

OB1 - <offline>

""

Name:
Author:
Family:
Version: 0.1
Block version: 2
Time stamp Code: 01/01/2016 08:41:06 PM
Interface: 02/15/1996 04:51:12 PM
Lengths (block/logic/data): 01644 01428 00030

Name	Data Type	Address	Comment
TEMP		0.0	
OB1_EV_CLASS	Byte	0.0	Bits 0-3 = 1 (Coming event), Bits 4-7 = 1 (Event class 1)
OB1_SCAN_1	Byte	1.0	1 (Cold restart scan 1 of OB 1), 3 (Scan 2-n of OB 1)
OB1_PRIORITY	Byte	2.0	Priority of OB Execution
OB1_OB_NUMBR	Byte	3.0	1 (Organization block 1, OB1)
OB1_RESERVED_1	Byte	4.0	Reserved for system
OB1_RESERVED_2	Byte	5.0	Reserved for system
OB1_PREV_CYCLE	Int	6.0	Cycle time of previous OB1 scan (milliseconds)
OB1_MIN_CYCLE	Int	8.0	Minimum cycle time of OB1 (milliseconds)
OB1_MAX_CYCLE	Int	10.0	Maximum cycle time of OB1 (milliseconds)
OB1_DATE_TIME	Date_And_Time	12.0	Date and time OB1 started

Block: OB1 "Main Program Sweep (Cycle)"

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SP7-13 Batch Reactor Control

Additional internal memory:

Symbol	Address		
Run	M5.0	BOOL	On while batch running
Step_1 to Step_6	M0.1 to M0.6	BOOL	Step-in-progress bits
Fast_Agit_Tmr	DB1	SFB4	Tic timer fast agitation step
Decr_Agit_Tmr	DB2	SFB4	Tic timer decreasing agitation
step			
Count_A	DB3	SFB0	Measures amount of A being added
Count_B	DB4	SFB0	Measures amount of B being added
Count_Out	DB5	SFB0	Measures amount of product being
drained			
Fast_Agit_Ctr	DB6	SFB0	Counter for fast agit timer
Decr_Agit_Ctr	DB7	SFB0	Counter for decr agit timer
Count_A_Acc	MW150	INT	Count_A accumulator
Count_B_Acc	MW152	INT	Count_B accumulator
Count_Out_Acc	MW154	INT	Count_Out accumulator
Decr_Agit_Acc	MD158	TIME	Decr_Agit_Tmr accumulator
TmpDI	MD120	DINT	Temporary double integer
TmpR	MD124	REAL	Temporary real
TmpR2	MD128	REAL	Temporary real
Ret_Val	MW12	WORD	Return value from SCALE block
Always_Off	M10.0	BOOL	Always off bit for SCALE block

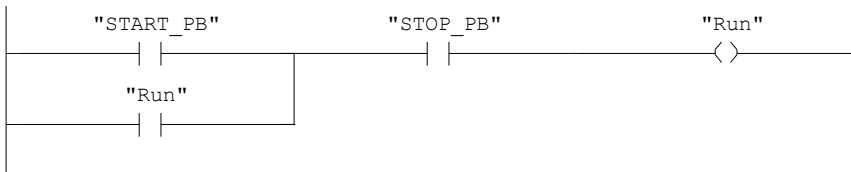
Conversion formulas

$$\text{AGIT_CURR} = ((\text{ACUR_MEAS} - 5530) / 22118) * (100)$$

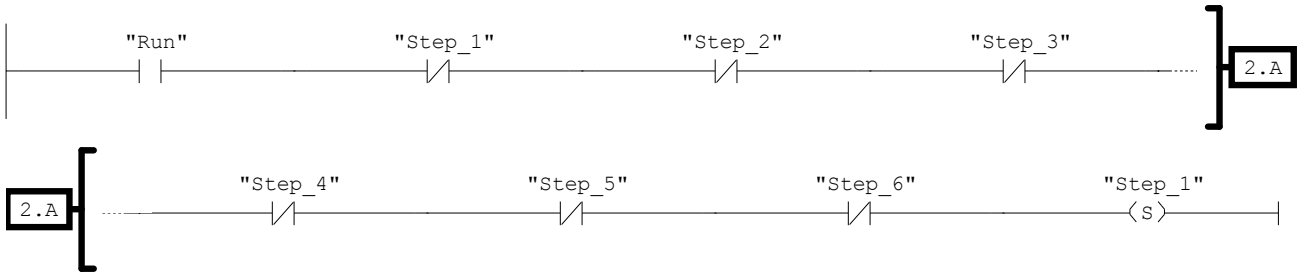
$$\text{AGIT_AO} = (\text{AGIT_RPM} / 1000) * (22118) + 5530$$

In Step_5, AGIT_RPM = 500 - Decr_Agit_Tmr/10000
 because accum of TON has resolution of 1 ms, ranges from 0 to
 to 2400000 over 40 minutes.

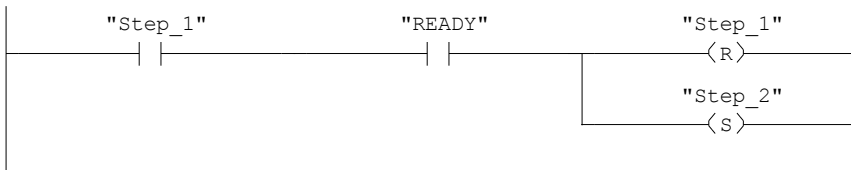
Network: 1 Start/Stop



Network: 2 Initial Start

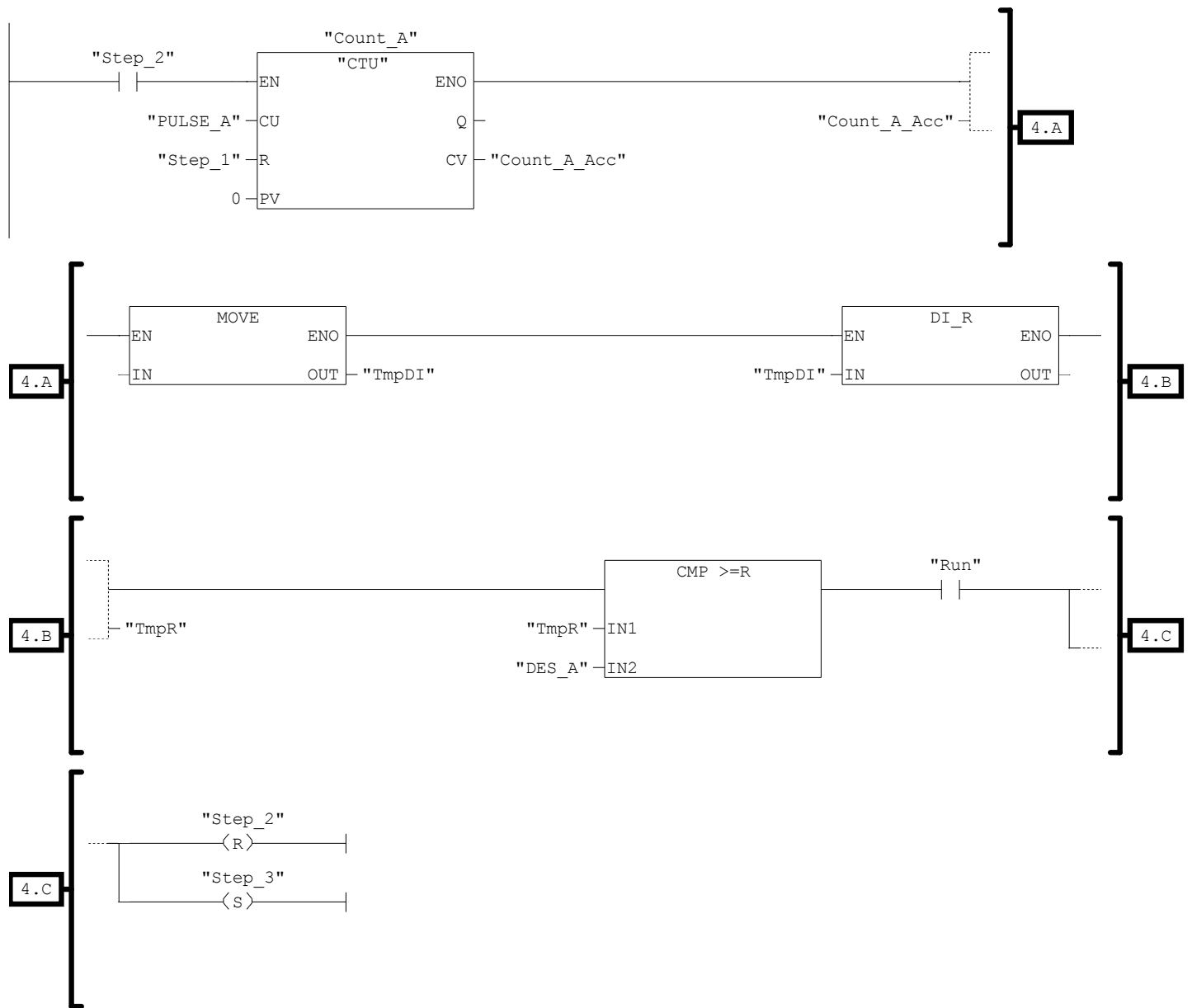


Network: 3 Step 1 Wait for ready permissive

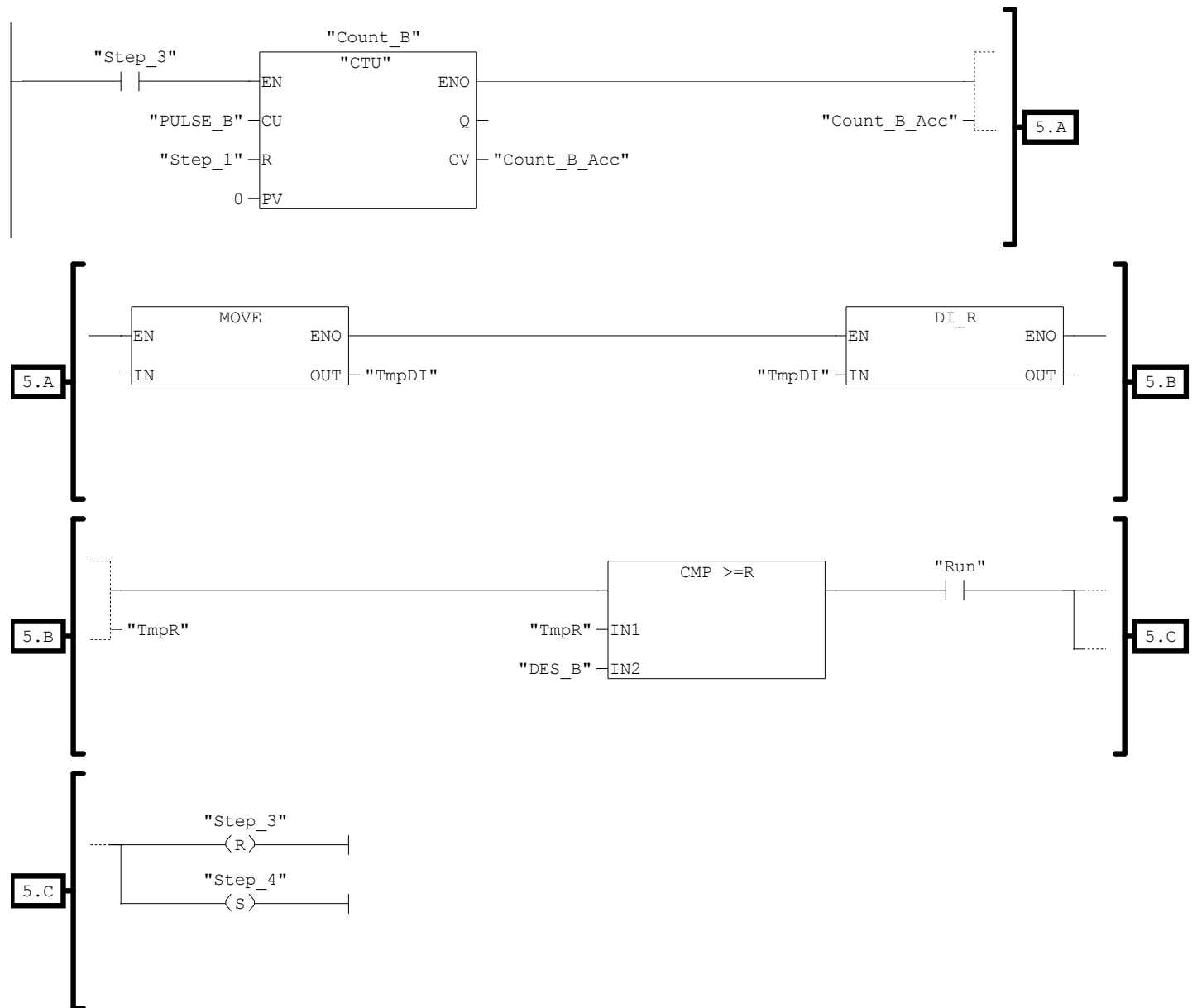


Network: 4 Step 2 Fill A

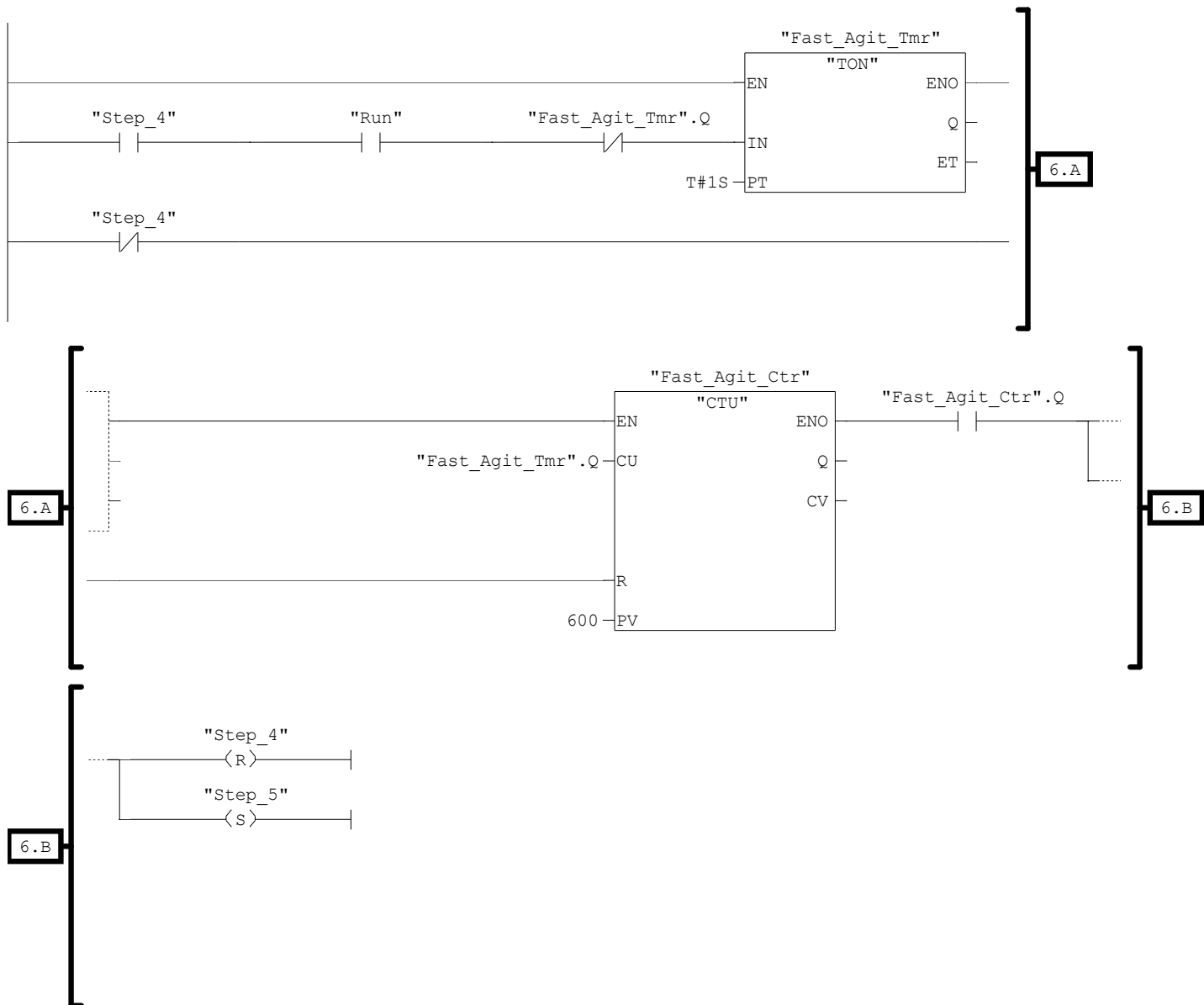
Note that the PV is not used and the CV must be converted to a real before it can be compared.
An alternate way is to convert the desired amount to an integer and use it as the PV and the .Q of the counter for the transition condition.



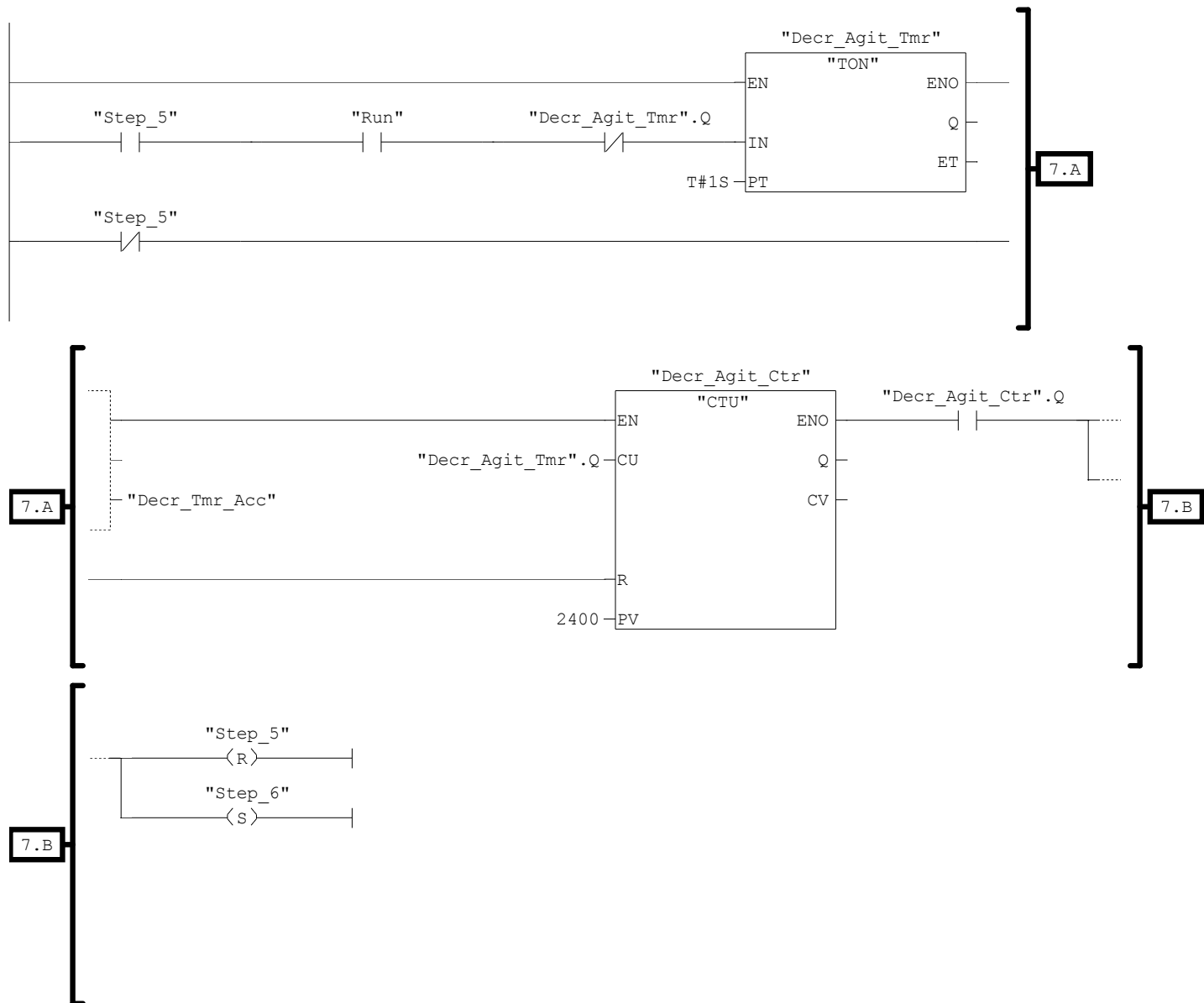
Network: 5 Step 3 Fill B



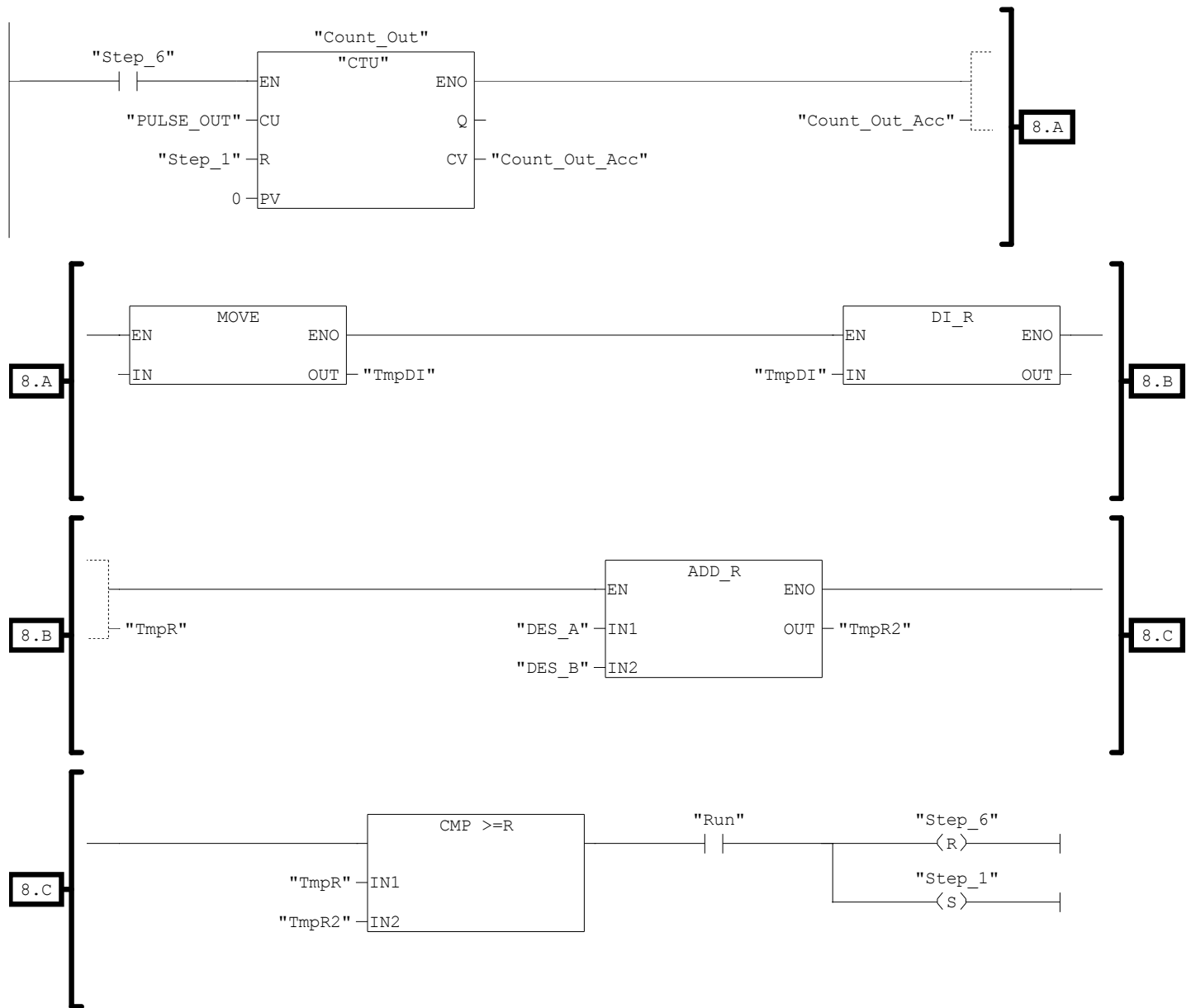
Network: 6 Step 4. Agitate at constant speed.



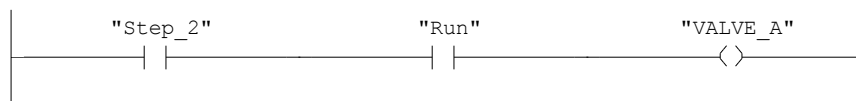
Network: 7 Step 5 Agitate at decreasing speed



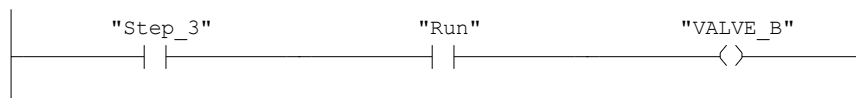
Network: 8 Step 6 - Drain tank



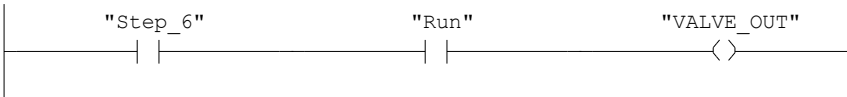
Network: 9 Valves



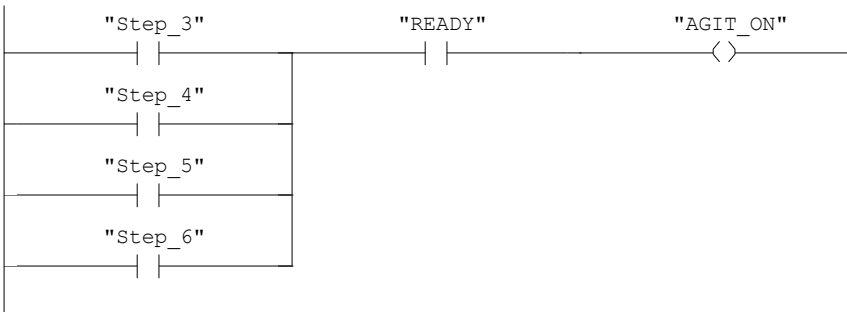
Network: 10 Solenoid valve to allow ingredient B to flow into mixing vessel



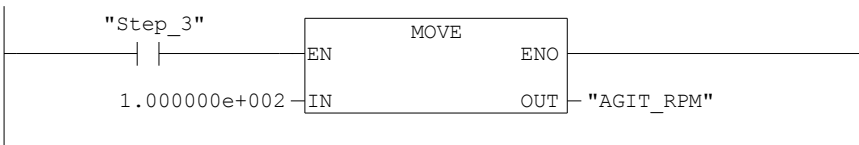
Network: 11 Solenoid valve to allow flow out of mixing vessel



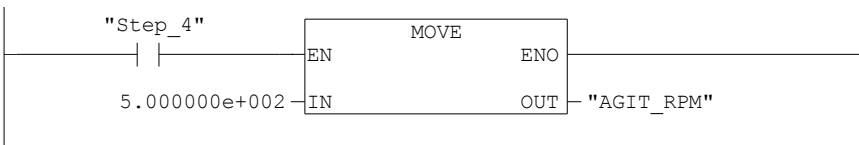
Network: 12 Air Valve



Network: 13 Control Agitator RPM

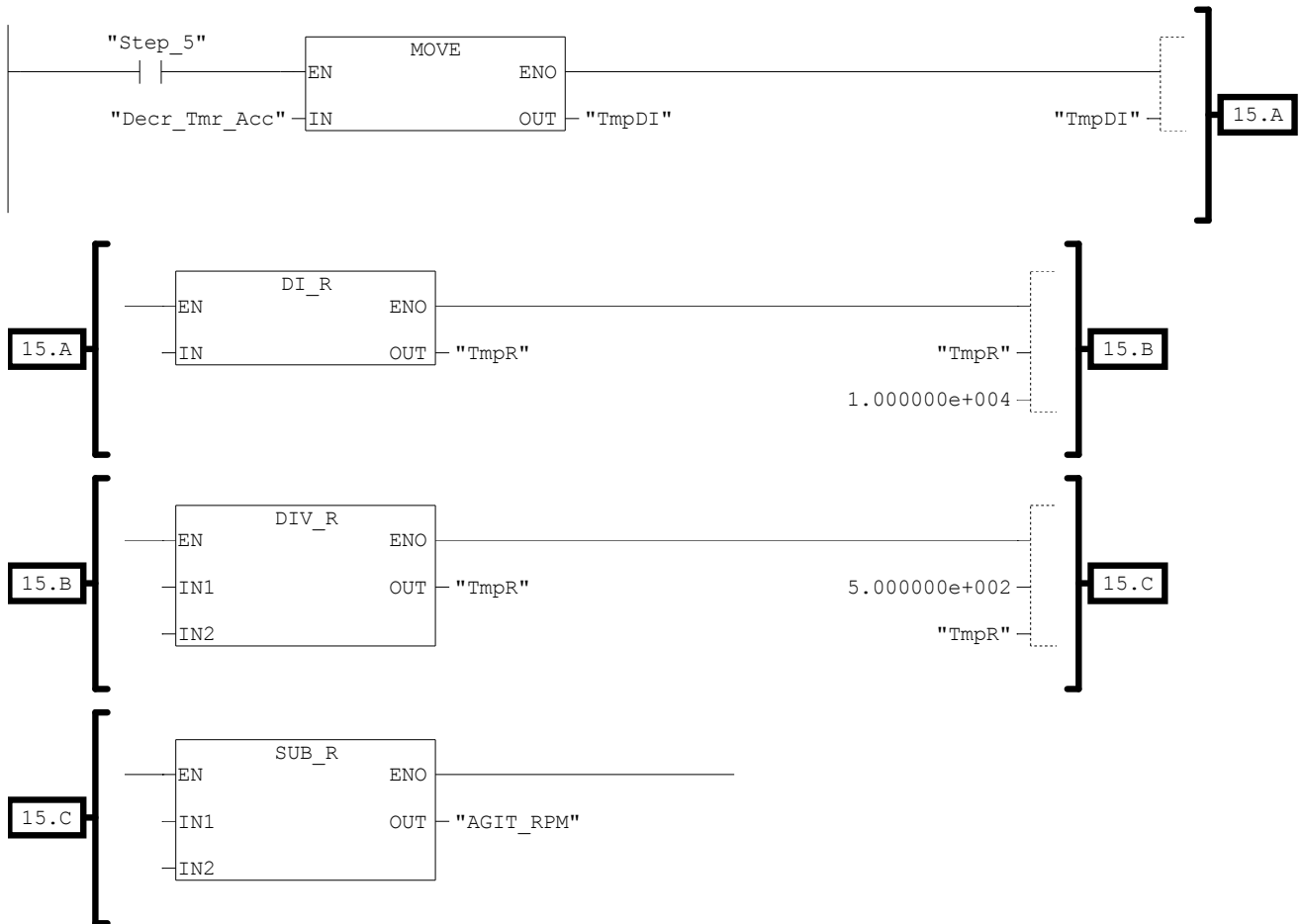


Network: 14



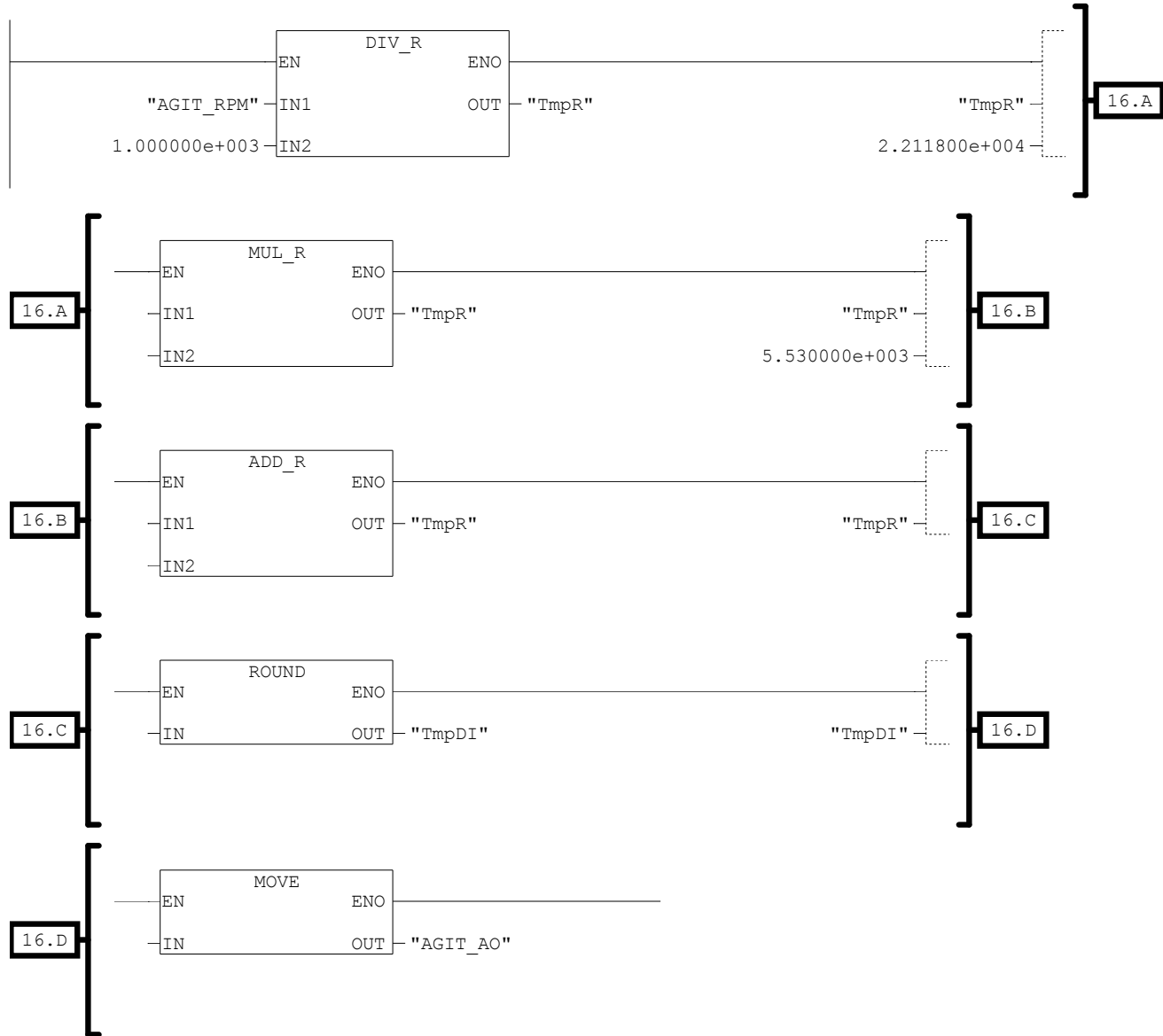
Network: 15 Calculate agitator RPM in step 5

Agitator speed decreases from 500 to 240 over 40 minutes (2400 seconds). Since the timer accumulator is in ms, divide accumulator by 10000 and subtract from 500.

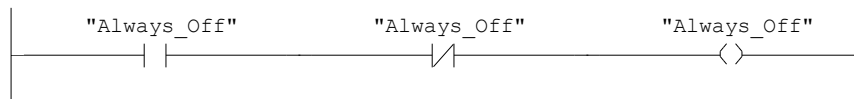


Network: 16

Convert AGIT_RPM into AGIT_AO.
Uses individual computation blocks.



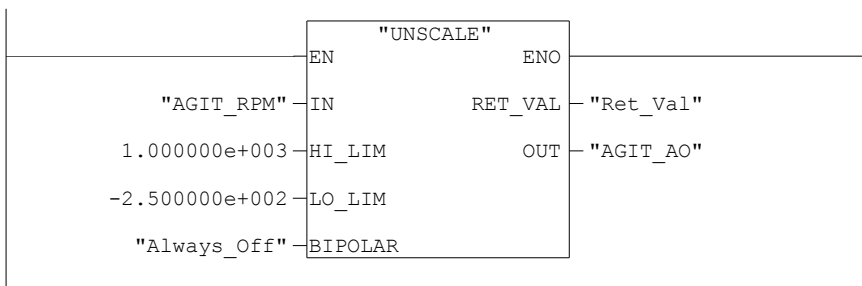
Network: 17 Always Off



Network: 18

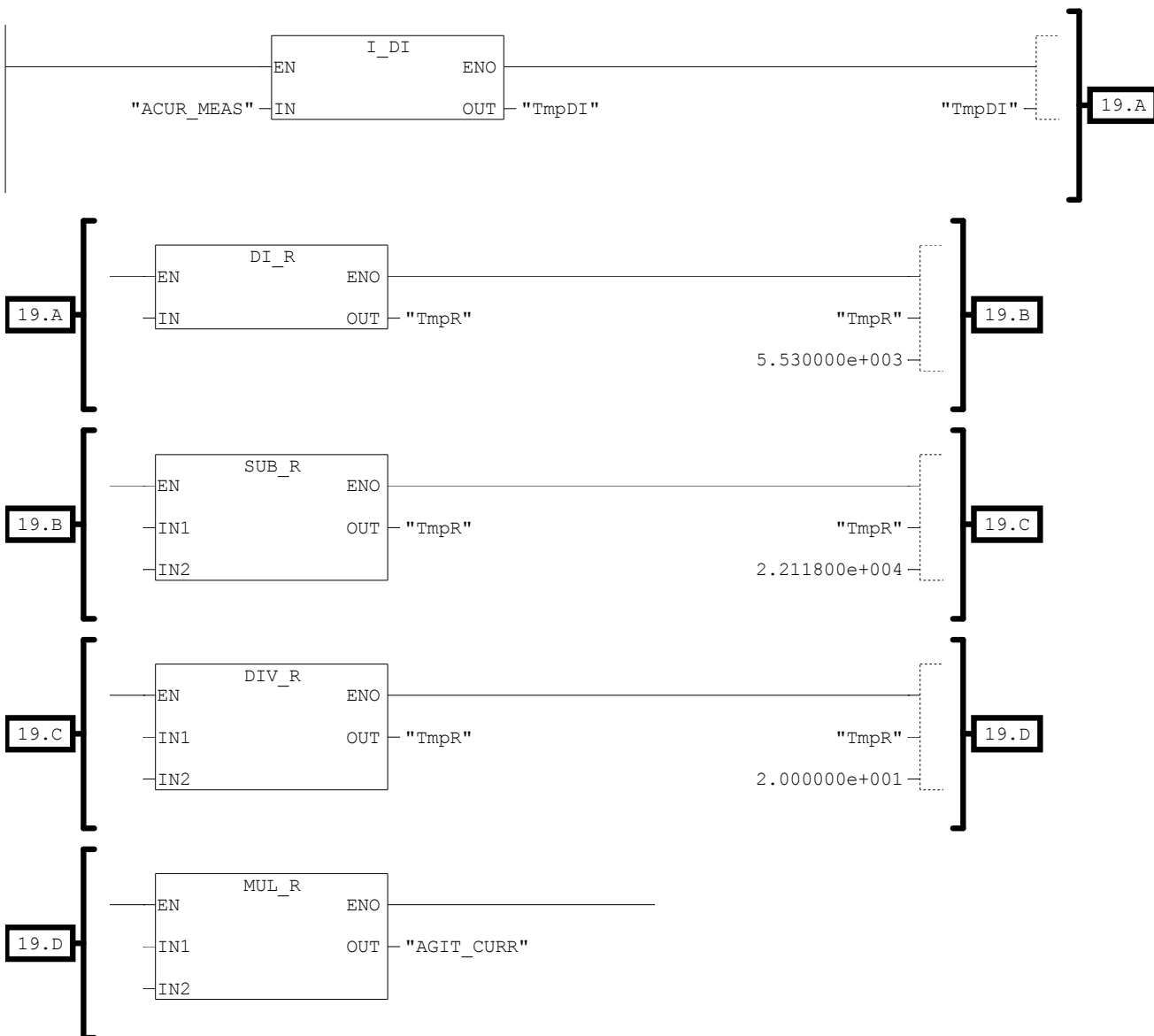
Convert AGIT_RPM into AGIT_AO.

Uses UNSCALE block. Note that the lo_lim input is 25% lower than zero RPM to account for this block assuming the minimum value of the analog out is zero rather than the 5530 (which corresponds to 4 mA).



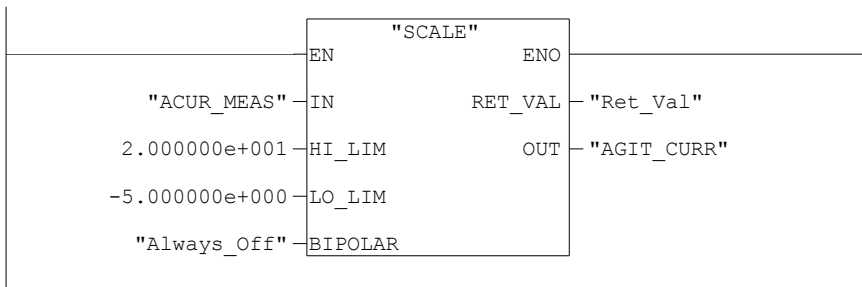
Network: 19

Convert current measurement to amperes.
Uses individual computation blocks.

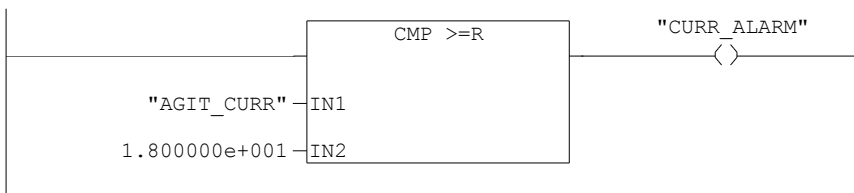


Network: 20

Convert current measurement to amperes.
Uses SCALE block. Note that the lo_lim input is 25% lower than zero weight to account for this block assuming the minimum value of the analog in is zero rather than the 5530 (which corresponds to 4 mA).



Network: 21 Current alarms



Network: 22 On when agitator current is between 15 amps and 18 amps

