Analog Input

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Program blocks

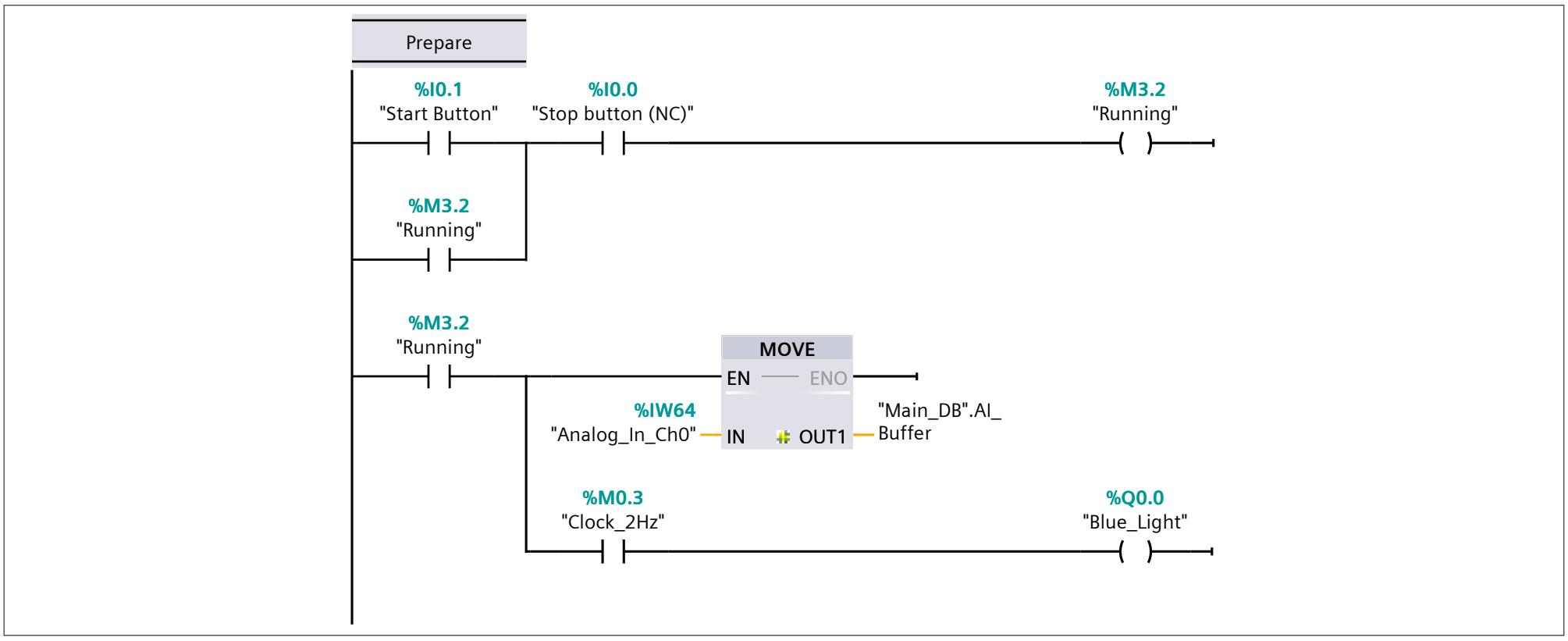
Main [OB1]

Main Properties							
General							
Name	Main	**Number**	1	**Type**	OB	**Language**	LAD
Numbering	Automatic						
Information							
Title	"Main Program Sweep (Cycle)"	**Author**		**Comment**	Author: Andi Sama Organization: Sinergi Wahana Gemilang Date (created): Jan 6, 2023 Date (last modified): Jan 16, 2023 Purpose: Understanding 0-10VDC/4-20mA Analog Signal - Real PLC: Siemens PLC 1200 DC/DC/DC Special note: As the Siemens S7-1200 PLC only support 0-10V voltage signaling for its analog input, a 500 Ohm resistor with very low tolerance (e.g. 0.1%) needs to be installed in paralel to analog input in order to receive 4-20mA. Otherwise the default is to receive only 0-10V. See details in: https://support.industry.siemens.com/cs/ww/en/view/67396370. Start - Blue light ON One of the following: 1. Voltage Analog Input 0-2.5VDC Red light ON Analog Input 2.5-5VDC - Yellow light ON Analog Input 5-7.5VDC - Green light ON Analog Input 75-10VDC - White light ON 2. Current Analog Input 0-25mA - Red light ON Analog Input 25-50mA - Yellow light ON Analog Input 50-75mA - Green light ON Analog Input 75-100mA - White light ON	**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value	Comment
▼ Input			
Initial_Call	Bool		Initial call of this OB
Remanence	Bool		=True, if remanent data are available
▼ Temp			
Ch0AQ1	Bool		
Ch0AQ0	Bool		
Ch0AI0	Bool		
Ch0_Normalized_Scaled	Real		
Start	Bool		
Start_done	Bool		
PLC_Initialized	Bool		
▼ Constant			
AI_Lowest	Real	4.0	
AI_Low	Real	8.0	
AI_Mid	Real	12.0	
AI_High	Real	16.0	
AI_Highest	Real	20.0	
PLC_ADC_Max	Int	27648	

Network 1: Preparation

Real PLC
- Directly gets analog input (0-10VDC or 4-20mA) from PLC Analog Input (CH00)



Network 2: Running (processing 4-20mA current)

Now is processing CURRENT
500 Ohm resistor needs to be installed in paralel, between Analog Input CH0 and Ground to "convert" PLC S7-1200 that supports voltage analog input only, to process current

Run

%DB1
"Norm_Scale_DB"

%M3.2
"Running"

%FB1
"Norm_Scale"

EN
ENO

"Main_DB".AI_
Buffer — AI0

0 — min_normx

0 — min_scalex

27648
#PLC_ADC_Max — max_normx

20.0
#AI_Highest — max_scalex

AIQ — #Ch0_
Normalized_
Scaled

IN_RANGE
Real

4.0
#AI_Lowest — MIN

#Ch0_
Normalized_
Scaled — VAL

8.0
#AI_Low — MAX

%Q0.4
"Red_Light"

IN_RANGE
Real

8.0
#AI_Low — MIN

#Ch0_
Normalized_
Scaled — VAL

12.0
#AI_Mid — MAX

%Q0.5
"Yellow_Light"

IN_RANGE
Real

12.0
#AI_Mid — MIN

#Ch0_
Normalized_
Scaled — VAL

16.0
#AI_High — MAX

%Q0.6
"Green_Light"

IN_RANGE
Real

16.0
#AI_High — MIN

#Ch0_
Normalized_
Scaled — VAL

20.0
#AI_Highest — MAX

%Q0.7
"White_Light"

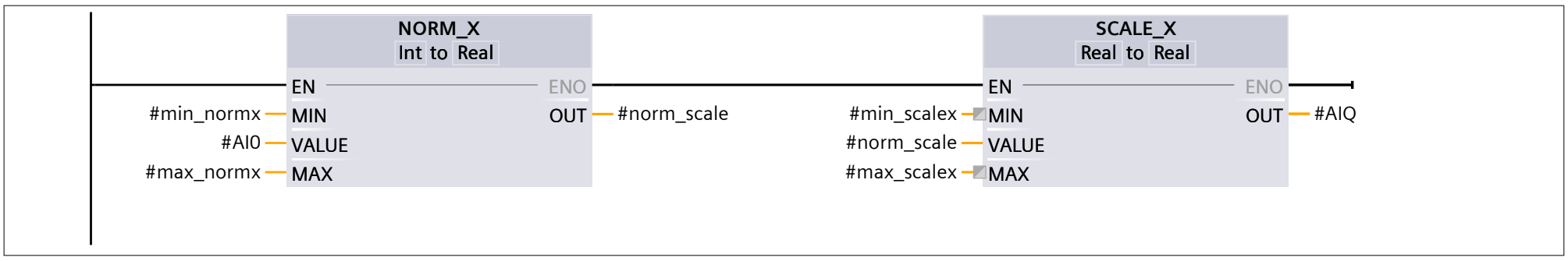
Program blocks

Norm_Scale [FB1]

Norm_Scale Properties							
General							
Name	Norm_Scale	**Number**	1	**Type**	FB	**Language**	LAD
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value	Retain	Accessible from HMI/OPC UA/Web API	Writ-able from HMI/ OPC UA/ Web API	Visible in HMI engi-neering	Setpoint	Supervi-sion	Comment
Input									
AI0	Int	0	Non-retain	True	True	True	False		
min_normx	Int	0	Non-retain	True	True	True	False		
min_scalex	Int	0	Non-retain	True	True	True	False		
max_normx	Int	0	Non-retain	True	True	True	False		
max_scalex	Int	0	Non-retain	True	True	True	False		
Output									
AIQ	Real	0.0	Non-retain	True	True	True	False		
InOut									
Static									
Temp									
norm_scale	Real								
Constant									

Network 1:



Program blocks

Norm_Scale_DB [DB1]

Norm_Scale_DB Properties							
General							
Name	Norm_Scale_DB	**Number**	1	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Start value	Retain	Accessible from HMI/OPC UA/Web API	Writ-able from HMI/ OPC UA/ Web API	Visible in HMI engi-neering	Setpoint	Supervi-sion	Comment
▼ Input									
AI0	Int	0	False	True	True	True	False		
min_normx	Int	0	False	True	True	True	False		
min_scalex	Int	0	False	True	True	True	False		
max_normx	Int	0	False	True	True	True	False		
max_scalex	Int	0	False	True	True	True	False		
▼ Output									
AIQ	Real	0.0	False	True	True	True	False		
InOut									
Static									

Program blocks

Main_DB [DB2]

Main_DB Properties							
General							
Name	Main_DB	**Number**	2	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

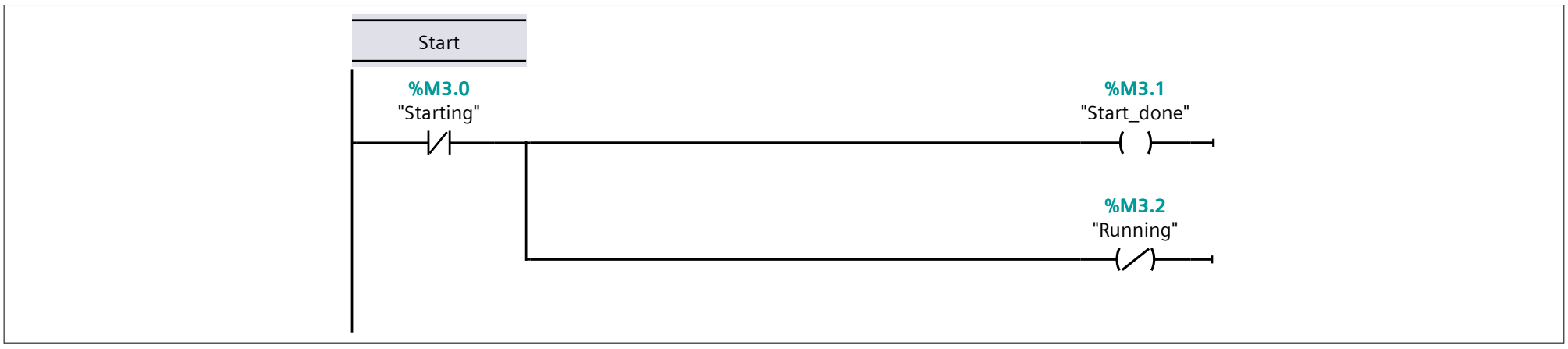
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA/Web API	Writ-able from HMI/ OPC UA/ Web API	Visible in HMI engi-neering	Setpoint	Supervi-sion	Comment
▼ Static									
Q25	Bool	false	False	True	True	True	False		
Q50	Bool	false	False	True	True	True	False		
Q75	Bool	false	False	True	True	True	False		
Q100	Bool	false	False	True	True	True	False		
AI_Buffer	Word	16#0	False	True	True	True	False		

Program blocks

Initialization [OB100]

Initialization Properties							
General							
Name	Initialization	**Number**	100	**Type**	OB	**Language**	LAD
Numbering	Automatic						
Information							
Title	"Complete Restart"	**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value	Comment
▼ Input			
LostRetentive	Bool		True if retentive data are lost
LostRTC	Bool		True if date and time are lost
Temp			
Constant			

Network 1: Start

Select one of Run Modes:
1: Real PLC
2: PLC Simulator