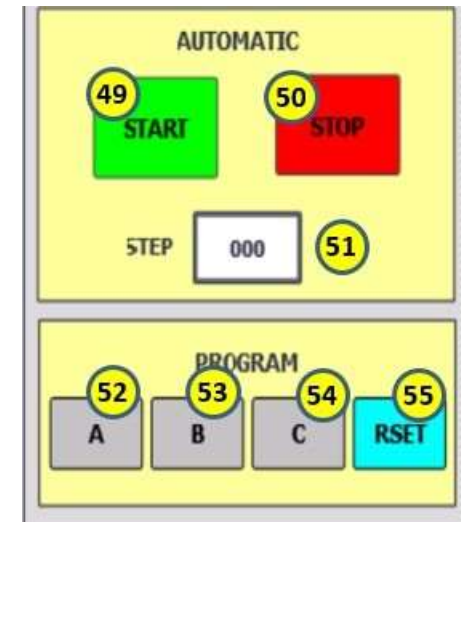


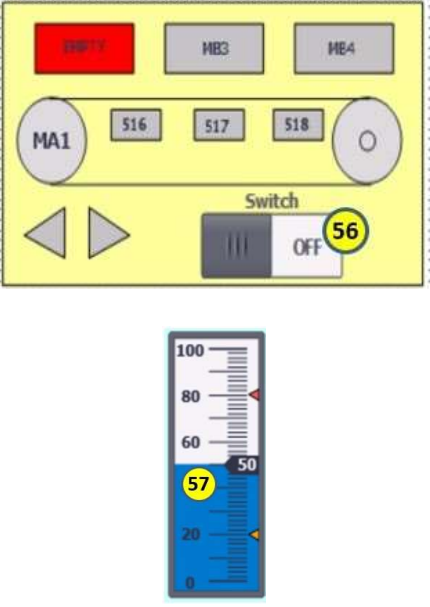
POSITION	VARIABLE	ACTION	COMMENT
11	S15	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
12	MA2_LEFT	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
13	MA2_RIGHT	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
14	MA2_SPEED	Output field	Range: 25 to 100%
15	E1_ON	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
16	MB1	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
17	MB2	Background Control Colour	State "0" = colour = GRAY

			State "1" = colour = GREEN
18	S13	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
19	S14	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
20	MA4	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
21	MA3_UP	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
22	MA3_DOWN	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
23	S11	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
24	S12	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
25	BELT_POSITION	Output field	Range: 0 to 20
26	S19	Text field Visibility	State "0" = Visible State "1" = Invisible
27	MB3	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
28	MB4	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
29	S16	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
30	S17	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
31	S18	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
32	MA1_LEFT	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
33	MA1_RIGHT	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN

PICTURE / POSITION	VARIABLE	ACTION	COMMENT
34	MA2_SW_R	Button Event	Set Bit while Key pressed
35	MA2_STOP	Button Event	Set Bit while Key pressed
36	MA2_SW_L	Button Event	Set Bit while Key pressed
37	MA2_SPEED_HMI	Input/Output field	Range: 0 to 100%
38	MB1_SW	Button Event	Set Bit while Key pressed
39	MB3_SW	Button Event	Set Bit while Key pressed
40	MB2_SW	Button Event	Set Bit while Key pressed
41	MB4_SW	Button Event	Set Bit while Key pressed

	42	E1_START	Button Event	Set Bit while Key pressed
	43	E1_STOP	Button Event	Set Bit while Key pressed
	44	SETPOINT	Input/Output field	Range: 50 to 120°C
	45	MA3_UP_SW	Button Event	Set Bit while Key pressed
	46	MA3_DOWN_SW	Button Event	Set Bit while Key pressed
	47	MA4_ON_SW	Button Event	Set Bit while Key pressed
	48	MA4_OFF_SW	Button Event	Set Bit while Key pressed

PICTURE / POSITION	VARIABLE	ACTION	COMMENT	
	49	START_SW	Button Event	Set Bit while Key pressed
	50	STOP_SW	Button Event	Set Bit while Key pressed
	51	STEP	Output Field	Range: 0 to 40
	52	PROG_A_SW	Button Event	Set Bit while Key pressed
		PROG_A	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
	53	PROG_B_SW	Button Event	Set Bit while Key pressed
		PROG_B	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN
	54	PROG_C_SW	Button Event	Set Bit while Key pressed
		PROG_C	Background Control Colour	State "0" = colour = GRAY State "1" = colour = GREEN

	55	RESET_SW	Button Event	Set Bit while Key pressed
	56	PART_B_SW	Switch Event	Switch ON / Switch OFF
	57	TEMPERATURE	Output Field	Range: 0 to 150°C



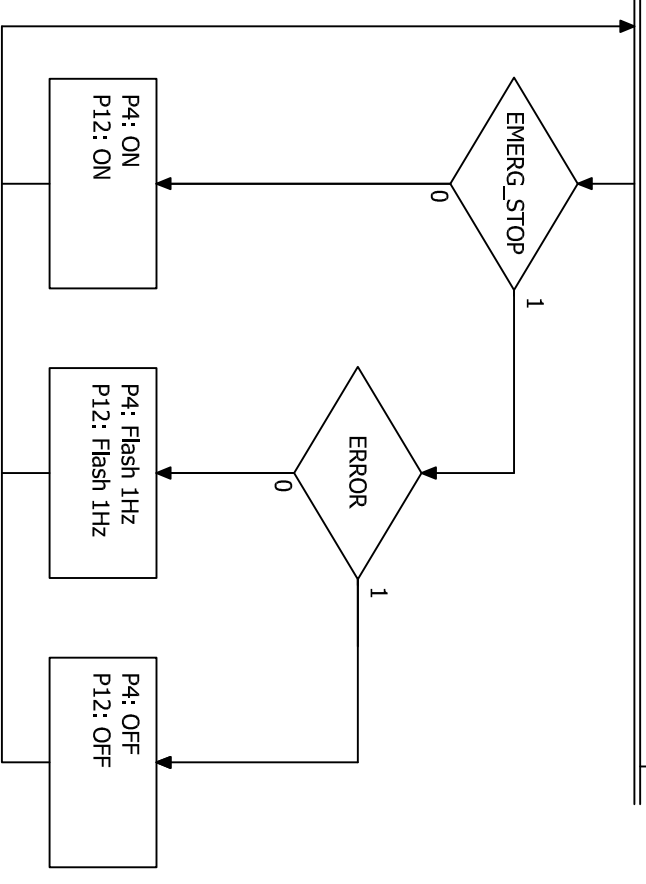
POSITION	VARIABLE	ACTION	COMMENT
58	BELT_POSITION	Horizontal movement	Start value = 0 End value = 20

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

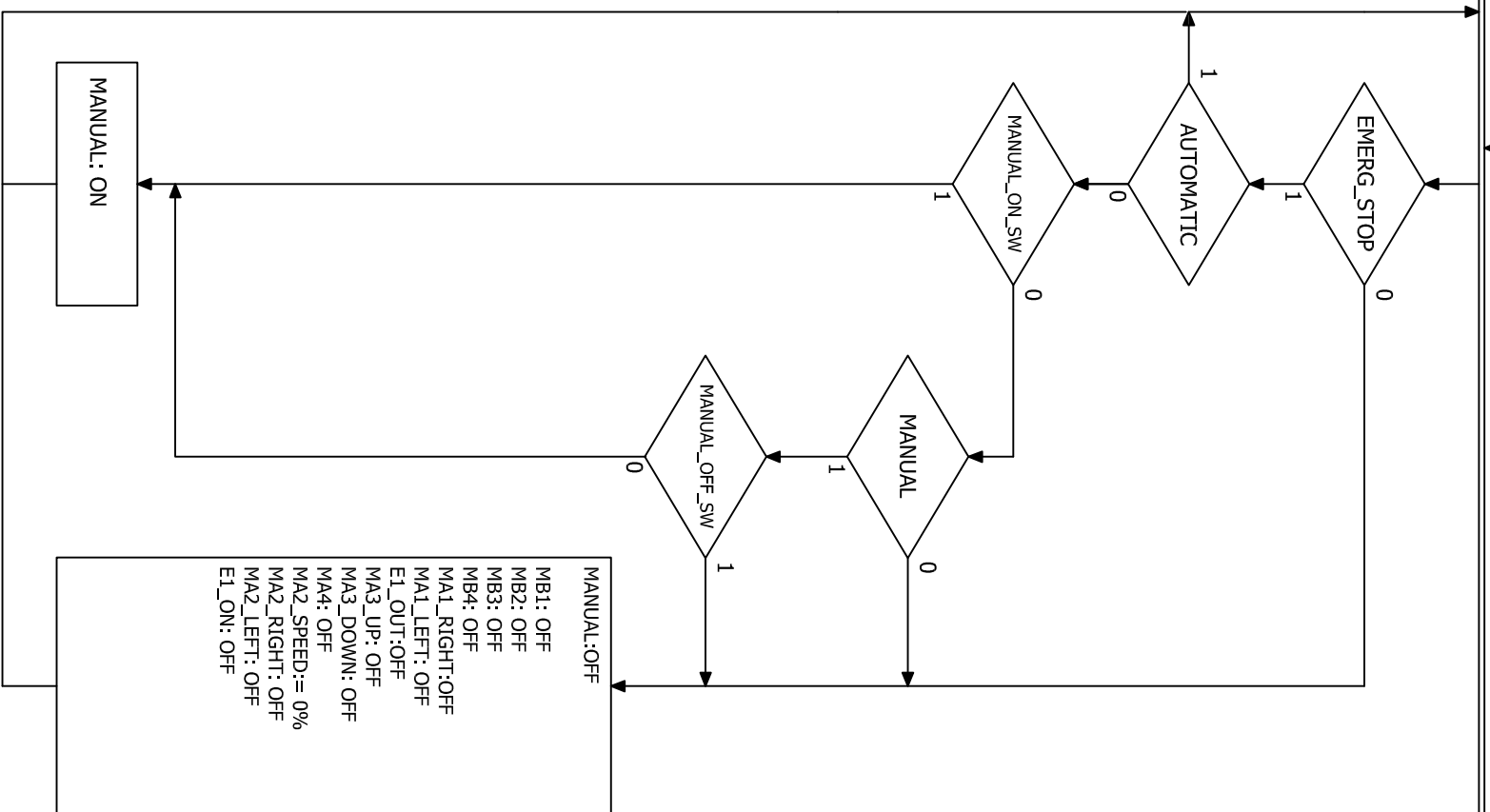
Power ON

All actuators: OFF

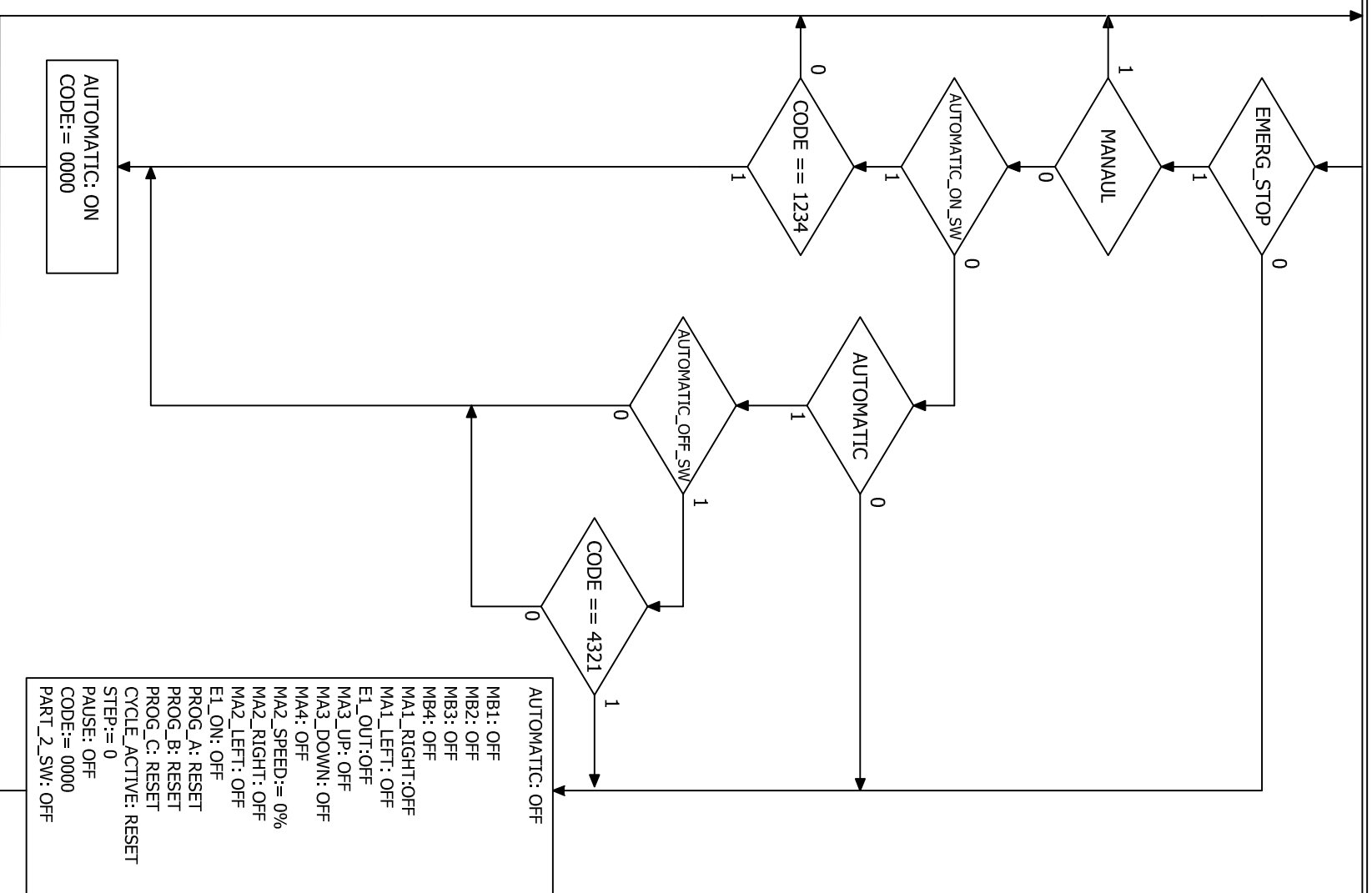
Page 2



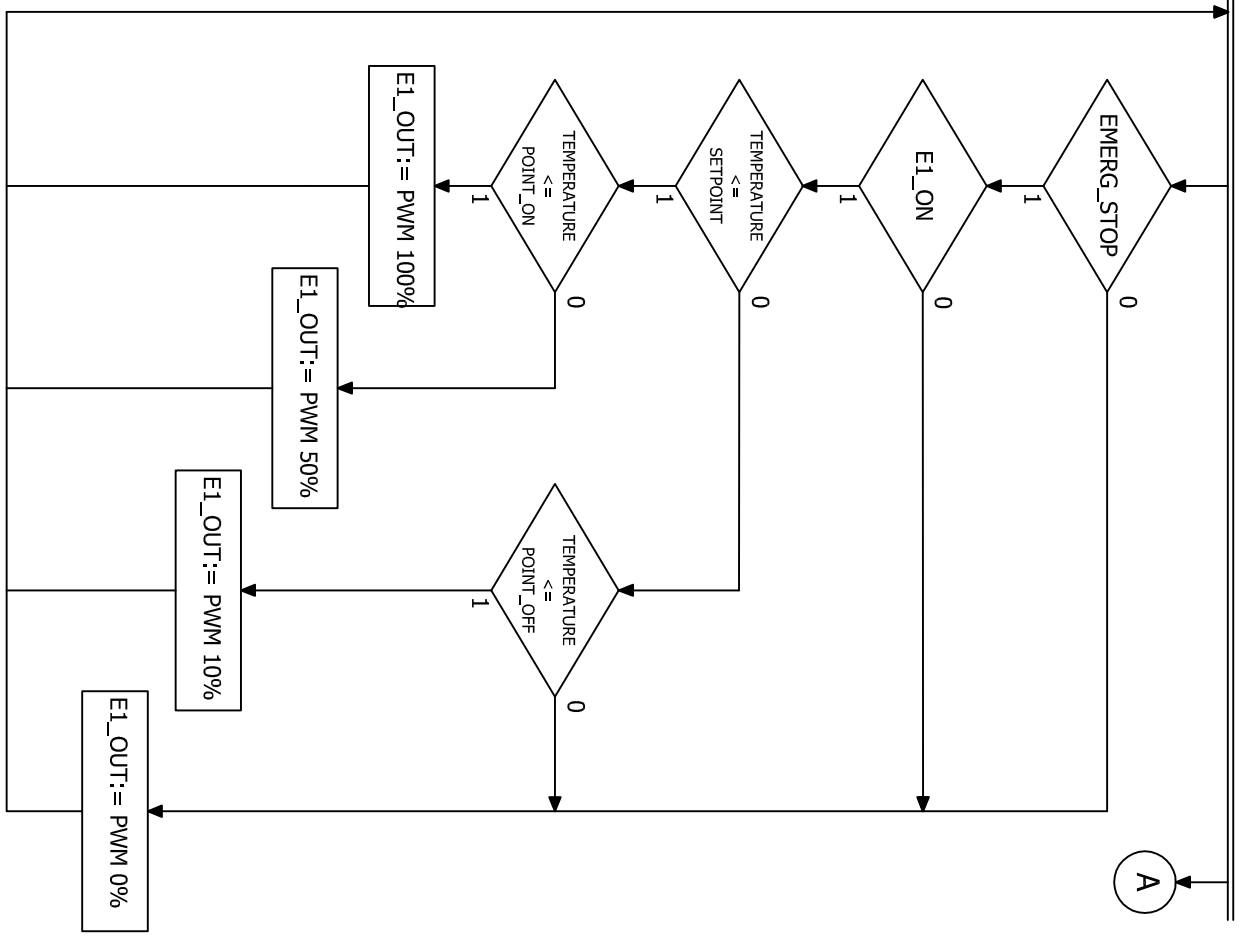
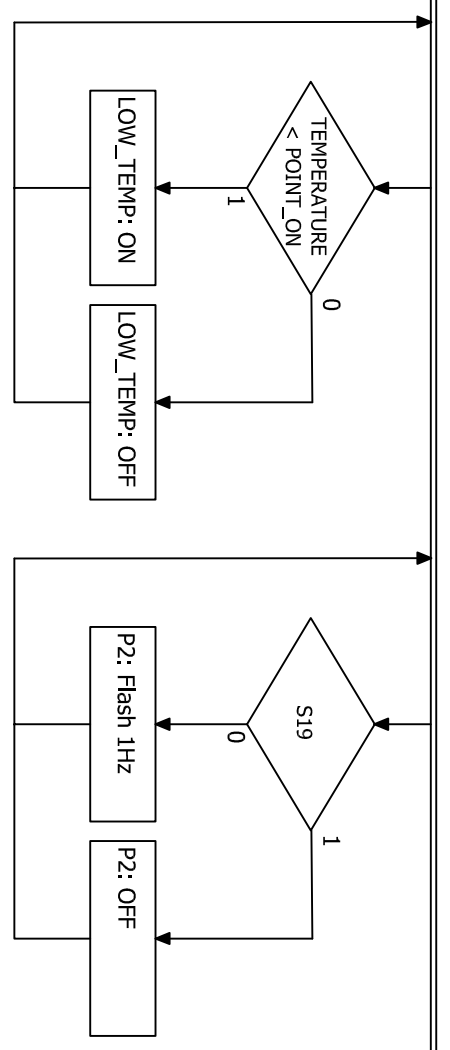
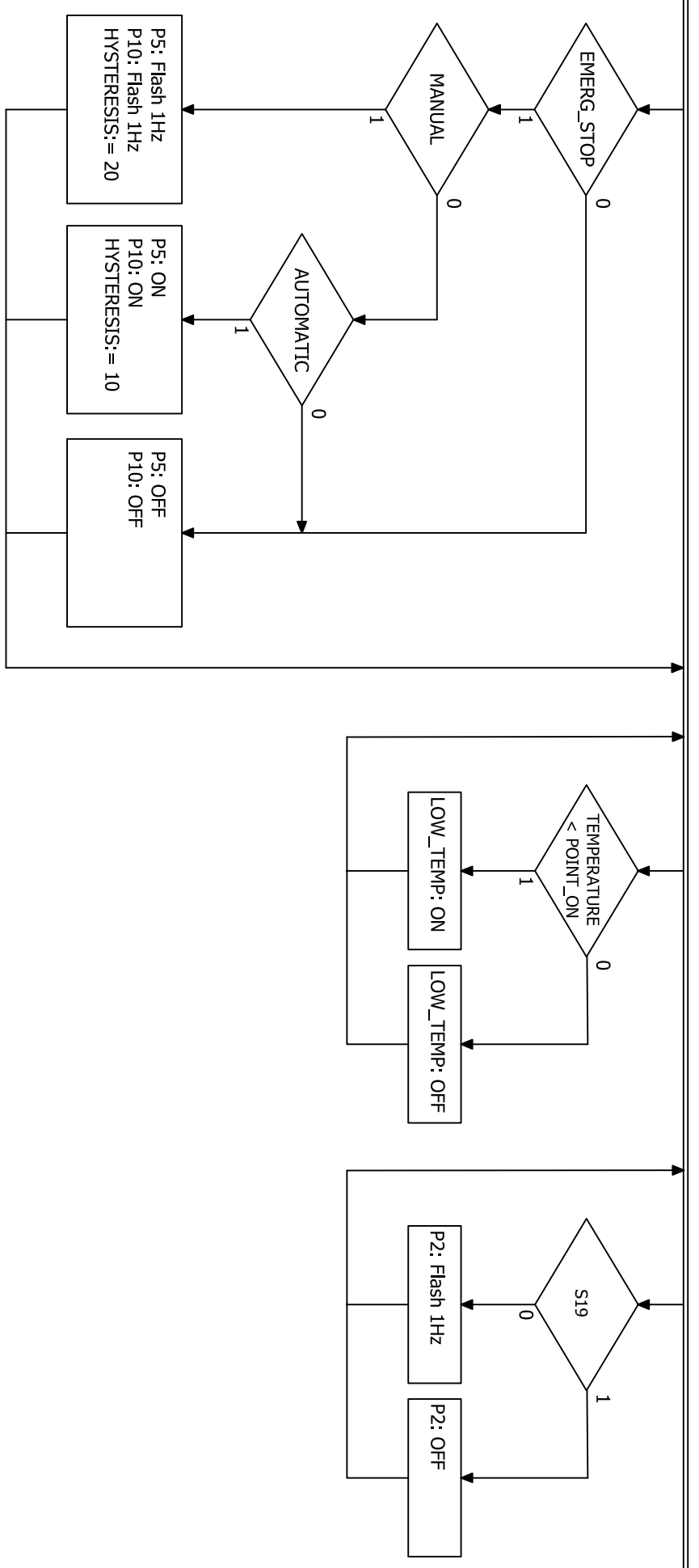
Emergency_STOP
Signalization



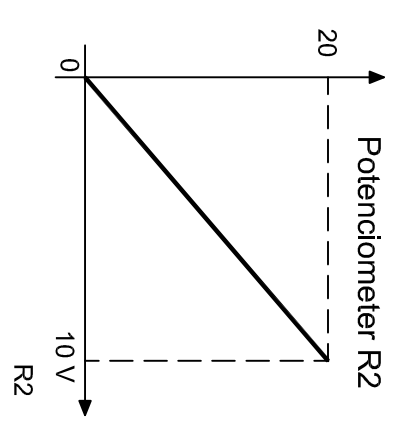
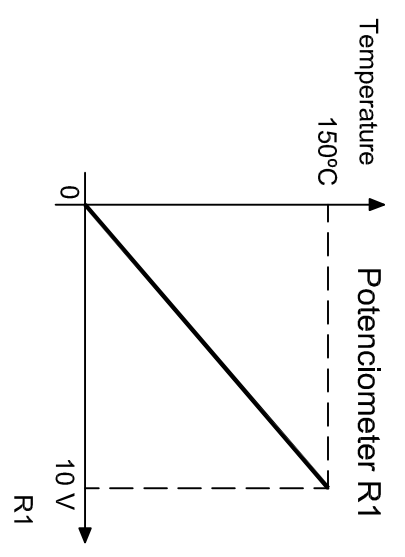
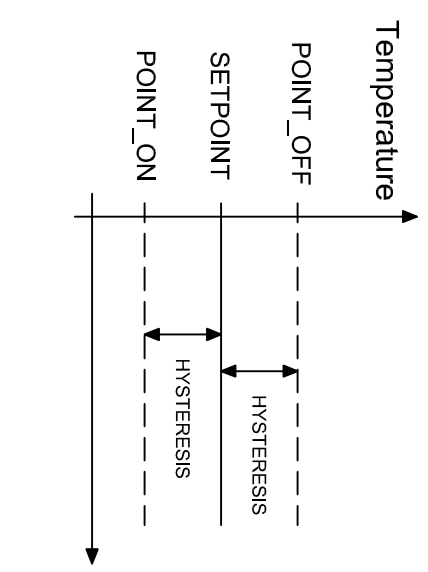
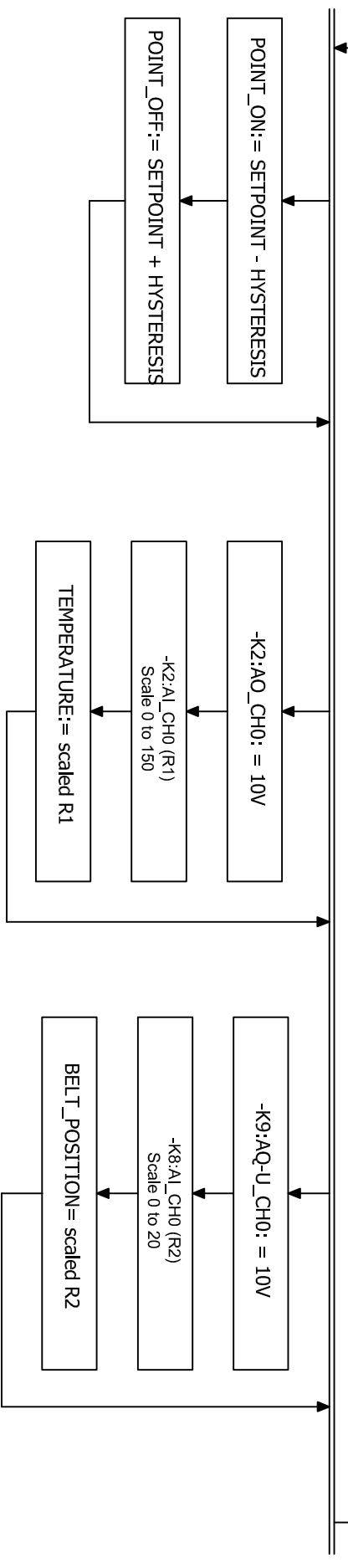
Mode_Manual

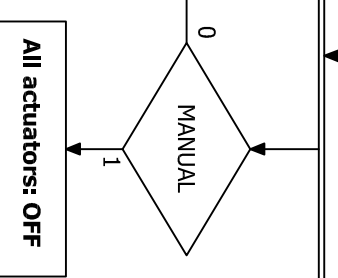


Mode_Automatic



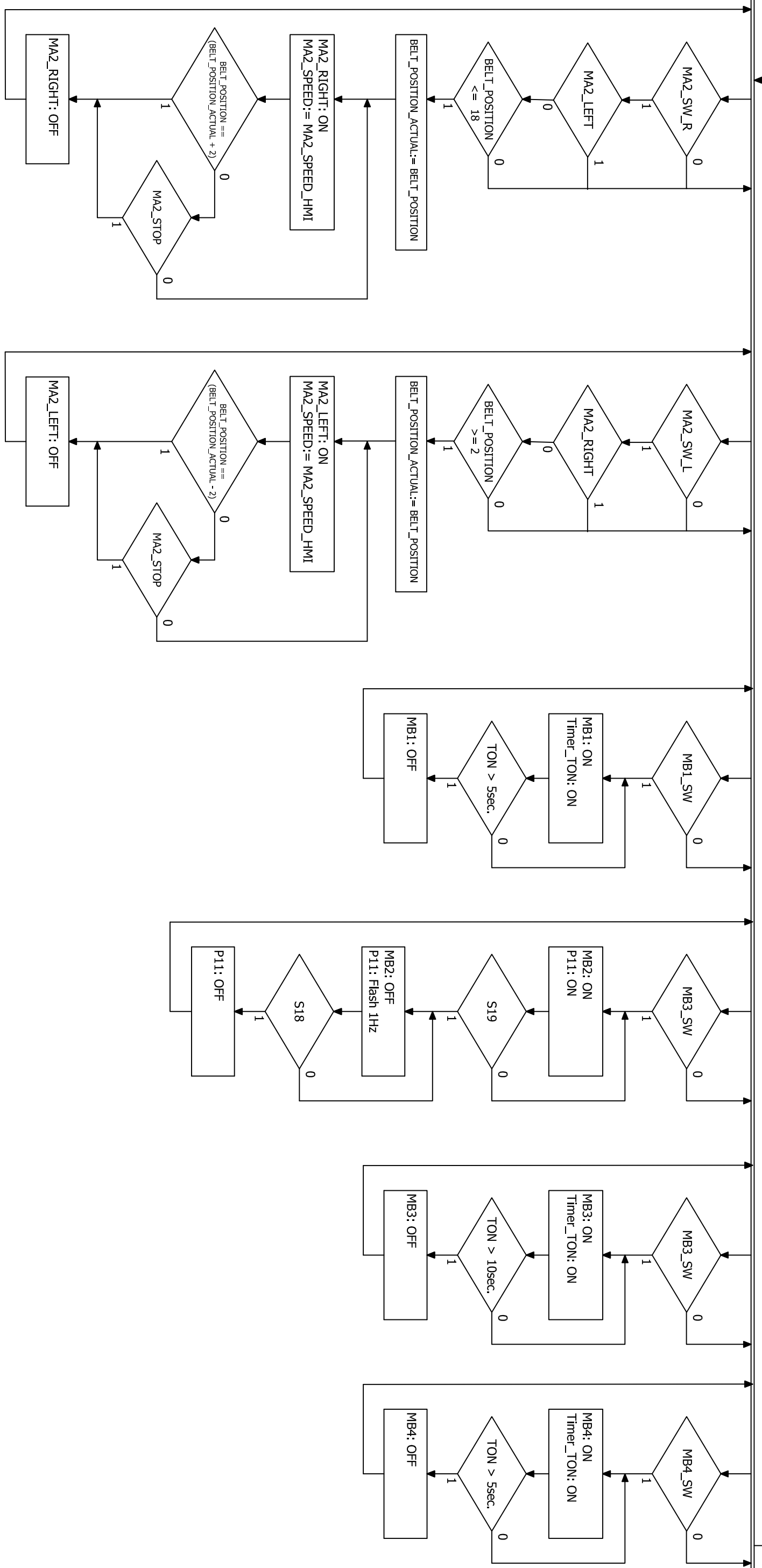
NOTE: For the PLC output "E1_OUT", needs to be configured for PWM output and base frequency of 15Hz.

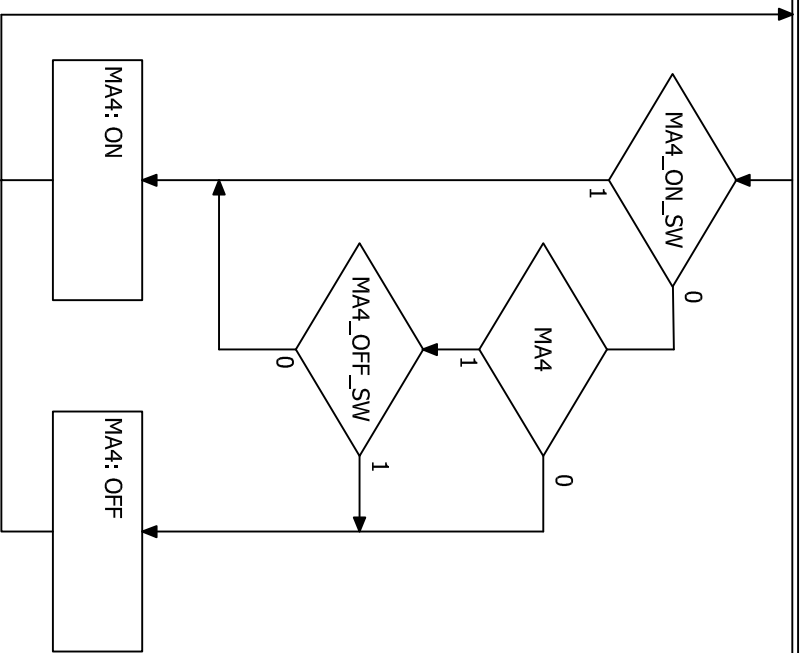
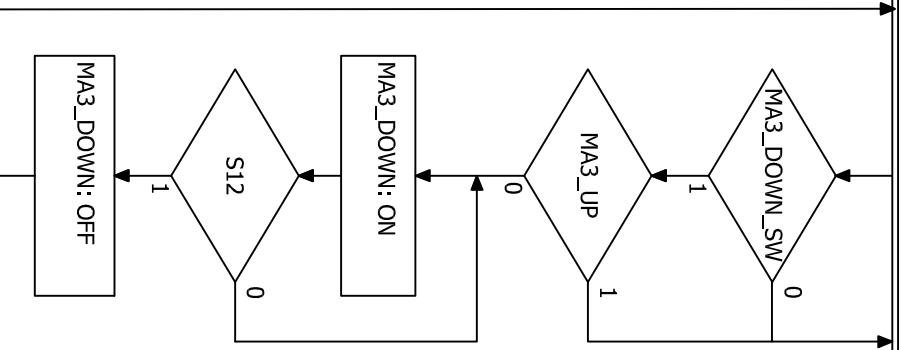
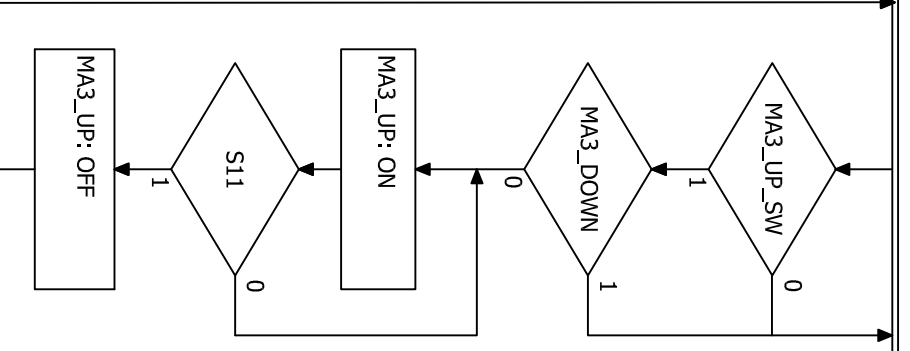
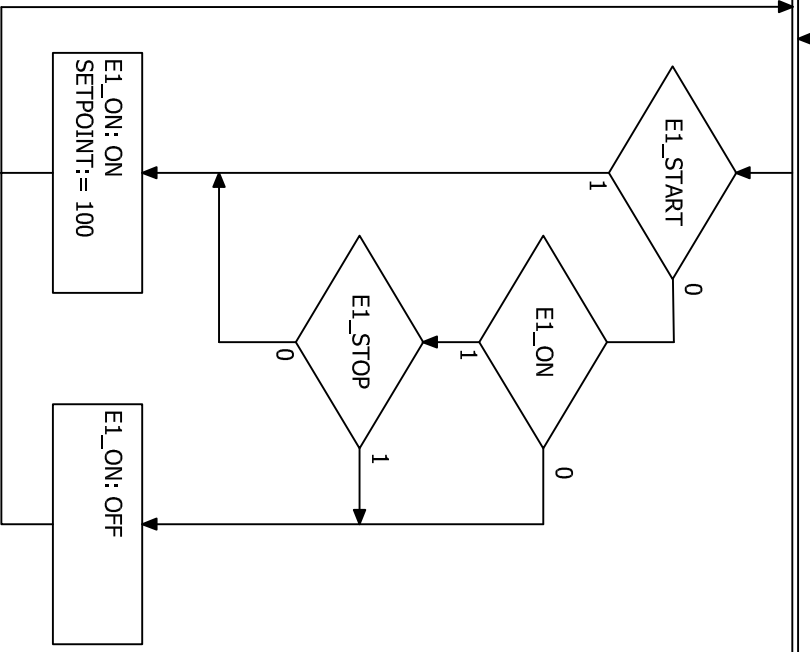




Mode_Manual

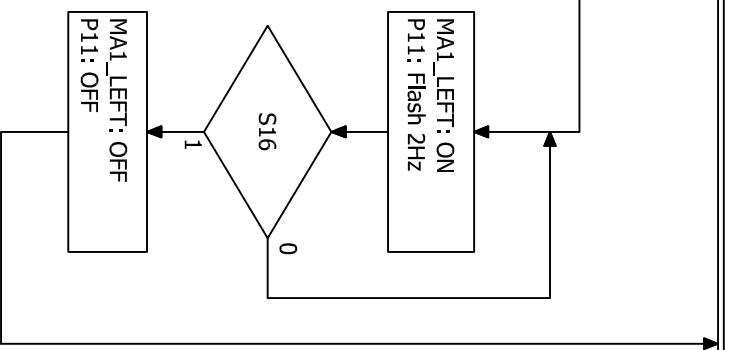
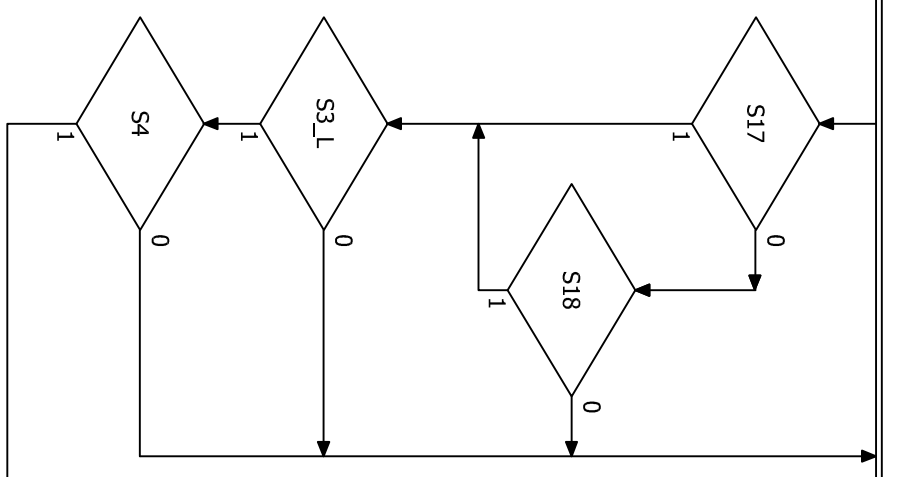
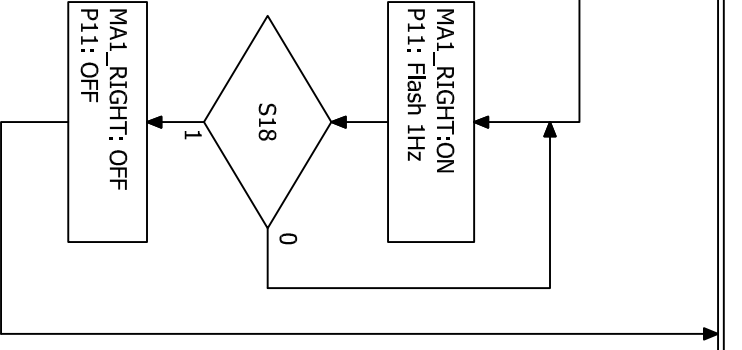
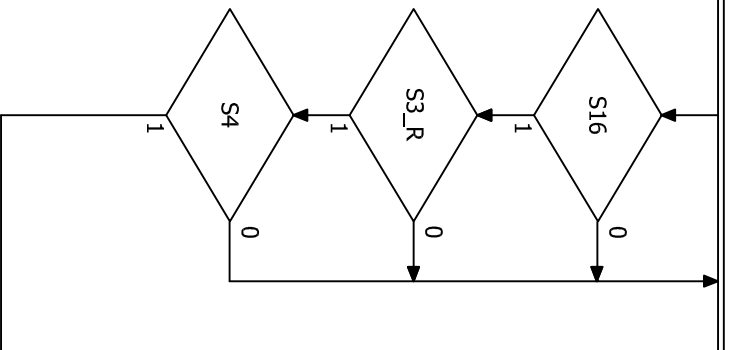
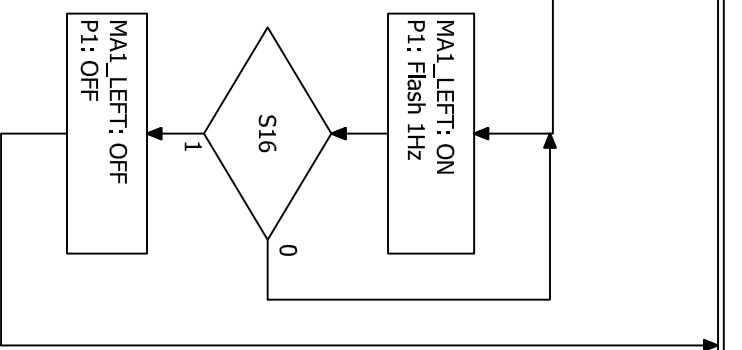
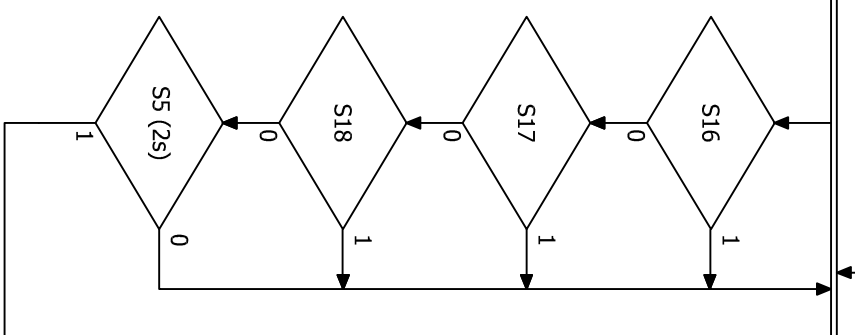
Page 4; Mode_Manual

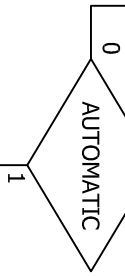




B

B

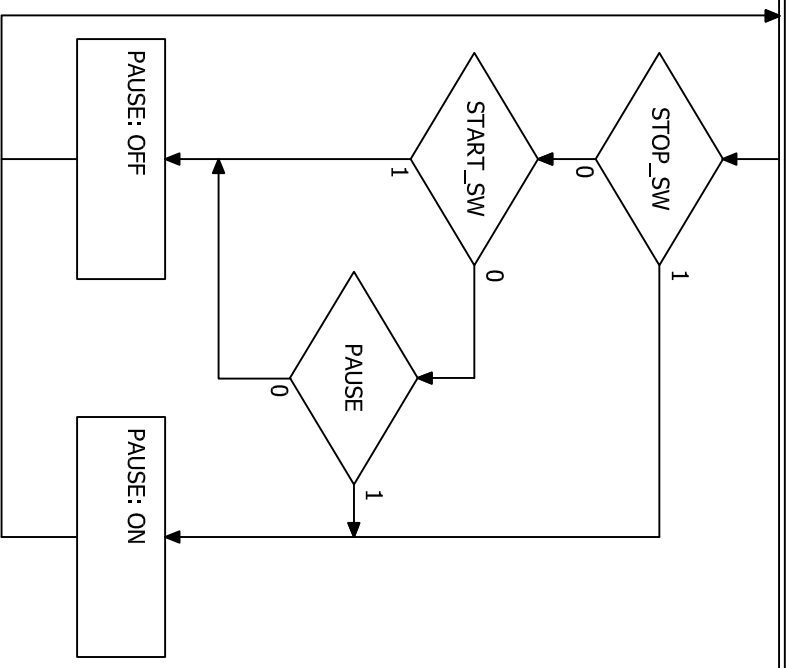
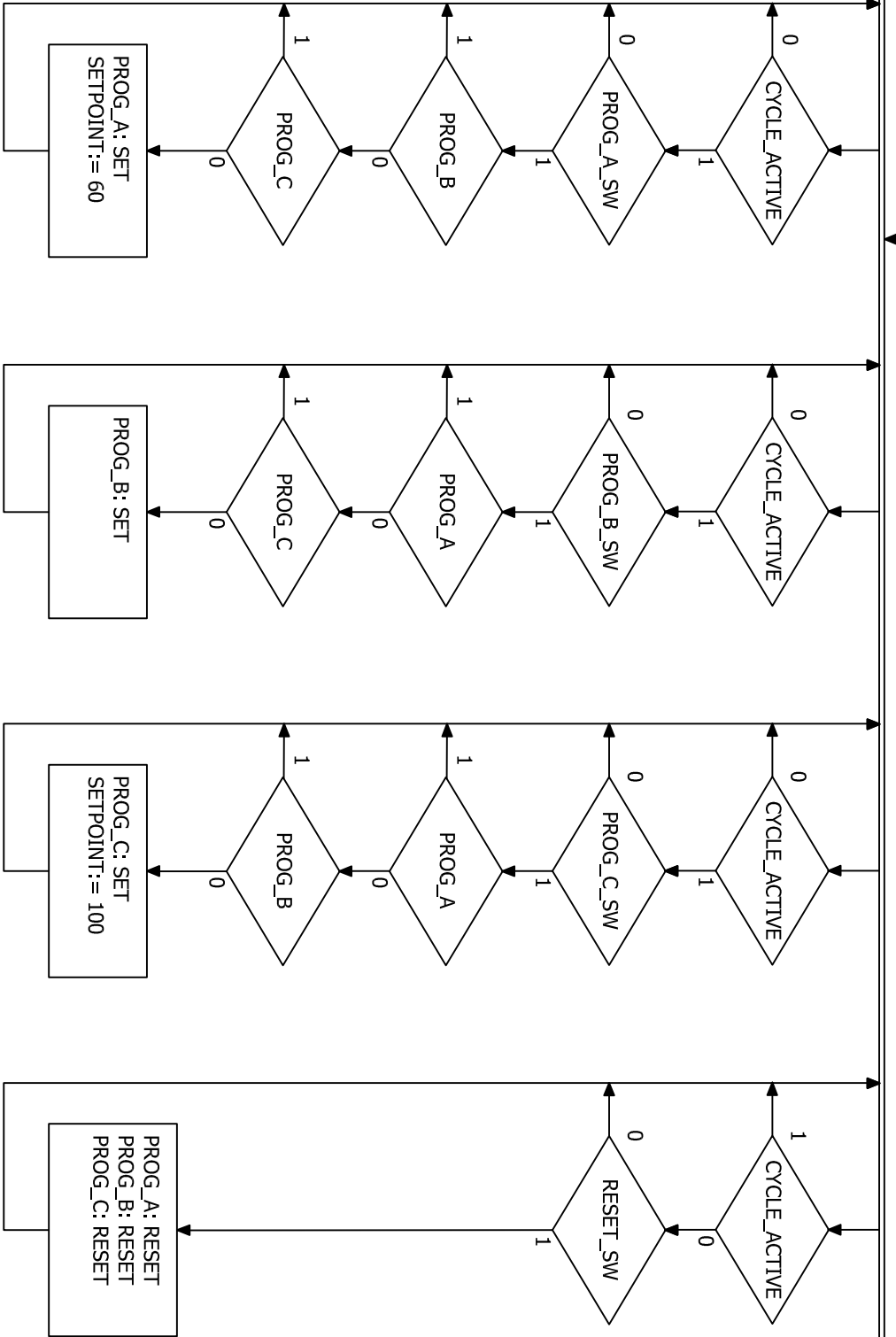


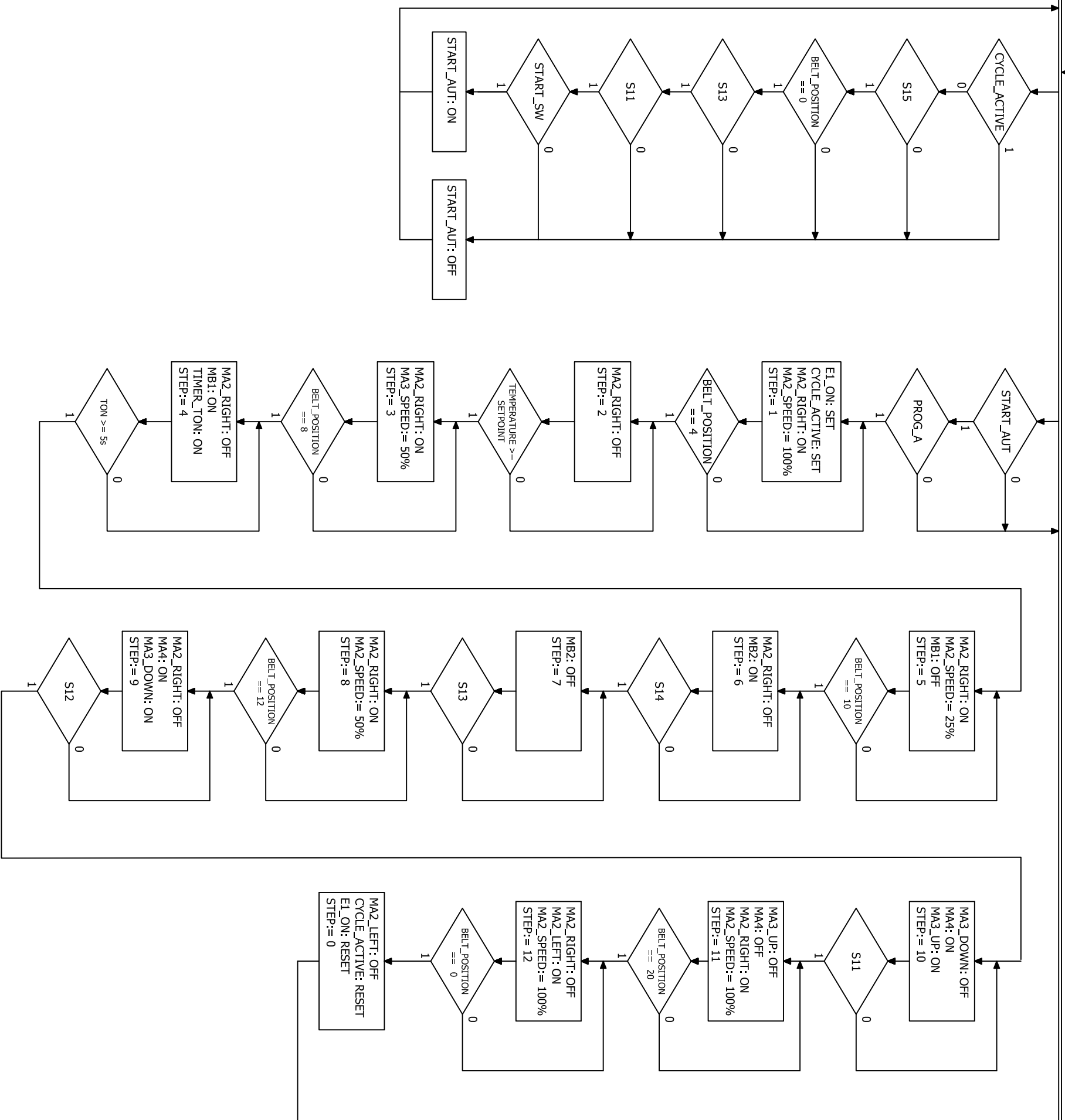


All actuators: OFF

Mode_Automatic

Page 6; Mode_Auto





Program A

