RM_RotorAssy_Rev15_Sm@rtserver_V19 / PLC_1 [CPU 1215C DC/DC/DC] / Program blocks / Utilities

Preload_Calibration [FB15]

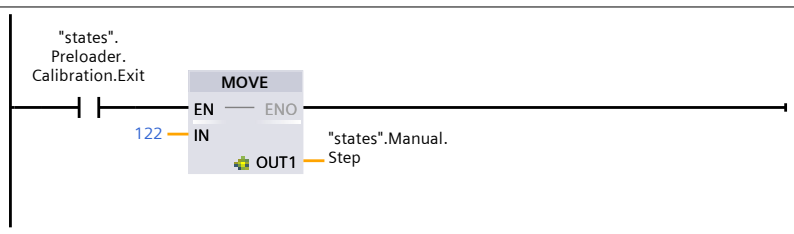
Preload_Calibration Properties							
General							
Name	Preload_Calibration	**Number**	15	**Type**	FB	**Language**	LAD
Numbering	Automatic						
Information							
Title		**Author**		**Comment**	steps incriment by 5 screen incriment by 5 starting from 11000	**Family**	
Version	0.1	**User-defined ID**					

Preload_Calibration

Name	Data type	Default value	Retain	Accessible from HMI/OPC UA/Web API	Writable from HMI/OPC UA/Web API	Visible in HMI engineering	Setpoint	Supervision	Comment
Input									
Output									
InOut									
▼ Static									
▼ Timers	Struct		Non-retain	True	True	True	False		
▼ sample_time1	IEC_TIMER		Non-retain	True	True	True	True		
PT	Time	T#0ms	Non-retain	True	True	True	False		
ET	Time	T#0ms	Non-retain	True	False	True	False		
IN	Bool	false	Non-retain	True	True	True	False		
Q	Bool	false	Non-retain	True	False	True	False		
▼ sample_time2	IEC_TIMER		Non-retain	True	True	True	True		
PT	Time	T#0ms	Non-retain	True	True	True	False		
ET	Time	T#0ms	Non-retain	True	False	True	False		
IN	Bool	false	Non-retain	True	True	True	False		
Q	Bool	false	Non-retain	True	False	True	False		
▼ MotorWarmup_time3	IEC_TIMER		Non-retain	True	True	True	True		
PT	Time	T#0ms	Non-retain	True	True	True	False		
ET	Time	T#0ms	Non-retain	True	False	True	False		
IN	Bool	false	Non-retain	True	True	True	False		
Q	Bool	false	Non-retain	True	False	True	False		
▼ Sample	Struct		Non-retain	True	True	True	False		
Increment	Int	0	Non-retain	True	True	True	True		
▼ Sample	IEC_COUNTER		Non-retain	True	True	True	False		
CU	Bool	false	Non-retain	True	True	True	False		
CD	Bool	false	Non-retain	True	True	True	False		
R	Bool	false	Non-retain	True	True	True	False		
LD	Bool	false	Non-retain	True	True	True	False		
QU	Bool	false	Non-retain	True	True	True	False		
QD	Bool	false	Non-retain	True	True	True	False		
PV	Int	0	Non-retain	True	True	True	False		
CV	Int	0	Non-retain	True	True	True	False		
Static_1	Bool	false	Non-retain	True	True	True	True		
▼ Average	Struct		Non-retain	True	True	True	False		
▼ Sample	IEC_COUNTER		Non-retain	True	True	True	False		
CU	Bool	false	Non-retain	True	True	True	False		
CD	Bool	false	Non-retain	True	True	True	False		
R	Bool	false	Non-retain	True	True	True	False		
LD	Bool	false	Non-retain	True	True	True	False		
QU	Bool	false	Non-retain	True	True	True	False		
QD	Bool	false	Non-retain	True	True	True	False		
PV	Int	0	Non-retain	True	True	True	False		
CV	Int	0	Non-retain	True	True	True	False		
sum	DInt	0	Non-retain	True	True	True	False		
AVG_Val	Real	0.0	Non-retain	True	True	True	False		
Temp									
Constant									

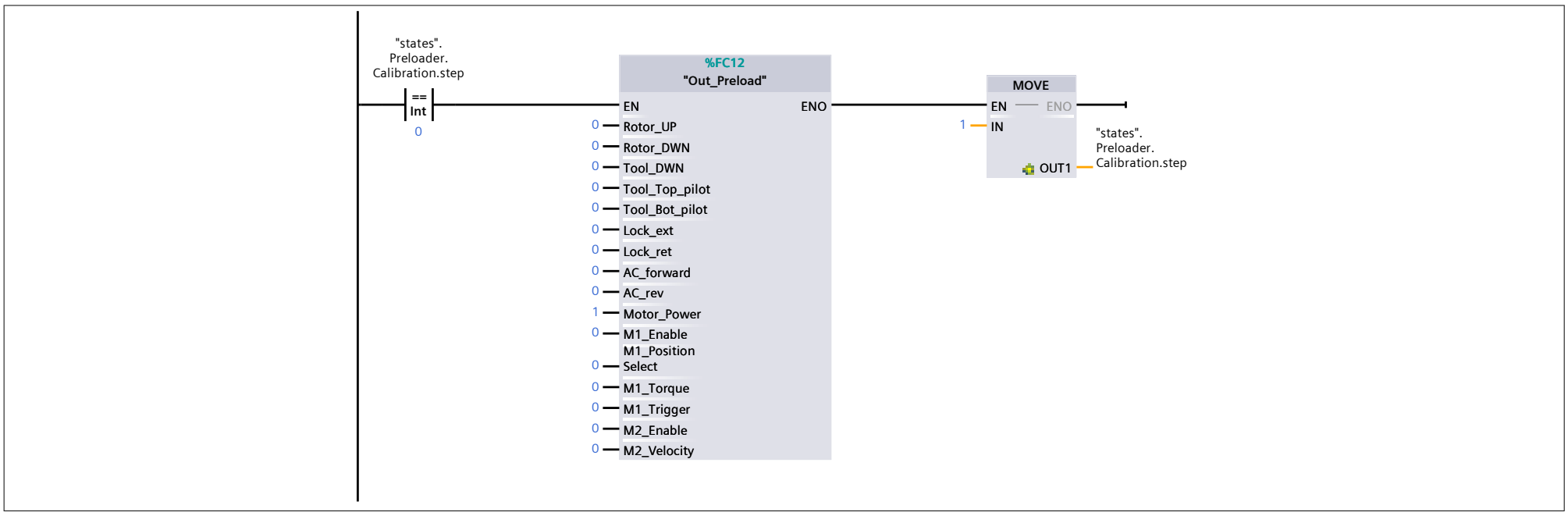
Network 1: Exit Calibration & back function

restores former value (Unlike "Confirm" which replaces former value with newly calibrated values)



Network 2: initalization

incase any steps are required before running through the calibration steps



Network 3: Assemble the sensor jig

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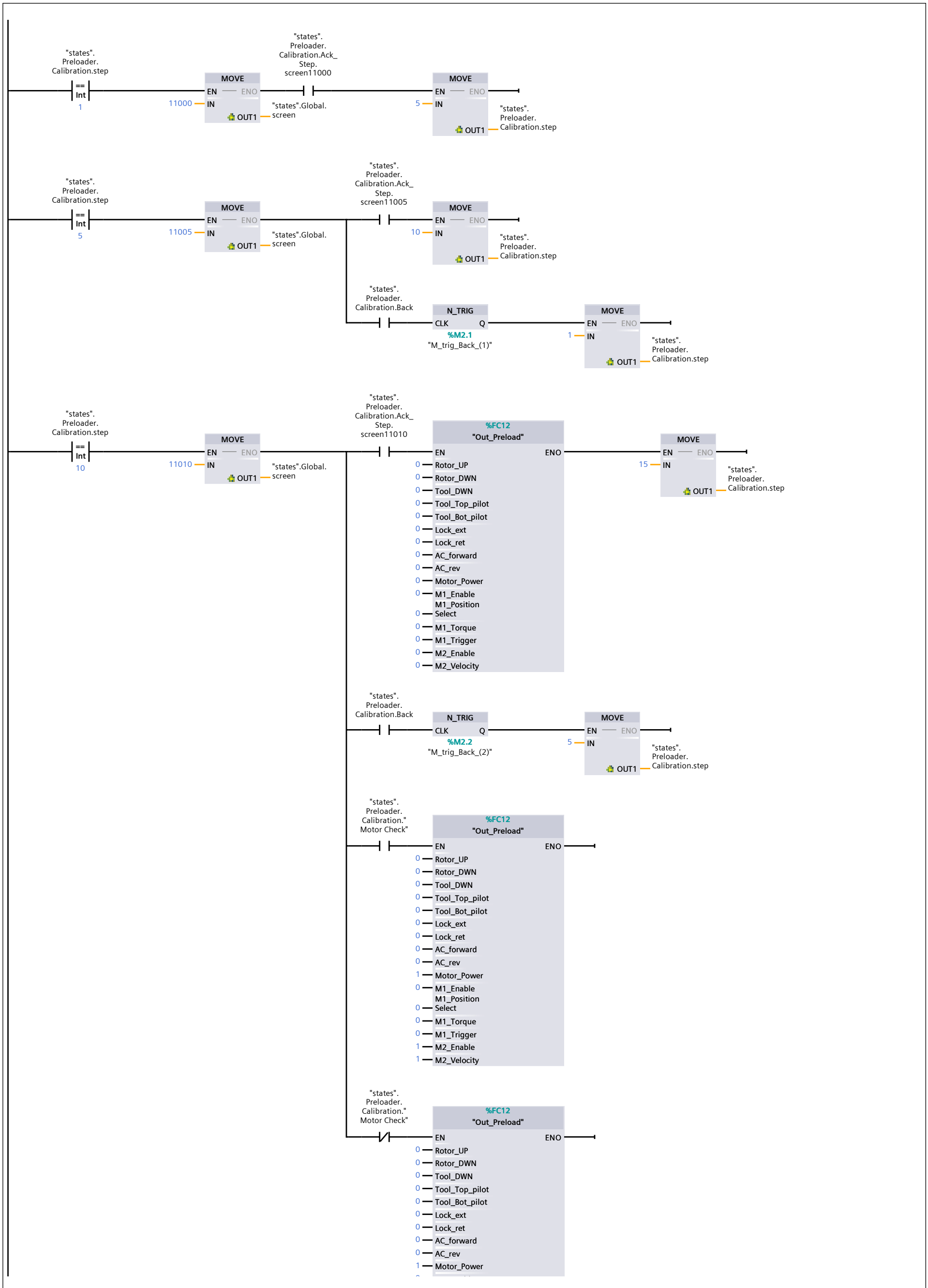
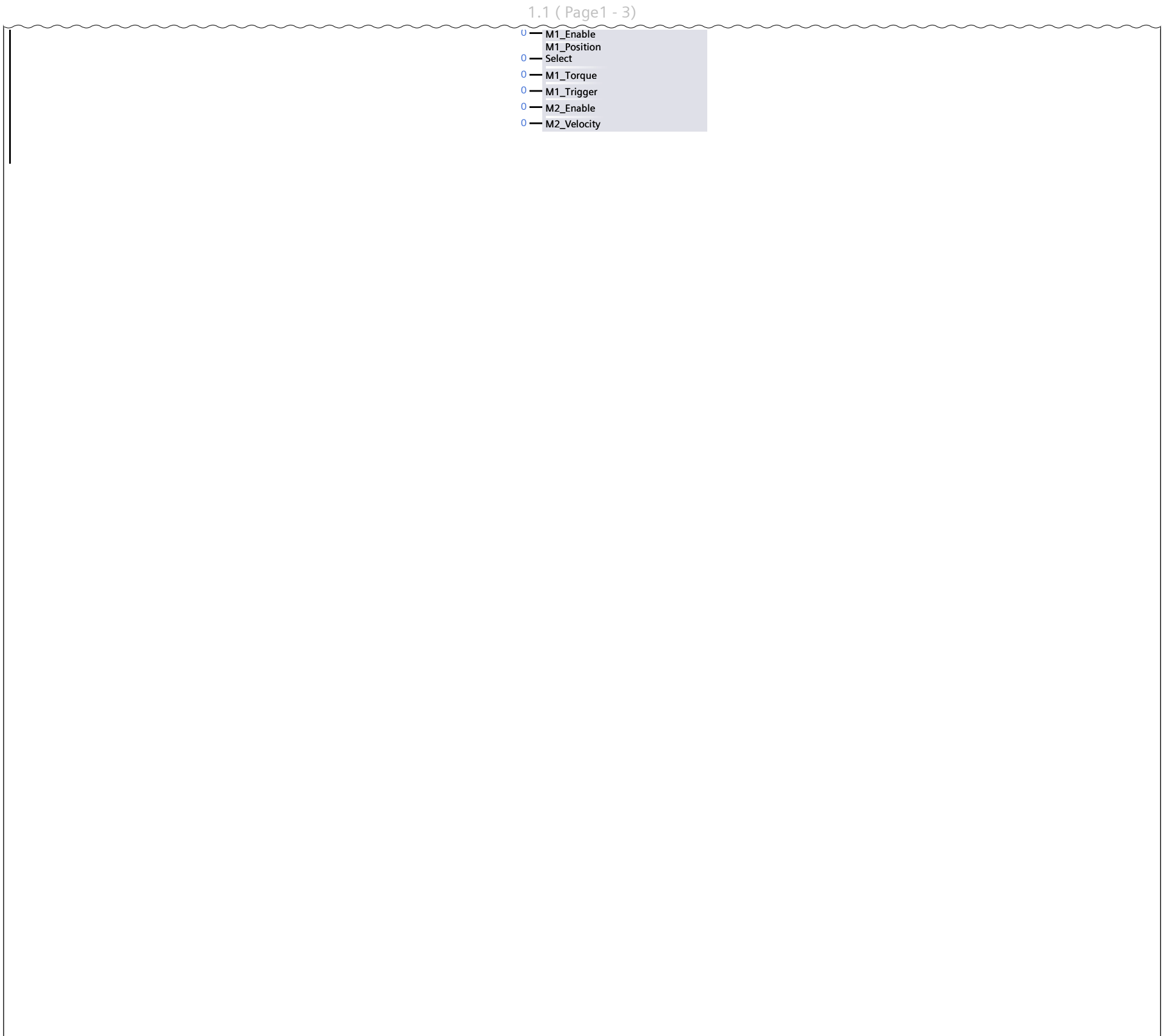
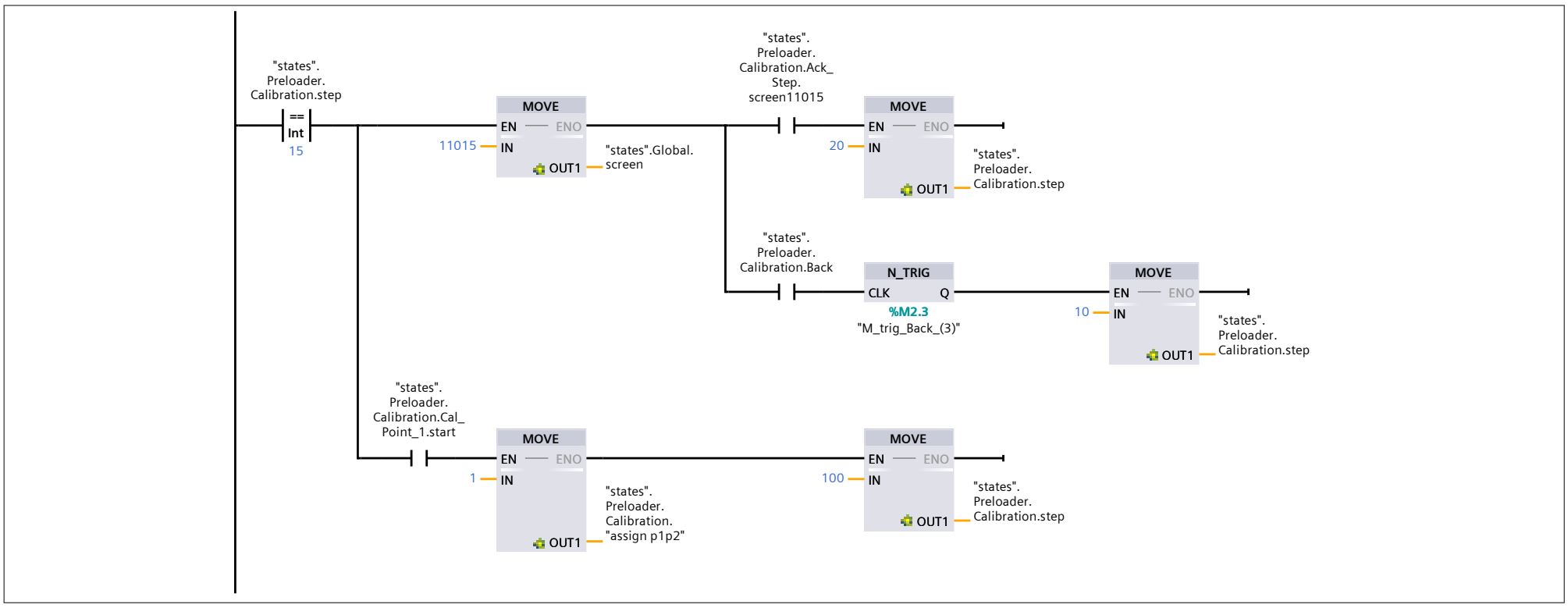


Network 3: Assemble the sensor jig (2.1 / 2.1)



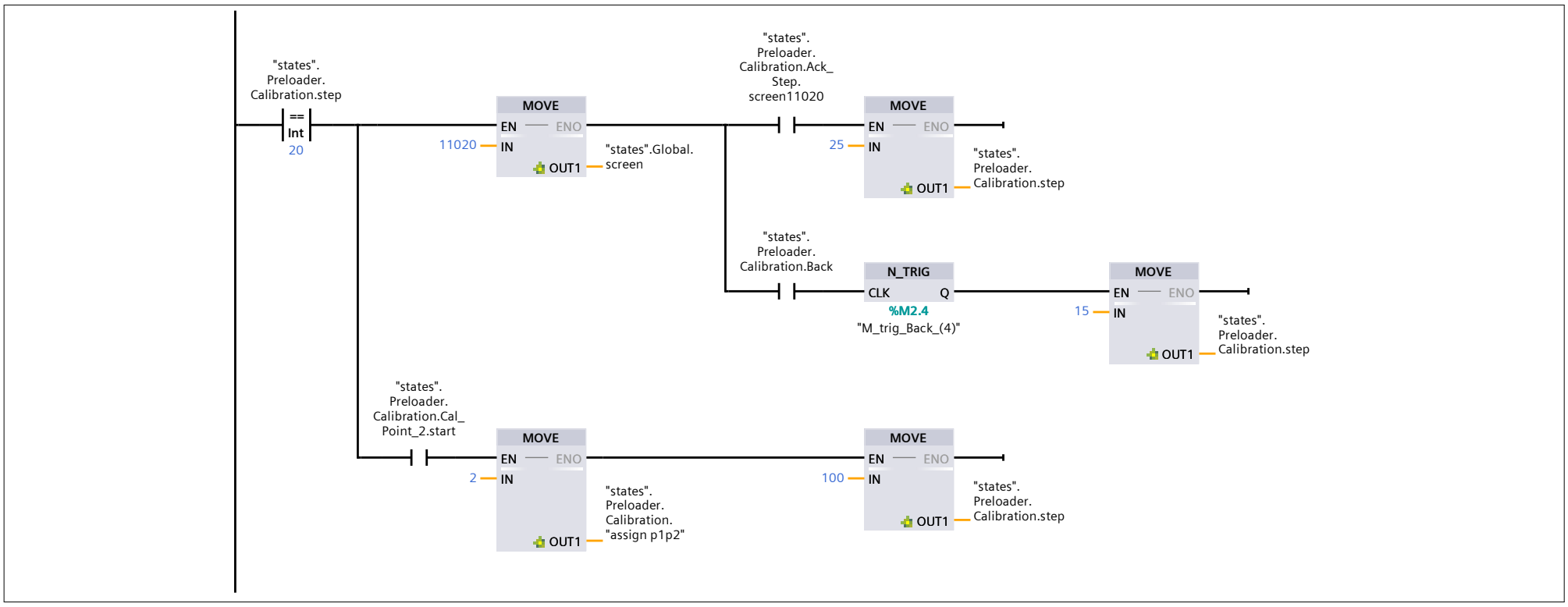
Network 4: Measure the motor torque at 1st current/voltage

5.5 - 15 ozf-in



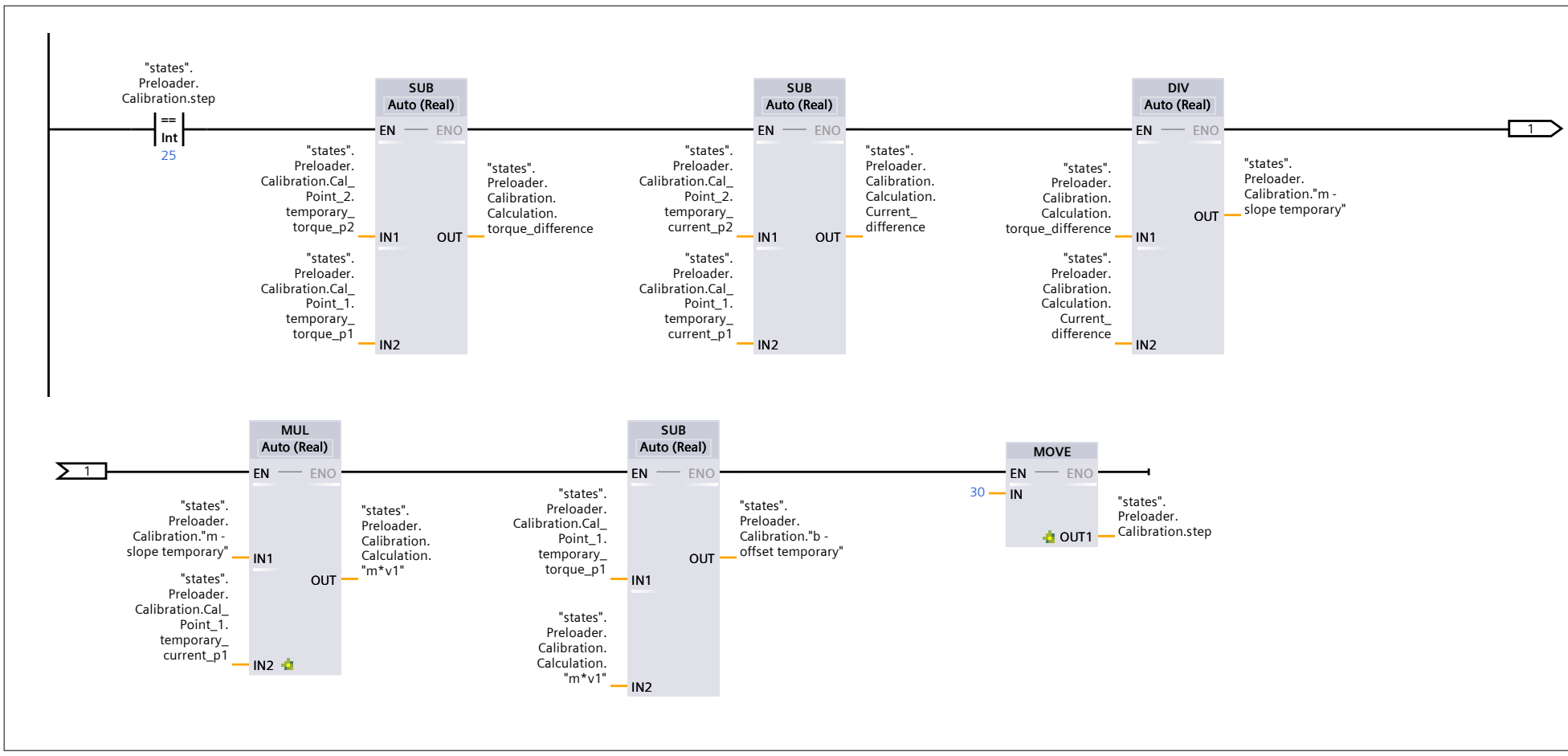
Network 5: Measure the motor at 2nd interval

5.5 - 15 ozf-in

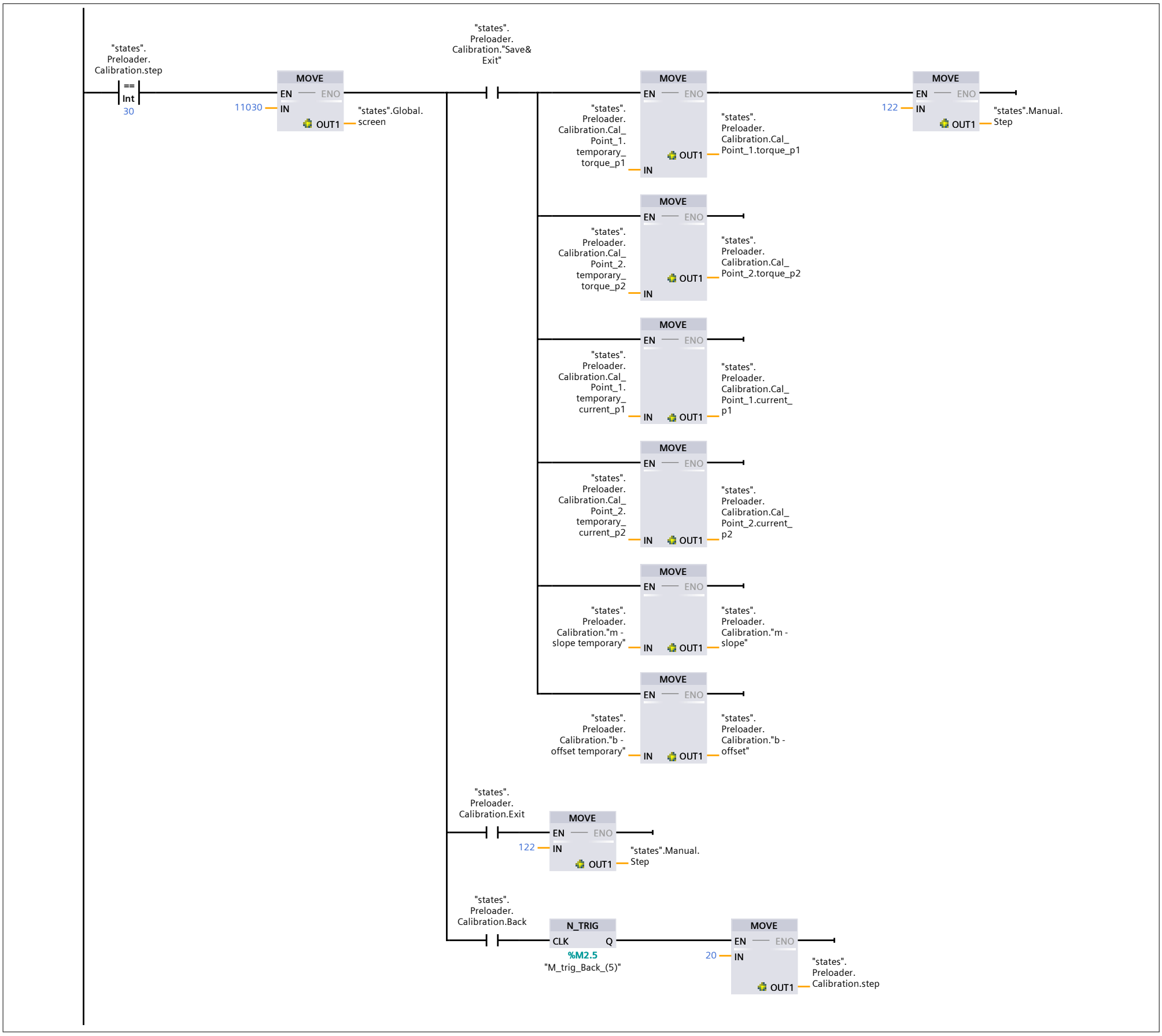


Network 6: Perform calculation to determine new scale value

find slope (m) and offset (b) in the y=mx+b
slope = (t2-t1)/(v2-v1)
offset = t1-m*v1

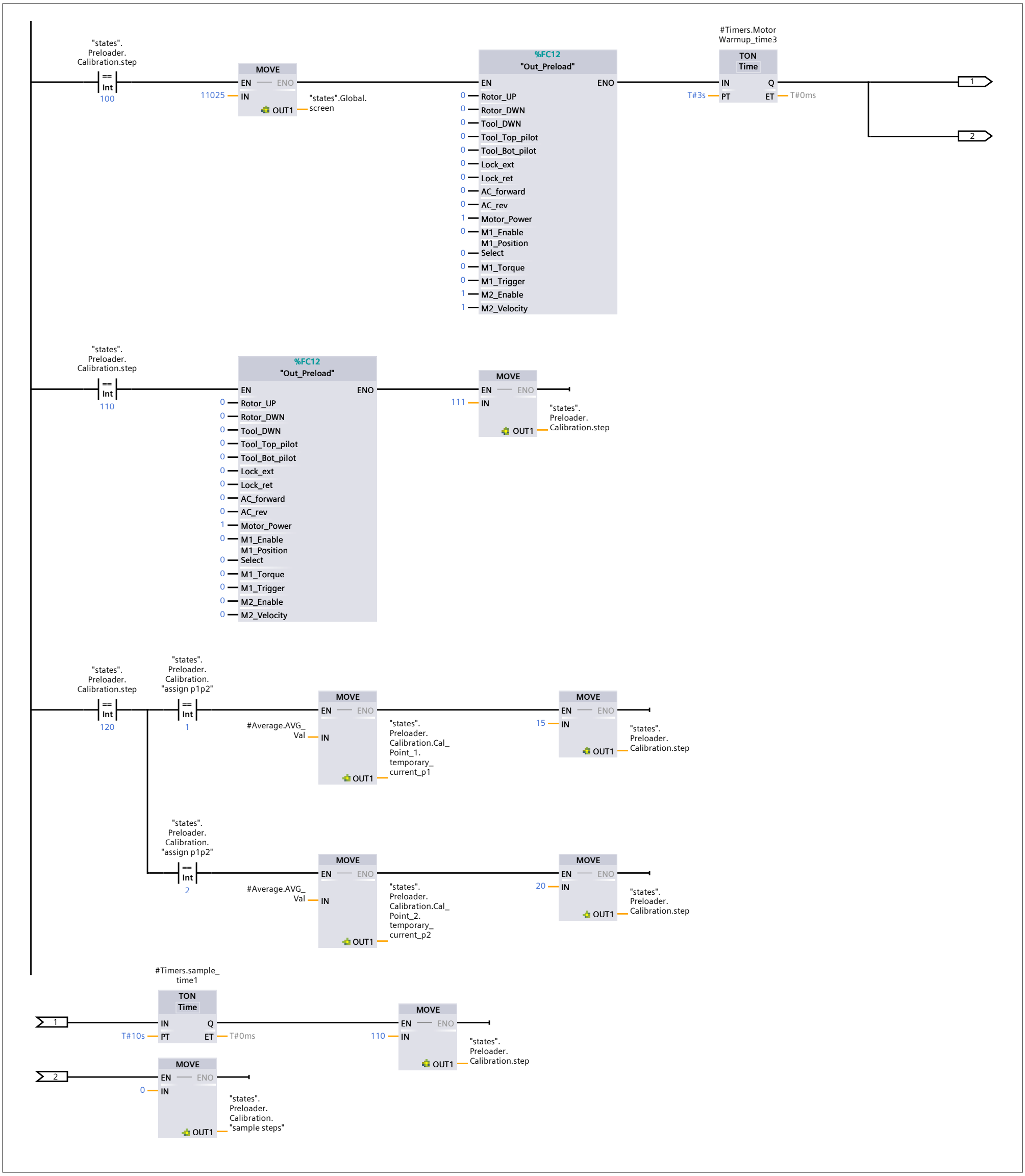


Network 7: Exit Calibration



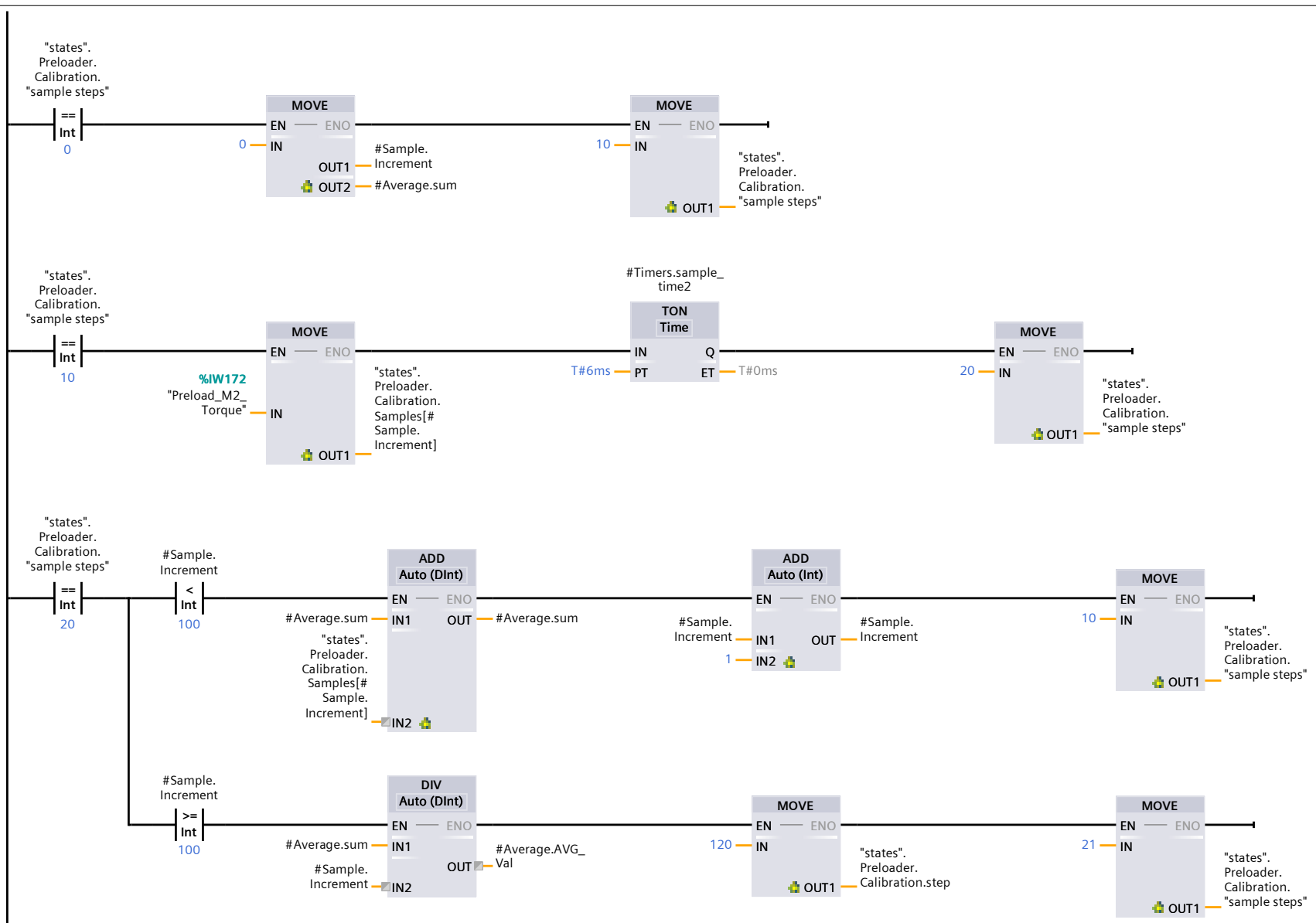
Network 8: Motor and current draw for p1 and p2

run the motor for 10 seconds
turn off the motor
assign the values



Network 9: sample increments

0 - initialize
1 - start of loop, insert into array, add one to increment, wait 6ms, and repeat


"states".Preloader.Calibration."sample steps"
==Int
0
MOVE
EN
ENO
0
IN
OUT1
#Sample.Increment
OUT2
#Average.sum
MOVE
EN
ENO
10
IN
OUT1
"states".Preloader.Calibration."sample steps"
"states".Preloader.Calibration."sample steps"
==Int
10
MOVE
EN
ENO
%IW172
"Preload_M2_Torque"
IN
OUT1
"states".Preloader.Calibration.Samples[#Sample.Increment]
#Timers.sample_time2
TON
Time
IN
Q
T#6ms
PT
ET
T#0ms
MOVE
EN
ENO
20
IN
OUT1
"states".Preloader.Calibration."sample steps"
"states".Preloader.Calibration."sample steps"
==Int
20
#Sample.Increment
<Int
100
ADD
Auto (DInt)
EN
ENO
#Average.sum
IN1
OUT
#Average.sum
"states".Preloader.Calibration.Samples[#Sample.Increment]
IN2
ADD
Auto (Int)
EN
ENO
#Sample.Increment
IN1
OUT
#Sample.Increment
1
IN2
MOVE
EN
ENO
10
IN
OUT1
"states".Preloader.Calibration."sample steps"
#Sample.Increment
>=Int
100
DIV
Auto (DInt)
EN
ENO
#Average.sum
IN1
OUT
#Average.AVG_Val
#Sample.Increment
IN2
MOVE
EN
ENO
120
IN
OUT1
"states".Preloader.Calibration.step
MOVE
EN
ENO
21
IN
OUT1
"states".Preloader.Calibration."sample steps"