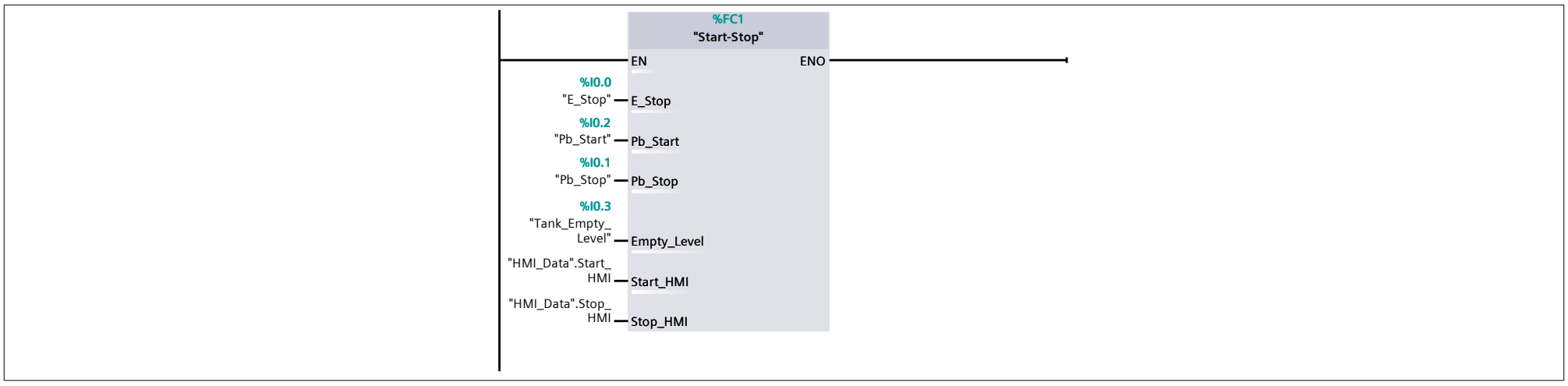
Program blocks

Main [OB1]

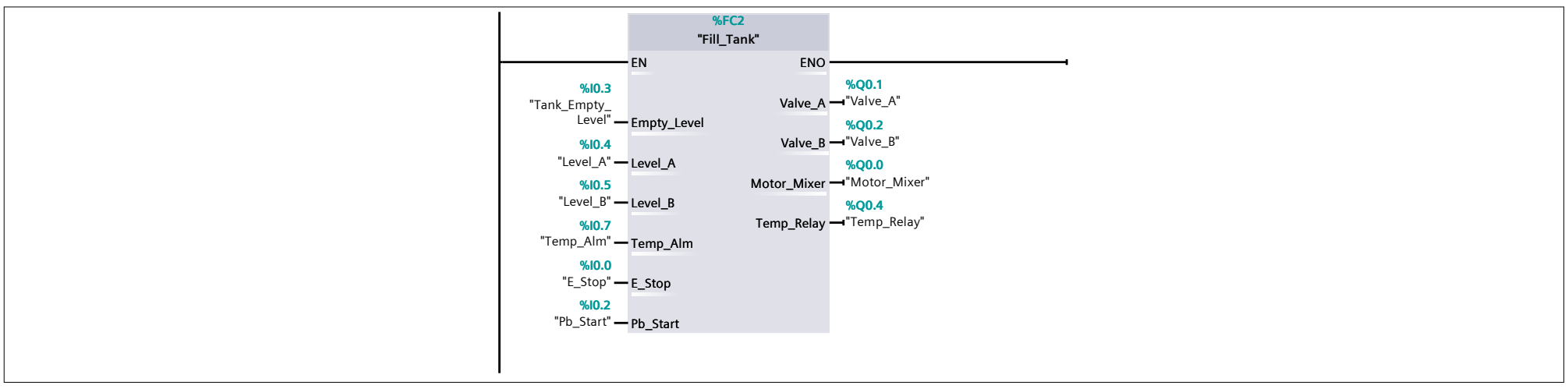
Main Properties							
General							
Name	Main	**Number**	1	**Type**	OB	**Language**	LAD
Numbering	Automatic						
Information							
Title	"Main Program Sweep (Cycle)"	**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value
Input		
Initial_Call	Bool	
Remanence	Bool	
Temp		
Constant		

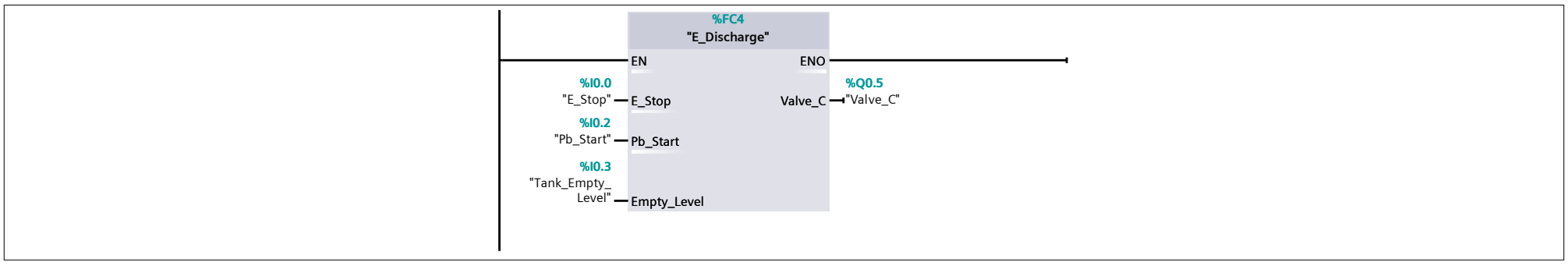
Network 1: Block Start or Stop all process



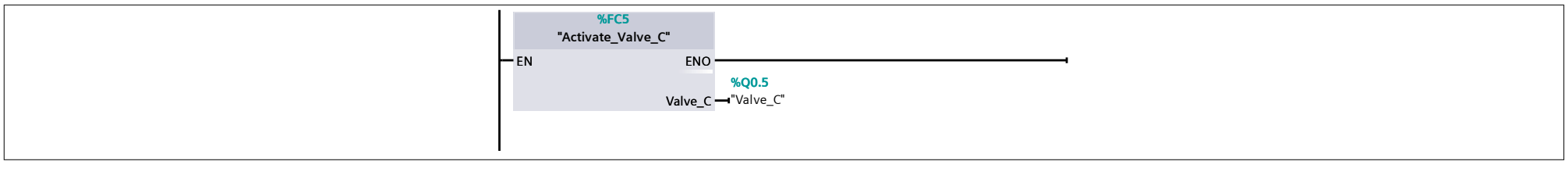
Network 2: Block fill tank



Network 3: Block emergency stop discharge



Network 4:



Program blocks / FC

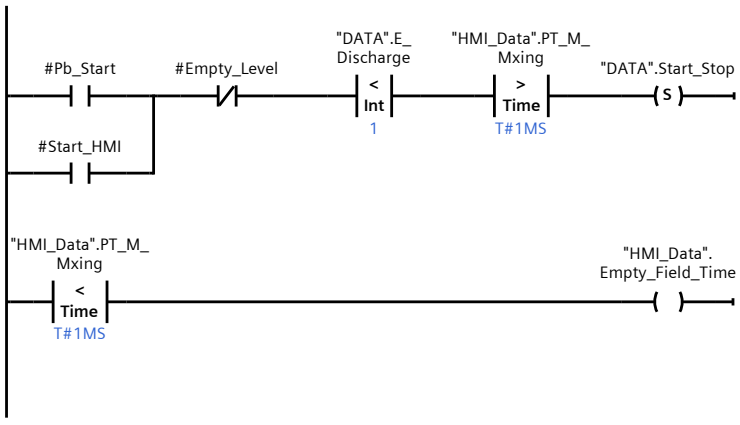
Start-Stop [FC1]

Start-Stop Properties							
General							
Name	Start-Stop	**Number**	1	**Type**	FC	**Language**	LAD
Numbering	Automatic						
Information							
Title	Start stop process	**Author**	Stiven Perez Mora	**Comment**	Conditions to active or deactive all process	**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value
Input		
E_Stop	Bool	
Pb_Start	Bool	
Pb_Stop	Bool	
Empty_Level	Bool	
Start_HMI	Bool	
Stop_HMI	Bool	
Output		
InOut		
Temp		
Constant		
Return		
Start-Stop	Void	

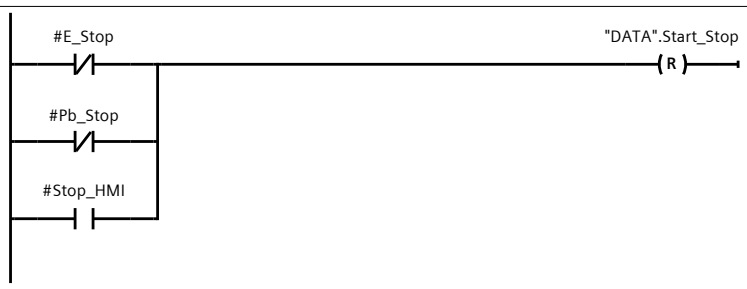
Network 1: Start Process

Conditions to start all process, initial conditions are, tank must be empty and operator must set the time for mixing, if mix time is equal to 0, the process will dont start



Network 2: Stop Process

Conditions to reset all proces



Program blocks / FC

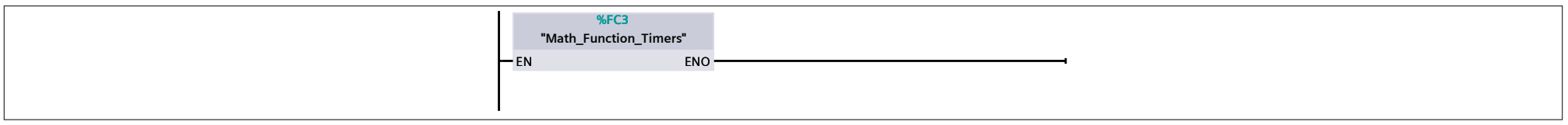
Fill_Tank [FC2]

Fill_Tank Properties							
General							
Name	Fill_Tank	**Number**	2	**Type**	FC	**Language**	LAD
Numbering	Automatic						
Information							
Title	Fill Tank for mixing process	**Author**	Stiven Perez Mora	**Comment**		**Family**	
Version	0.1	**User-defined ID**					

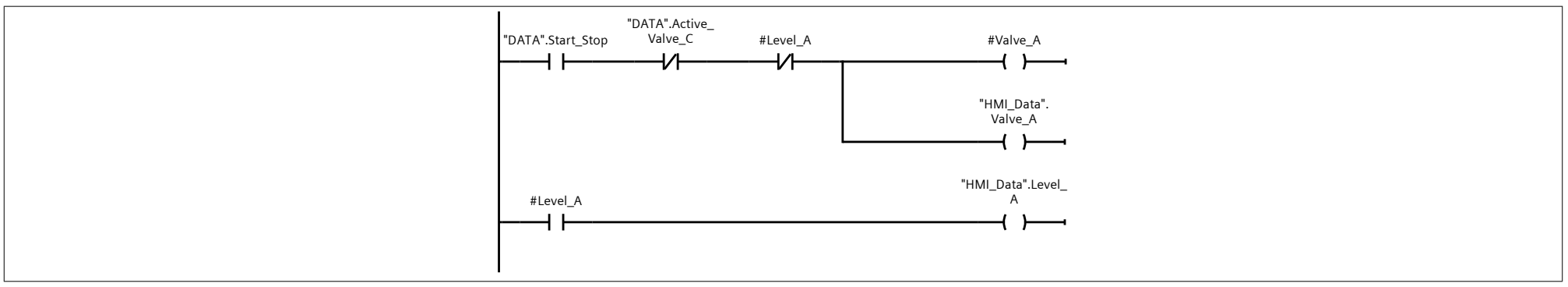
Name	Data type	Default value
▼ Input		
Empty_Level	Bool	
Level_A	Bool	
Level_B	Bool	
Temp_Alm	Bool	
E_Stop	Bool	
Pb_Start	Bool	
▼ Output		
Valve_A	Bool	
Valve_B	Bool	
Motor_Mixer	Bool	
Temp_Relay	Bool	
InOut		
Temp		
Constant		
▼ Return		
Fill_Tank	Void	

Network 1: Convert time from mixing timer

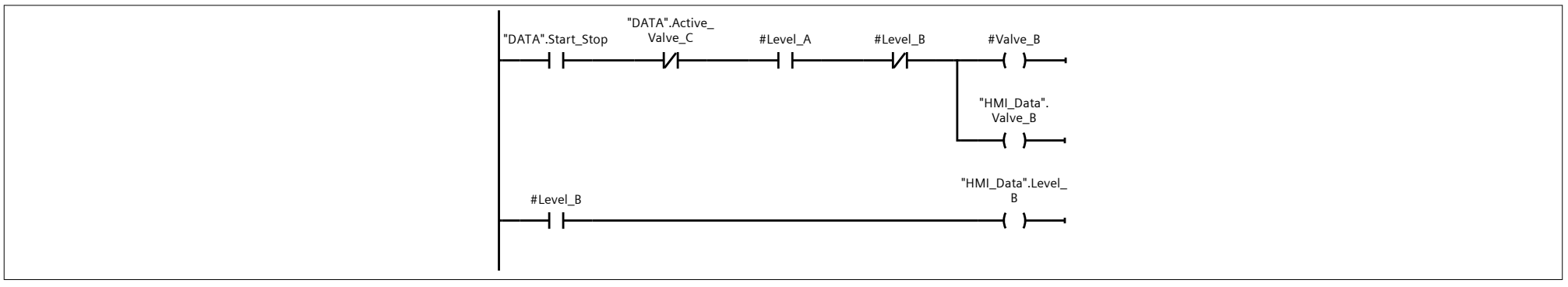
Convert elapsed time millisenconds to seconds and preset time



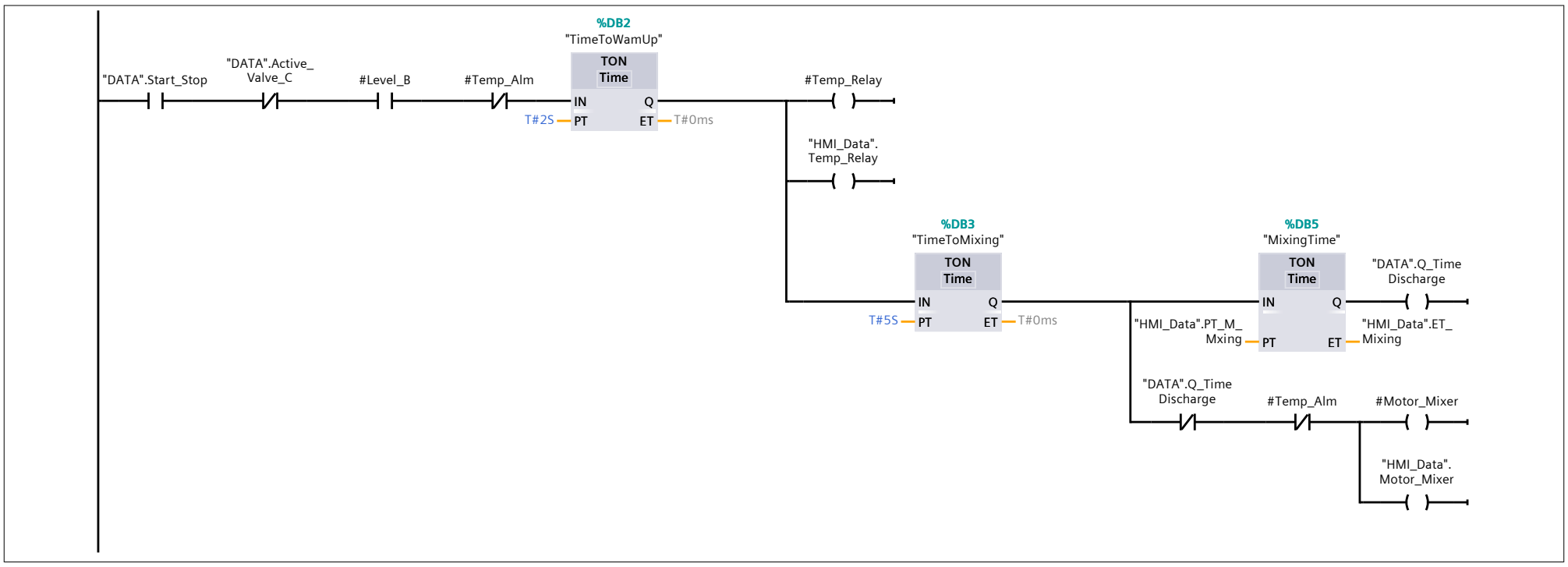
Network 2: Activate Valve A



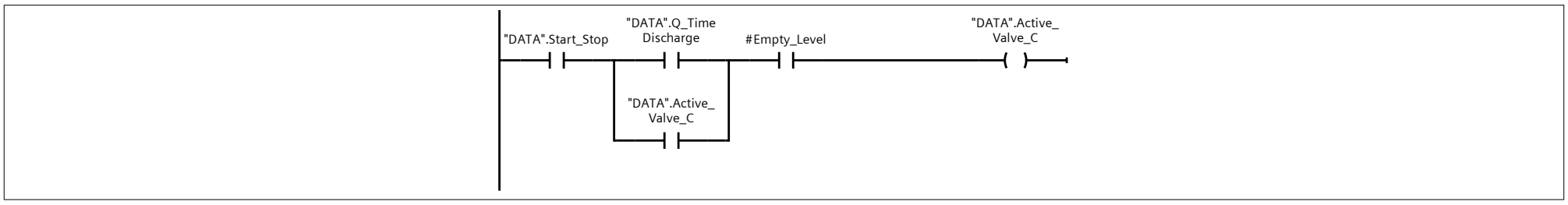
Network 3: Active Valve B



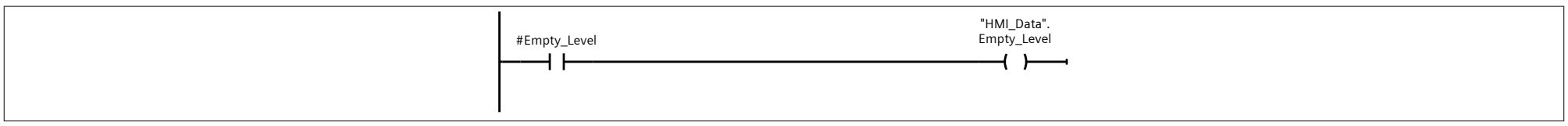
Network 4: Active Motor Mixer and Wam Up



Network 5:



Network 6: Empty Level HMI Indicator



Program blocks / FC

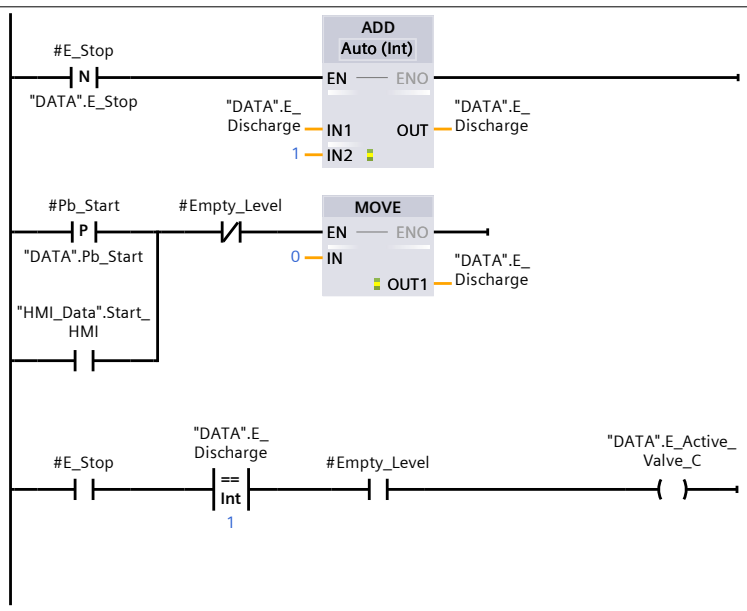
E_Discharge [FC4]

E_Discharge Properties							
General							
Name	E_Discharge	**Number**	4	**Type**	FC	**Language**	LAD
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value
▼ Input		
E_Stop	Bool	
Pb_Start	Bool	
Empty_Level	Bool	
▼ Output		
Valve_C	Bool	
InOut		
Temp		
Constant		
▼ Return		
E_Discharge	Void	

Network 1: Counter emergency stop pushed

if emergency stop has been pushed, the counter variable discharge increase 1, if counter variable is equal to 1 the valve C will activate but the tank must be filled, when the level decrease, the empty level sensor deactivate valve C and enable push button start for restart counter variable and start process



Program blocks / FC

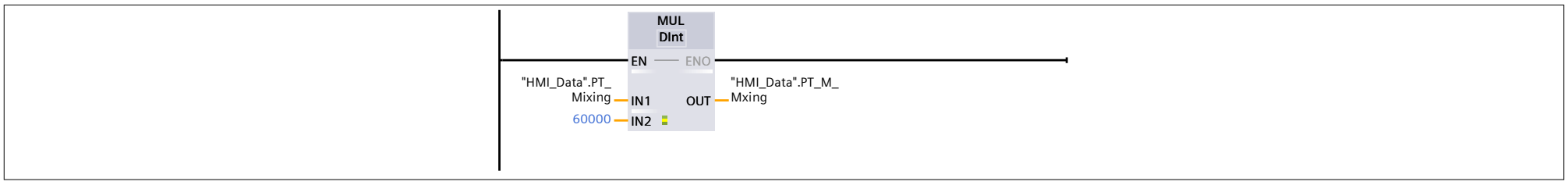
Math_Function_Timers [FC3]

Math_Function_Timers Properties							
General							
Name	Math_Function_Timers	**Number**	3	**Type**	FC	**Language**	LAD
Numbering	Automatic						
Information							
Title	Convert time from mixing timer	**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value
Input		
Output		
InOut		
Temp		
Constant		
▼ Return		
Math_Function_Timers	Void	

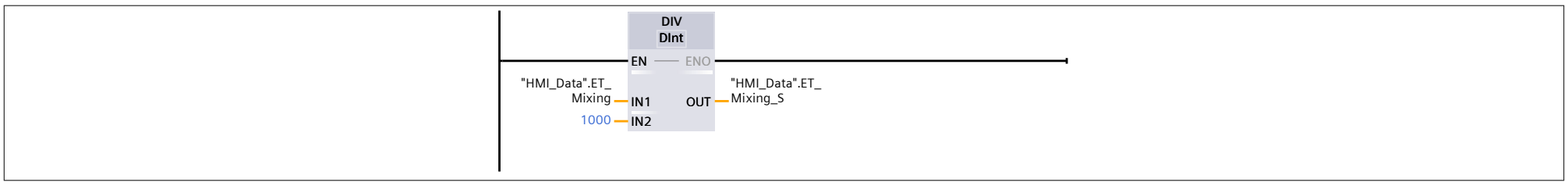
Network 1: Input miliseconds time from HMI convert to Minutes

input field from HMI is equal to milliseconds, in this network millisencond are convert to minutes, the formula for convert milliseconds to minutes is multiply the data type from HMI field per 60.000



Network 2: Convert Elapsed Time MS to S of discharge timer

Convert elapsed time milliseconds to seconds from mixing timer



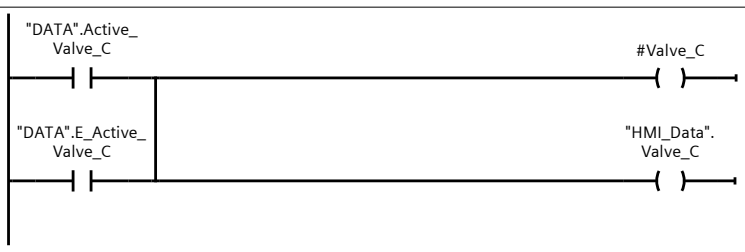
Program blocks / FC

Activate_Valve_C [FC5]

Activate_Valve_C Properties							
General							
Name	Activate_Valve_C	**Number**	5	**Type**	FC	**Language**	LAD
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value
Input		
▼ Output		
Valve_C	Bool	
InOut		
Temp		
Constant		
▼ Return		
Activate_Valve_C	Void	

Network 1: Discharge Valve



Program blocks / DB

DATA [DB1]

DATA Properties							
General							
Name	DATA	**Number**	1	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title	Data blocks for functions	**Author**	Stiven Perez Mora	**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Start value	Retain
▼ Static			
Start_Stop	Bool	false	False
Q_TimeDischarge	Bool	false	False
E_Discharge	Int	0	False
Active_Valve_C	Bool	false	False
E_Active_Valve_C	Bool	false	False
E_Stop	Bool	false	False
Pb_Start	Bool	false	False

Program blocks / DB

HMI_Data [DB4]

HMI_Data Properties							
General							
Name	HMI_Data	**Number**	4	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Start value	Retain
▼ Static			
Start_HMI	Bool	false	False
Stop_HMI	Bool	false	False
Valve_A	Bool	false	False
Level_A	Bool	false	False
Valve_B	Bool	false	False
Level_B	Bool	false	False
Valve_C	Bool	false	False
Motor_Mixer	Bool	false	False
Temp_Relay	Bool	false	False
PT_Mixing	Time	T#0ms	False
PT_M_Mxing	Time	T#0ms	False
ET_Mixing	Time	T#0ms	False
ET_Mixing_S	Time	T#0ms	False
Empty_Level	Bool	false	False
Empty_Field_Time	Bool	false	False

Program blocks / System blocks / Program resources

TimeToWamUp [DB2]

TimeToWamUp Properties							
General							
Name	TimeToWamUp	**Number**	2	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**	Simatic	**Comment**		**Family**	IEC
Version	1.0	**User-defined ID**	IEC_TMR				

Name	Data type	Start value	Retain
▼ Static			
PT	Time	T#0ms	False
ET	Time	T#0ms	False
IN	Bool	false	False
Q	Bool	false	False

Program blocks / System blocks / Program resources

TimeToMixing [DB3]

TimeToMixing Properties							
General							
Name	TimeToMixing	**Number**	3	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**	Simatic	**Comment**		**Family**	IEC
Version	1.0	**User-defined ID**	IEC_TMR				

Name	Data type	Start value	Retain
▼ Static			
PT	Time	T#0ms	False
ET	Time	T#0ms	False
IN	Bool	false	False
Q	Bool	false	False

Program blocks / System blocks / Program resources

MixingTime [DB5]

MixingTime Properties							
General							
Name	MixingTime	**Number**	5	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**	Simatic	**Comment**		**Family**	IEC
Version	1.0	**User-defined ID**	IEC_TMR				

Name	Data type	Start value	Retain
▼ Static			
PT	Time	T#0ms	False
ET	Time	T#0ms	False
IN	Bool	false	False
Q	Bool	false	False