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# 4R\_Veloce\_05\_June / PLC [CPU 1214C DC/DC/DC] / Program blocks

# Operation\_cycle [FB24]

Operation_cycle Properties							
General							
Name	Operation_cycle	Number	24	Туре	FB	Language	LAD
Numbering	Automatic						
Information							
Title		Author		Comment		Family	
Version	0.1	User-defined ID					

eration_cycle									
me	Data type	Default value	Retain	Accessible from HMI/OPC UA	able	Visible in HMI engi- neering	Setpoint	Supervi- sion	Comment
r Input									
Input_cmd_moc	Int	0	Non-retain	True	True	True	False		
RACK	Bool	false	Non-retain	True	True	True	False		
RACK_EXT	Bool	false	Non-retain	True	True	True	False		
BIN_DETECT	Bool	false	Non-retain	True	True	True	False		
TELESH1	Bool	false	Non-retain	True	True		False		
TELESH2	Bool	false	Non-retain	True	True		False		
BINC1	Bool	false	Non-retain	True	True		False		
BINC2	Bool	false	Non-retain	True	True		False		
Lift_reached	Bool Bool	false false	Non-retain	True	True True		False False		
Turntable_reached	Bool	false	Non-retain Non-retain	True True	True		False		
telescope_reached fork_reached	Bool	false	Non-retain	True	True		False		
Turn Act pos	DInt	0	Non-retain	True	True		False		
tele Act pos	Dint	0	Non-retain	True	True		False		
TUrntable_correction	Dint	0	Non-retain	True	True		False		
reset	Bool	false	Non-retain	True	True		False		
STO	Bool	false	Non-retain	True	True		False		
Turn_complete _sensor	Bool	false	Non-retain	True	True		False		
forks_down	Bool	false	Non-retain	True	True		False		
forks_up	Bool	false	Non-retain	True	True		False		
TelePick_intdeep1_mm	DInt	0	Non-retain	True	True		False		
TelePlace_intdeep1_mm	DInt	0	Non-retain	True	True	True	False		
turn_act_deg	DInt	0	Non-retain	True	True	True	False		
Lateral_offset	DInt	0	Non-retain	True	True	True	False		
TURNATEXT	Bool	false	Non-retain	True	True	True	False		
telepick_exedeep1_extension	DInt	0	Non-retain	True	True	True	False		
telepick_exedeep2_extension	DInt	0	Non-retain	True	True	True	False		
teleplace_exedeep1_extension	DInt	0	Non-retain	True	True	True	False		
teleplace_exedeep2_extension	DInt	0	Non-retain	True	True	True	False		
tele_joglimit_exten- sion_deep1	DInt	0	Non-retain	True	True	True	False		
tele_joglimit_exten- sion_deep2	DInt	0	Non-retain	True	True		False		
Tele_cmd_pos	DInt	0	Non-retain	True	True		False		
Jog_vel_Operation	DInt	0	Non-retain	True	True		False		
Lift_Barcode_pick_offset	Int	0	Non-retain	True	True		False		
Lift_Rack_IN_Offset	Int	0	Non-retain	True	True		False		
turn_offset	DInt	0	Non-retain	True	True	True	False		
Output									
mOVE_TURN_TARGET	Bool	false	Non-retain	True	True		False		
Lift_Rack_offset	Int	0	Non-retain	True	True		False		
Lift Position	Int	0	Non-retain	True	True		False		
Tele_Pos_reached	Bool	false	Non-retain	True	True		False		
Turn_pos_reached	Bool	false	Non-retain	True	True		False		
Lift_pick_offset	Int	0	Non-retain	True	True		False		
tele_mode	Byte	16#0	Non-retain	True	True		False		
Turn_mode	Byte	16#0	Non-retain	True	True		False		
Jog_velocity	Dint	0	Non-retain	True	True		False		
tURN_CMD_POS	Dint	0	Non-retain	True	True		False		
telescope position	DInt	0 false	Non-retain	True	True True		False False		
Lift_execute Turntable_execute	Bool	false	Non-retain Non-retain	True	True		False		
<del>_</del>	Bool	false	-	True	True		False		
Telescope_execute fork	Bool	o Taise	Non-retain Non-retain	True	True		False		
Lift_exePick	Bool	false	Non-retain Non-retain	True True	True		False		
	Bool	false	Non-retain	True	True		False		
lift_exe_picko1 Lift_exePlace	Bool	false	Non-retain		True		False		
forkuppick	Int	0	Non-retain		True		False		
LUI BULLUL B	11.15	_	i ton retuin	1140	uc		False		

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ne	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writ-Visible in able HMI engi- from neering HMI/ OPC UA	Setpoint	Supervi- sion	Comment
turn_exePick	Bool	false	Non-retain	True	True True	False		
turn error	DInt	0	Non-retain	False	False False	False		
tele error	DInt	0	Non-retain	False	False False	False		
tele_exehome	Bool	false	Non-retain	True	True True	False		
tele_exehome1	Bool	false	Non-retain	True	True True	False		
turn_homeexe	Bool	false	Non-retain	True	True True	False		
lift_homeexe	Bool	false	Non-retain	True	True True	False		
pick_comp	Bool	false	Non-retain	True	True True	False		
place_comp	Bool	false	Non-retain	True	True True	False		
JOG_TELE	Bool	false	Non-retain	True	True True	False		
enable_jog	Bool	false	Non-retain	True	True True	False		
disable_jog	Bool	false	Non-retain	True	True True	False		
move_trgt_jog1	Bool	false	Non-retain	True	True True	False		
move_trgt_jog2	Bool	false	Non-retain	True	True True	False		
move_trgt_jog3	Bool	false	Non-retain	True	True True	False		
Mov_to_pos_mode	Bool	false	Non-retain	True	True True	False		
Traction_Estop1	Bool	false	Non-retain	True	True True	False		
	Bool	false	Non-retain	True	True True	False		
Traction_Estop2	Bool	false	Non-retain	True	True True	False		
home_888	Word	16#0	Non-retain Non-retain	True	True True	False		
process_error								
Lift_double_place_offset	Int	0	Non-retain	True	True True	False		
LIFT_EXE_PICK_SINGLE	Bool	false	Non-retain	True	True True	False		
lift_exe_placeo1	Bool	false	Non-retain	True	True True	False		
Lift_QR_scan_exe	Bool	false	Non-retain	True	True True	False		
Lift_Place_QR_CMD	Bool	false	Non-retain	True	True True	False		
Lift_D_exe	Bool	false	Non-retain	True	True True	False		
InOut								
PICK	Bool	false	Non-retain	True	True True	False		
PLACE	Bool	false	Non-retain	True	True True	False		
telescope_position	Int	0	Non-retain	True	True True	False		
pick_ext	Bool	false	Non-retain	True	True True	False		
· · · · · · · · · · · · · · · · · · ·	Bool	false	Non-retain	True	True True	False		
place_ext								
mpv	Bool	false	Non-retain	True	True True	False		
Correction	DInt	0	Non-retain	True	True True	False		
home_step	Int	0	Non-retain	True	True True	False		
Static								
PICKSTEP	Int	0	Non-retain	False	False False	False		
tele_exePick1	Bool	false	Non-retain	True	True True	False		
tele_exePick2	Bool	false	Non-retain	True	True True	False		
tele_exepick3	Bool	false	Non-retain	True	True True	False		
tele_exepick4	Bool	false	Non-retain	True	True True	False		
tele_exepick5	Bool	false	Non-retain	True	True True	False		
tele_exepick6	Bool	false	Non-retain	True	True True	False		
·		false						
Tele_Jog_pick	Bool		Non-retain	True	True True	False		
turn_exeplace	Bool	false	Non-retain	True	True True	False		
tele_exeplace1	Bool	false	Non-retain	True	True True	False		
tele_exePlace2	Bool	false	Non-retain	True	True True	False		
tele_exePlace3	Bool	false	Non-retain	True	True True	False		
tele_exePlace4	Bool	false	Non-retain	True	True True	False		
tele_exePlace5	Bool	false	Non-retain	True	True True	False		
tele_exePlace6	Bool	false	Non-retain	True	True True	False		
Tele_exepick7	Bool	false	Non-retain	True	True True	False		
tag1	Bool	false	Non-retain	False	False False	False		
Pick_sto	Bool	false	Non-retain	True	True True	False		
home_tele_step1	Int	0	Non-retain	True	True True	False		
Place_movein_sto	Bool	false	Non-retain	True	True True	False		
Tote_out_of_reach_2d	Bool	false	Non-retain	True	True True	False		
Place_movein_sto_1	Bool	false	Non-retain	True	True True	False		
Place_movein_sto_12	Bool	false	Non-retain	True	True True	False		
Retract_Place_step	Int	0	Non-retain	True	True True	False		
·						False		
Place_movein_sto_22	Bool	false	Non-retain	True	True True			
Place_movein_sto_23	Bool	false	Non-retain	True	True True	False		
tag2	Bool	false	Non-retain	False	False False	False		
disable_jog1	Bool	false	Non-retain	True	True True	False		
tote_out of reach	Bool	false	Non-retain	True	True True	False		
mov_trgt_jog	Bool	false	Non-retain	True	True True	False		
PLACESTEP	Int	0	Non-retain	False	False False	False		
turntable_dir	Int	0	Non-retain	False	False False	False		
tURN_fb_DEGREE	Int	0	Non-retain	True	True True	False		
	Int	0	Non-retain	False	False False	False		
t1	Int	0	Non-retain	False	False False	False		
t1	IIII		= *******				1	The second secon
t1 t2		0	Non-retain	False	False False	False		
t1	Int Bool	0 false	Non-retain Non-retain	False False	False False False False	False False		

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ame	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writ- Visible in able HMI engi- from neering HMI/ OPC UA	Setpoint	Supervi- sion	Comment
t6	Bool	false	Non-retain	False	False False	False		
t7	Bool	false	Non-retain	False	False False	False		
t8	Bool	false	Non-retain	False	False False	False		
picked	Bool	false	Non-retain	True	True True	False		
Deep	Int	0	Non-retain	True	True True	False		
forkupplace	Int	0	Non-retain	True	True True	False		
forkdownplace	Int	0	Non-retain	True	True True	False		
Lif_temp	Int	0	Non-retain	True	True True	False		
turntable pos	DInt	0	Non-retain	True	True True	False		
POSITION	DInt	0	Non-retain	True	True True	False		
Mov_turn_pos	Int	0	Non-retain	True	True True	False		
jog_count	Int	0	Non-retain	True	True True	False		
Material_op_temp	Int	0	Non-retain	True	True True	False		
Ext_Lift_offset	Int	0	Non-retain	True	True True	False		
Material_operation cmd	Int	0	Non-retain	True	True True	False		
Static_1	Int	0	Non-retain	True	True True	False		
Previous_Cmd	Int	0	Non-retain	True	True True	False		
Lateral_extension_mm	DInt	0	Non-retain	True	True True	False		
TelePick_extdeep1_mm	DInt	0	Non-retain	True	True True	False		
TelePick_extdeep2_mm	DInt	0	Non-retain	True	True True	False		
TelePlace_extdeep1_mm	DInt	0	Non-retain	True	True True	False		
TelePlace_extdeep2_mm	DInt	0	Non-retain	True	True True	False		
Telepick_Joglimit_deep2_mm	DInt	0	Non-retain	True	True True	False		
Telepick_Joglimit_deep1_mm	DInt	0	Non-retain	True	True True	False		
lateral_shift_doubledeep	DInt	0	Non-retain	True	True True	False		
Tele_stalled_oper_pick	Bool	false	Non-retain	True	True True	False		
Tele_fork_contact_pos	DInt	0	Non-retain	True	True True	False		
tele_exeplace7	Bool	false	Non-retain	True	True True	False		
tele_exePick8	Bool	false	Non-retain	True	True True	False		
turn_exePick_1	Bool	false	Non-retain	True	True True	False		
RACK_CYCLE	Int	0	Non-retain	False	False False	False		
Rack_Place_Cycle	Int	0	Non-retain	False	False False	False		
Turn_Corr_Step	Int	0	Non-retain	True	True True	False		
tele_execute_4	Bool	false	Non-retain	False	False False	False		
turn_table_offset	DInt	0	Non-retain	True	True True	False		
turn_offset1	DInt	0	Non-retain	True	True True	False		
turn_exePlace_1	Bool	false	Non-retain	True	True True	False		
error_factor	Int	0	Non-retain	True	True True	False		
Temp								
Constant								

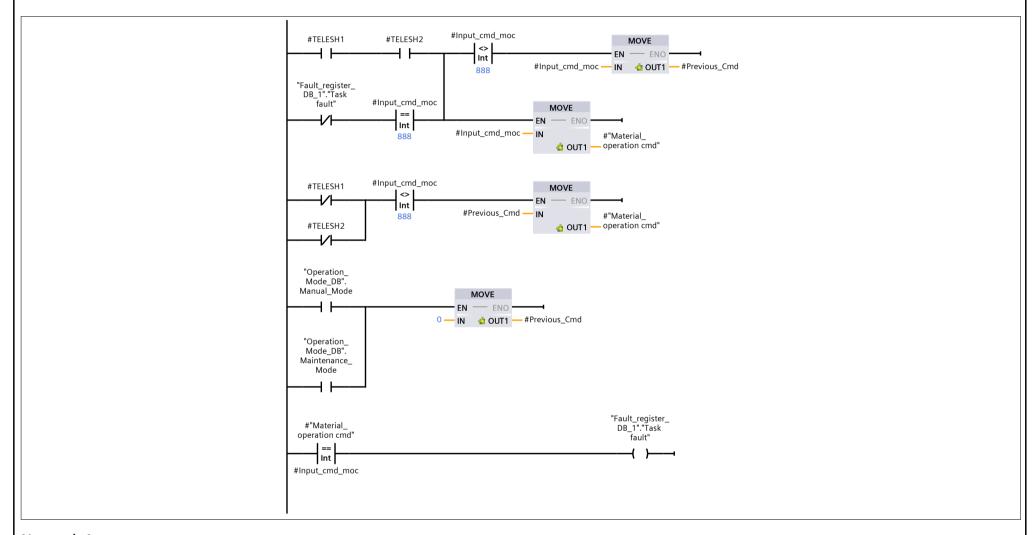
#### Network 2:

```
0001 IF #Lateral_offset > 40 AND #Deep=1 THEN
0002
         #Lateral_extension_mm := 40;
0003 ELSE
0004
         IF #Lateral_offset < 0 THEN</pre>
0005
             #Lateral_extension_mm := 0;
0006
0007
0008
0009
             IF #Lateral_offset > 0 AND #Lateral_offset < 40 THEN</pre>
0010
                 #Lateral_extension_mm := #Lateral_offset;
0011
0012
             END_IF;
0013
         END_IF;
0014 END_IF;
0015 IF #Lateral offset > 30 AND #Deep = 2 THEN
0016
        #lateral_shift_doubledeep := 30;
0017 ELSE
0018
         IF #Lateral_offset < 0 THEN</pre>
0019
             #lateral_shift_doubledeep := 0;
0020
0021
0022
         ELSE
0023
             IF #Lateral offset > 0 AND #Lateral offset < 30 THEN</pre>
                 #lateral shift doubledeep := #Lateral offset;
0024
0025
0026
             END IF;
0027
         END IF;
0028 END IF;
0029 #TelePick extdeep1 mm := #telepick exedeep1 extension + #Lateral extension mm - 20;
0030 #TelePick_extdeep2_mm := #telepick_exedeep2_extension + #lateral_shift_doubledeep- 20;
0031 #TelePlace_extdeep1_mm := #teleplace_exedeep1_extension + #Lateral_extension_mm- 20;
0032 #TelePlace_extdeep2_mm := #teleplace_exedeep2_extension + #lateral_shift_doubledeep- 20;
0033 #Telepick_Joglimit_deep1_mm := #tele_joglimit_extension_deep1 + #Lateral_extension_mm - 20;
0034 //#Telepick_Joglimit_deep2_mm := #tele_joglimit_extension_deep2 + #lateral_shift_doubledeep - 20;
```

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```
0035
0036 #Telepick_Joglimit_deep2_mm := 1400;
0037 IF #Telepick_Joglimit_deep1_mm >= 800 THEN
0038
         #Telepick Joglimit deep1 mm := 800;
0039
0040 END_IF;
0041
0042 IF #TelePlace_extdeep2_mm >= 1400 THEN
0043
         #TelePlace_extdeep2_mm := 1400;
0044
0045 END_IF;
0046 IF #TelePick_extdeep2_mm >= 1400 THEN
         #TelePick extdeep2 mm := 1400;
0047
0048
0049 END_IF;
0050 IF #Input cmd moc = 888 THEN
0051
         #Lift double place offset := 0;
0052
0053 END IF;
```

### Network 3:



### Network 4:

```
0001 #Lif temp := #Material op temp MOD 10;
0002 IF #PICK OR #PLACE THEN
0003
         #"Lift Position" := #Lif_temp;
0004 END_IF;
0005 IF \#t2 = 8 THEN
0006
         #"Lift Position" := 1;
0007
0008 END_IF;
0009 #Deep := #"Material operation cmd" / 1000;
0010
0011 #Material_op_temp := #"Material_operation cmd" MOD 1000;
0012
0013 #t1:=#Material op temp / 10;
0014 #turntable_dir := #t1 MOD 10;
0015
0016 #t2:= #t1/10;
0017 IF (\#t2 = 1) THEN
        #PICK := 1;
0018
0019
0020 END IF;
0021 IF (#t2 <>1) THEN
0022
        #PICK := 0;
0023 END IF;
0024 IF (\#t2 = 2) THEN
0025
        #PLACE := 1;
0026 END IF;
0027 IF (#t2 <> 2) THEN
0028
         #PLACE := 0;
0029 END_IF;
```

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```
0030 IF #Material_op_temp=0 THEN
0031
         #Mov_turn_pos := 0;
0032
0033 END_IF;
0034
0035
0036 IF #turntable_dir=1 AND #Material_op_temp>0 THEN
0037
         #"turntable pos" := -90;
0038
         #Mov_turn_pos := 1;
0039
0040
0041 END_IF;
0042
0043 IF #turntable_dir = 2 AND #Material_op_temp>0 THEN
        #"turntable pos" := 90;
0044
         #Mov turn pos := 2;
0045
0046
0047
0048 END IF;
0049 IF (\#turntable dir = 0 AND \#"Lift Position" <> 9) OR ((\#t2 = 8))THEN
0050
         #"turntable pos" := 0;
0051
         #Mov turn pos := 3;
0052
0053 END IF;
0054 (*IF #Mov turn pos >0 AND #Mov turn pos <4 AND #"Material operation cmd">0 THEN
0055 #mOVE TURN TARGET := 1;
0056 ELSE
0057 #mOVE TURN TARGET := 0;
0058;
0059 END_IF;
0060 *)
0061 IF #PICK AND #PICKSTEP < 1 THEN
        #turn_offset := 2000;
0063 END IF;
0064 IF #turntable dir = 0 OR (#t2 = 8) THEN
        #turn offset := 2000;
0066 END IF;
0067 IF #PLACE AND #PLACESTEP < 1 THEN
         #turn offset := 2000;
0069 END IF;
0070
0071 IF #Turn Corr Step < 2 THEN
0072
        IF #turn offset <> 2000 THEN
0073
             IF #turn offset1 >= 1000 THEN
0074
                 #turn offset1 := 1000;
0075
0076
             END IF;
0077
0078
             IF #turn offset1 <= 0 THEN</pre>
0079
                 #turn offset1 := 0;
0080
0081
             END IF;
0082
0083
             IF #turn offset <= 1000 AND #turn offset >= 0 THEN
0084
                 #turn offset1 := #turn offset;
0085
0086
             END_IF;
0087
         ELSE
0088
             #turn_offset1 := 500;
0089
         END_IF;
0090 END IF;
0091
0092 \#turn_table_offset := (\#turn_offset1 - 500) * (86231578/10000) /100; // (x-500)/100 becomes int
0093
0094 #POSITION := #"turntable pos" * (86231578/10000) + #turn_table_offset;//7957.0193// 7680.185; //408.8888 //
0095 IF #POSITION > 819200 THEN
0096
         #tURN_CMD_POS := 819200;
0097
0098
0099 END IF;
0100 IF #POSITION < -819200 THEN
0101
        #tURN CMD POS := -819200;
0102
0103 END IF;
0104 IF #POSITION >= -819200 AND #POSITION <= 819200 THEN
0105
         #tURN_CMD_POS := #POSITION;
0106
0107 END IF;
0108 #tURN_fb_DEGREE := ABS(#"Turn Act pos" / (86231578/10000));
0109
0110 #error factor := 20; // Error factor value in error = 1 degree
0111
0112 #"turn error":=ABS(((#"Turn Act pos"*10)/(86231578/10000))-#"turntable pos"*10-((#turn table offset*10)/
     (86231578/10000))); //Scaling error to turn error 10 factor means 10 = 1 degree error
0113 #"tele error" := ABS(#"tele Act pos" - #"telescope position");
0114 IF #PICK = 1 AND #turntable dir <> 0 THEN
0115
         #pick ext := 1;
0116
         #mpv := 0;
```

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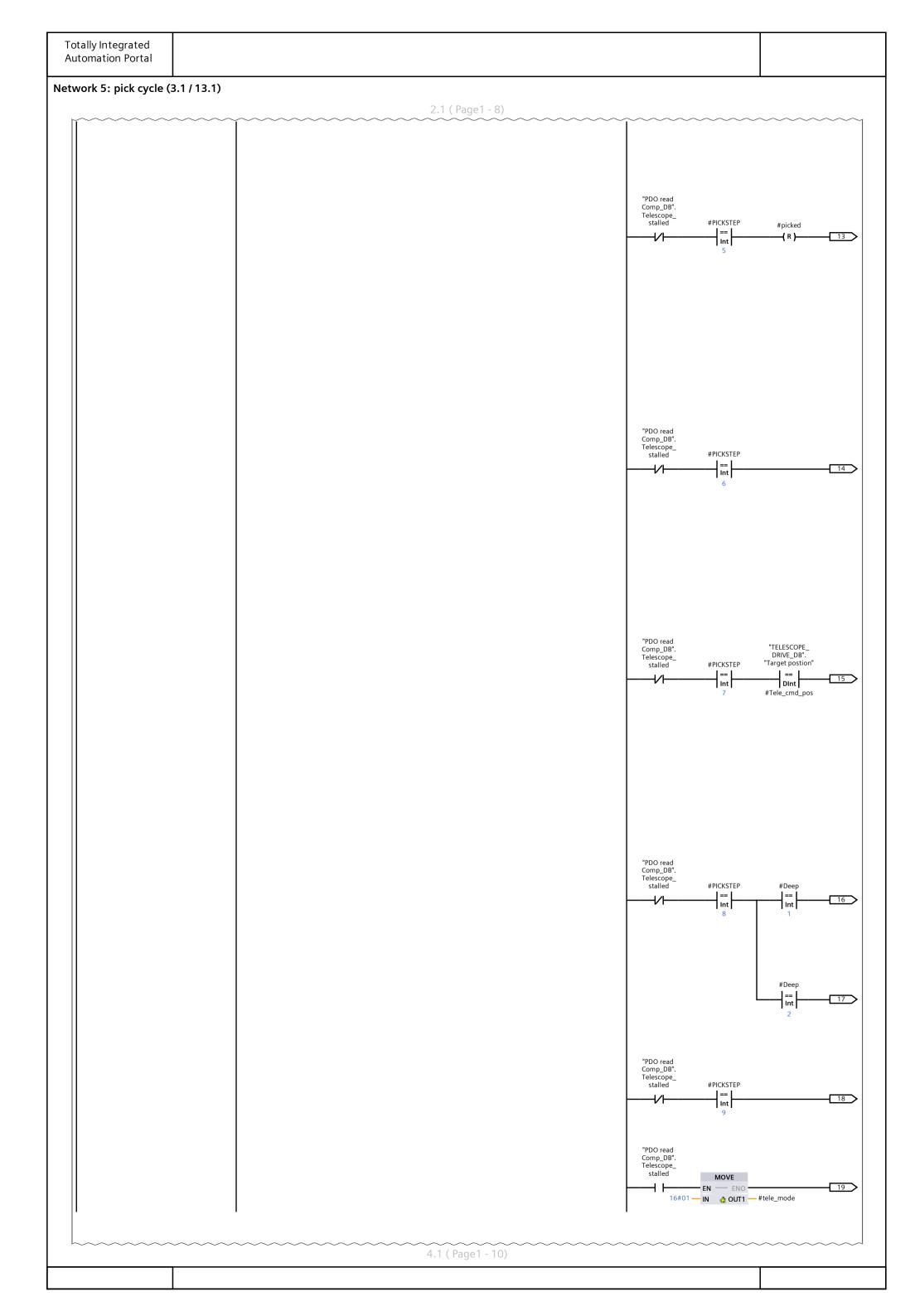
```
0117
         #place_ext := 0;
0118
0119
0120 END_IF;
0121 IF #PLACE = 1 AND #turntable_dir <> 0 THEN
0122  #place_ext := 1;
0123
      #pick_ext := 0;
0124
      #mpv := 0;
0125
0126
0127
0128 END_IF;
0129 IF (#PLACE = 1 OR #PICK=1 OR #t2 = 8 ) AND (#turntable_dir =8 OR #turntable_dir =0 ) THEN
0130  #place_ext := 0;
0131
       #pick ext := 0;
0132 #mpv := 1;
0133
0134 END IF;
0135 "MODBUS_DATA".d_icd[25] := 1;
0136;
0137 "MODBUS DATA".d icd[18] := #PICKSTEP;
0138 "MODBUS DATA".d icd[19] := #PLACESTEP;
0139 #Tele_cmd_pos := (1426253 / 1000) * #"telescope position";
0140
0141 IF #Lift Barcode pick offset >= 250 THEN
        #Lift_Barcode_pick_offset := 250;
0142
0143
0144 END_IF;
0145
0146 IF #Lift_Barcode_pick_offset <= 0 THEN</pre>
0147 #Lift_Barcode_pick_offset := 0;
0148
0149 END_IF;
0150
0151 IF #Lift_Rack IN Offset >= 200 THEN
        #Lift Rack IN Offset := 200;
0153
0154 END_IF;
0155
0156 IF #Lift Rack IN Offset <= 0 THEN
       #Lift_Rack_IN_Offset := 0;
0158
0159 END_IF;
```

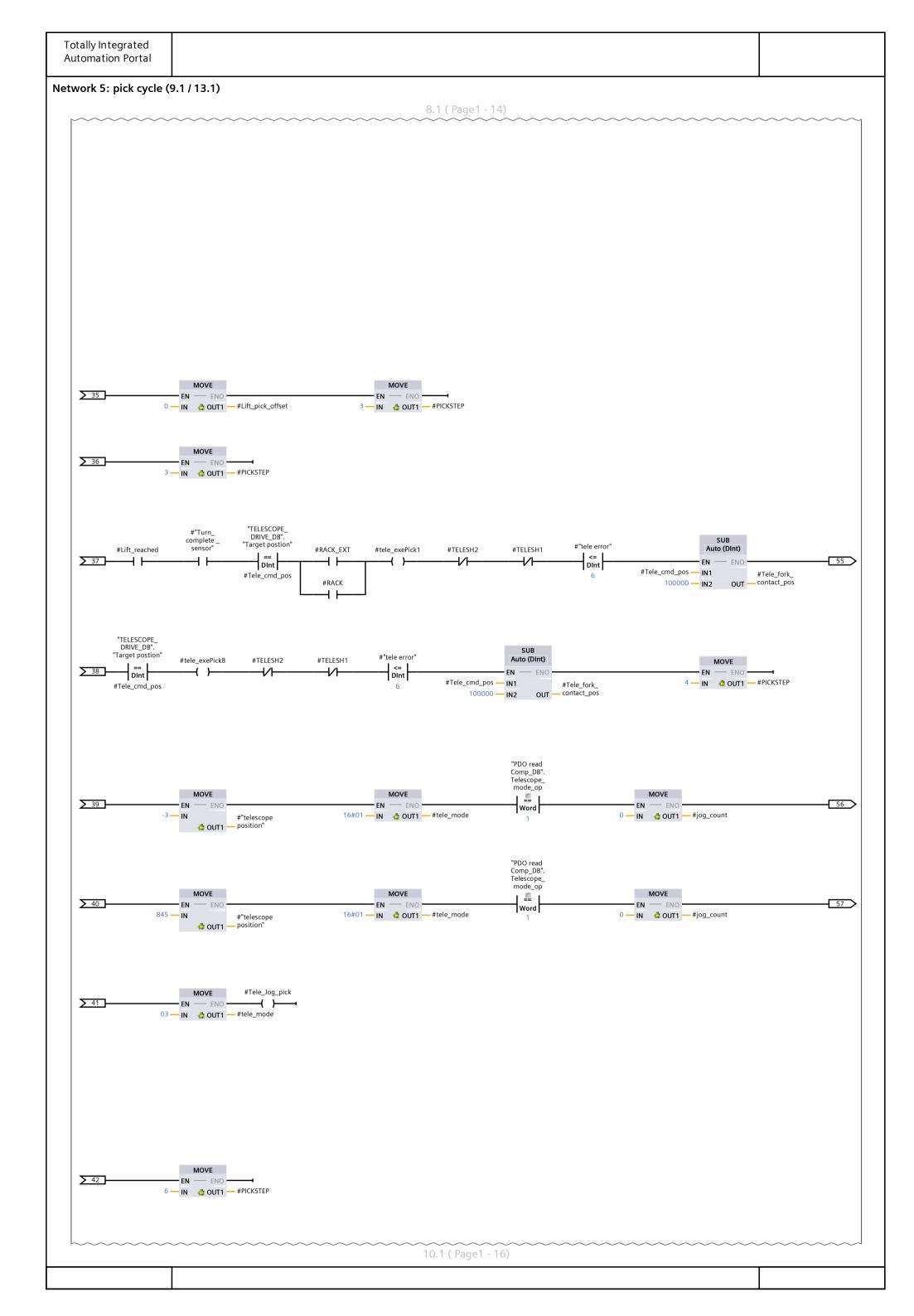
Network 5: pick cycle

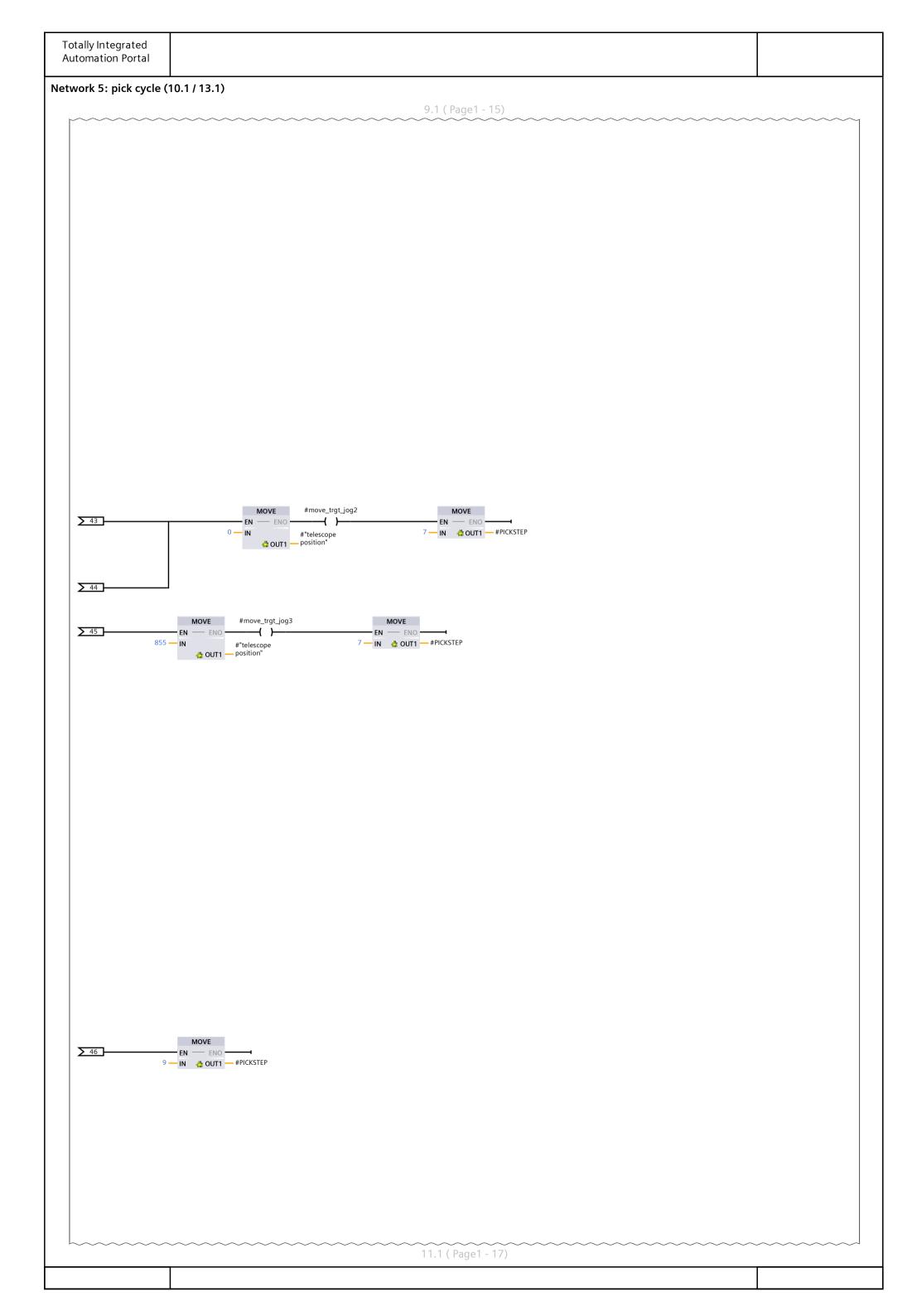
Totally Integrated **Automation Portal** Network 5: pick cycle (1.1 / 13.1) **%DB124**"IEC\_Timer\_O\_
DB\_43" TON #PICKSTEP Time Q -MOVE #pick\_comp #reset | <> |nt| == | Int | EN --- ENO 01 — IN 🛕 OUT1 — #Turn\_mode #PICK #PLACE MOVE MOVE <del>-</del>//----- EN --- ENO -EN - ENO 0 — IN "MODBUS\_ DATA".d\_ OUT1 — icd[26] MOVE MOVE - EN --- ENO -EN - ENO 0 — IN "MODBUS\_ DATA".d\_ OUT1 — icd[21] "PDO read Comp\_DB". Telescope\_ stalled MOVE EN - ENO #"telescope

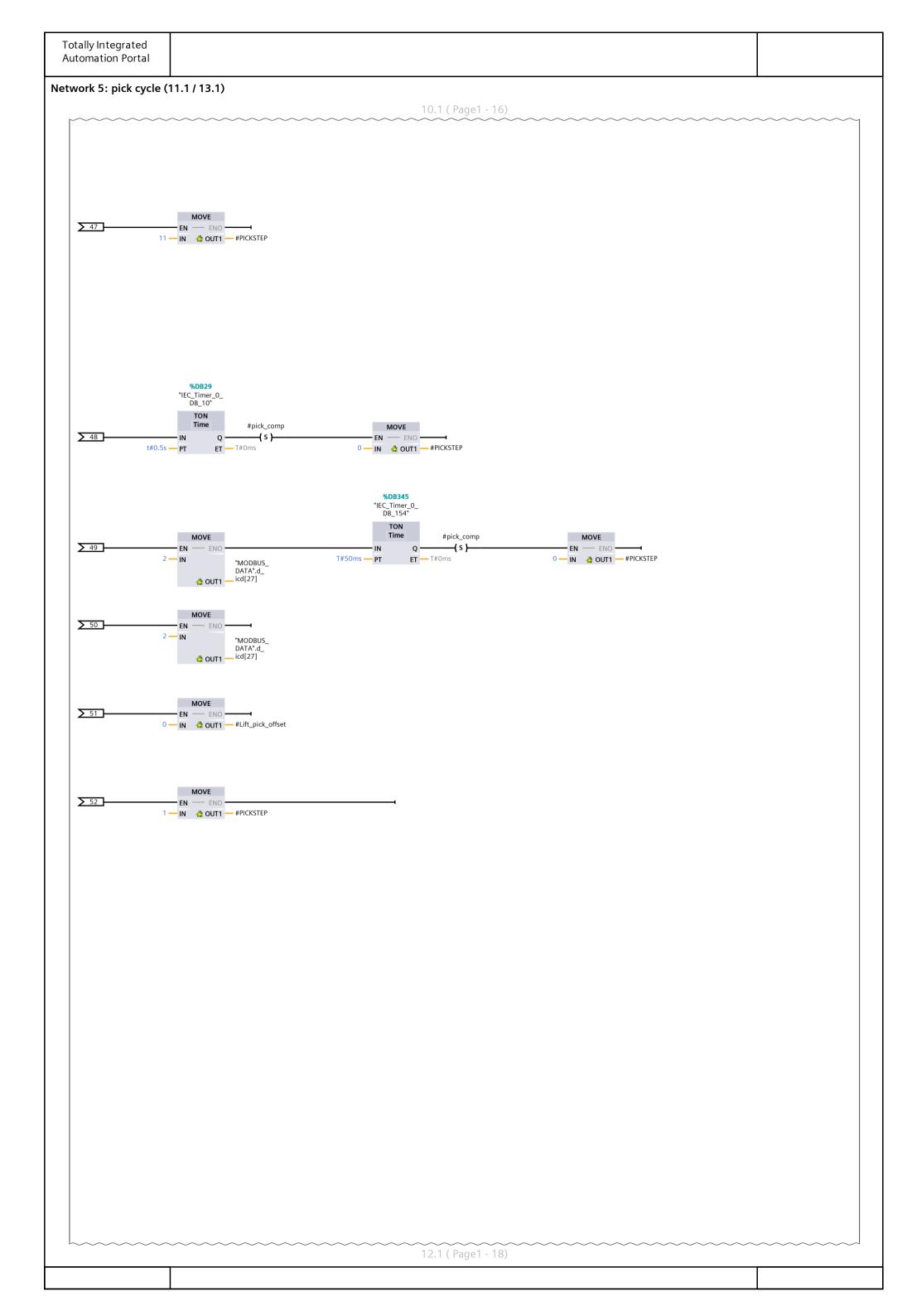
d OUT1 — position" 0 — IN #"tote\_out of reach" #PICK MOVE - EN --- ENO -#STO #pick\_comp MOVE #PLACE —( R )— EN - ENO 0 — IN "MODBUS\_ DATA".d\_
icd[24] #t2 == Int "PDO read Comp\_DB". Telescope\_ stalled #PICKSTEP == Int "PDO read Comp\_DB". Telescope\_ stalled #Turn\_Corr\_Step #PICKSTEP | == | Int | == | Int | <u>3</u> 2.1 ( Page1 - 8)

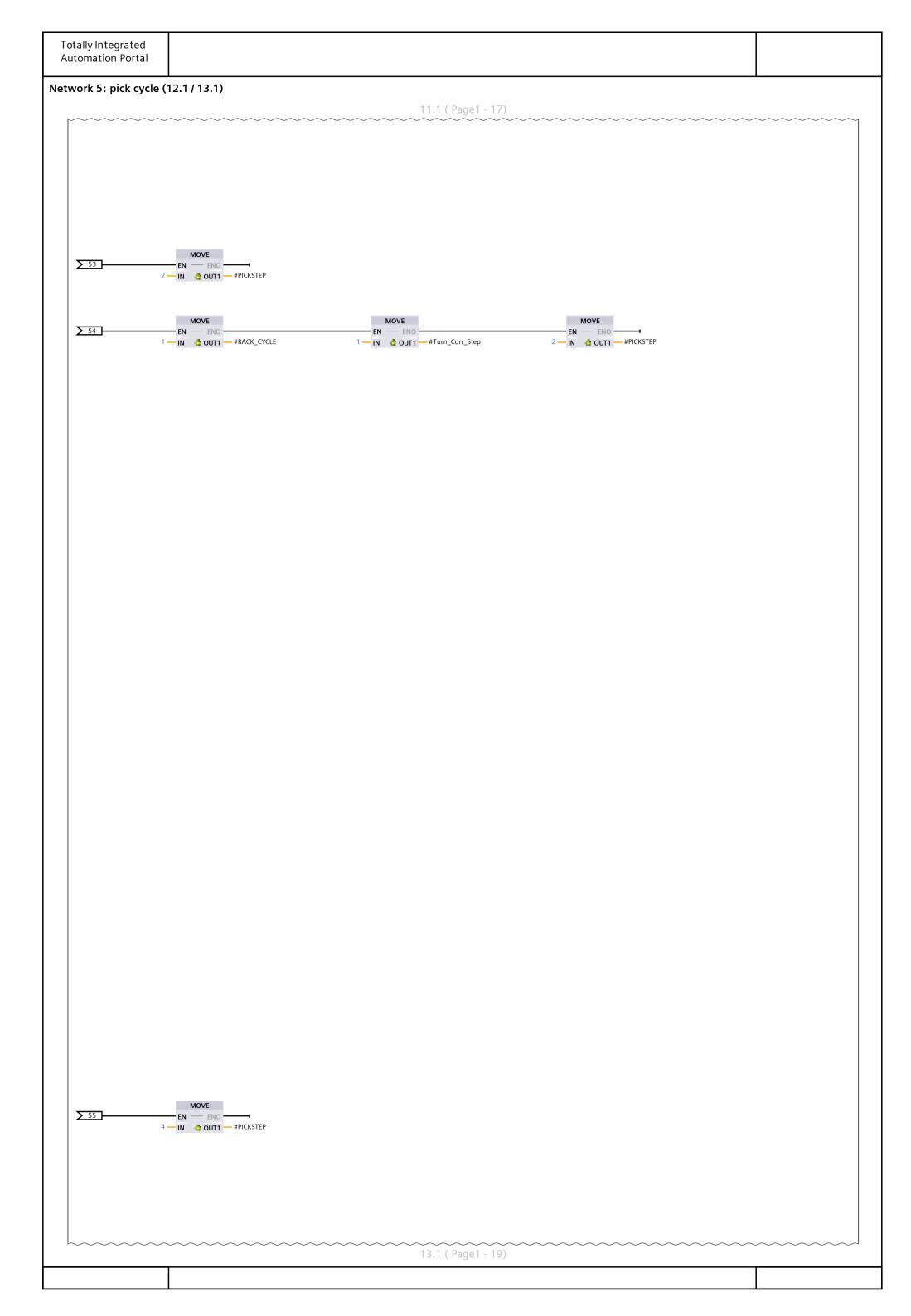
1.1 (Page 1-7)   1.2 (Page 1-7)   1.3 (Page 1-7)   1.4 (Page 1-7)   1.5		
"PDO read Comp. Difference of the comp. Difference of	~~~~~	~~~~
"PDO read Comp.DB". Telescope_ solids  "PDO read Comp.DB". Telescope_ solids  "PDO read Comp.DB". Telescope_ solids	#PICKSTEP #TELES	
"PDO read Comp_DB". Telescope_ stalled	#PICKSTEP #RACK_C ==   ==   ==   Int   2 3	t 6
"PDO read Comp_DB". Telescope_ stalled	#PICKSTEP #turntab	ble_dir
	#turntab ==   Int	ble_dir = t 8 >> ble_dir
	#PICKSTEP #Pick_   ==	_sto <b>/ </b>
	#Pick_	_sto 











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Network 5: pick cycle (1	13.1 / 13.1)  12.1 ( Page1 - 18)	~~~~~
<b>&gt;</b> 56 <b>]</b>	MOVE	
5-	— EN — ENO —————————————————————————————	
<b>&gt;</b> 57 <b>]</b>	MOVE — EN — ENO	
5 •	IN ♣ OUT1 — #PICKSTEP	

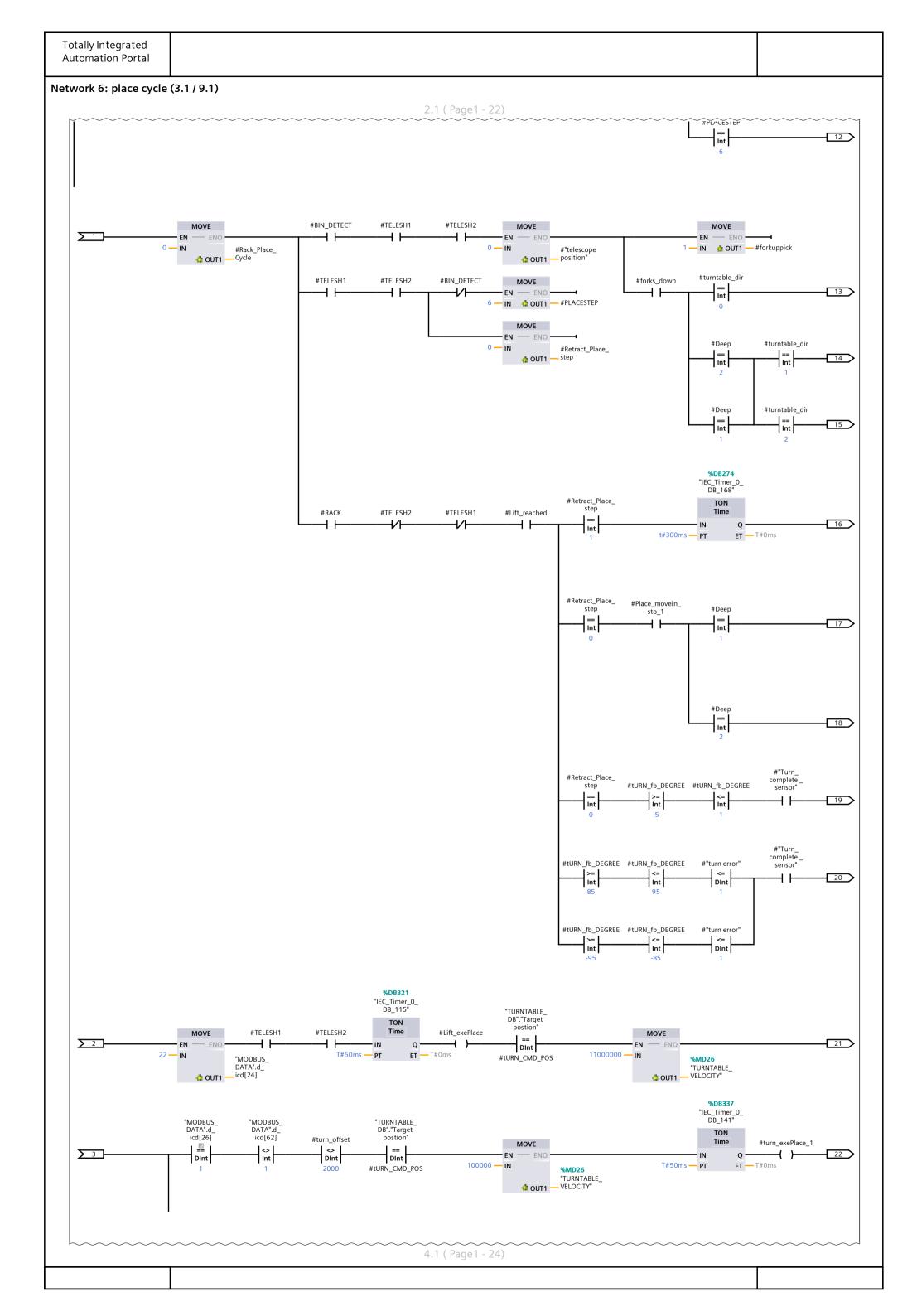
Totally Integrated Automation Portal		
Network 6: place cyc	le	
l		

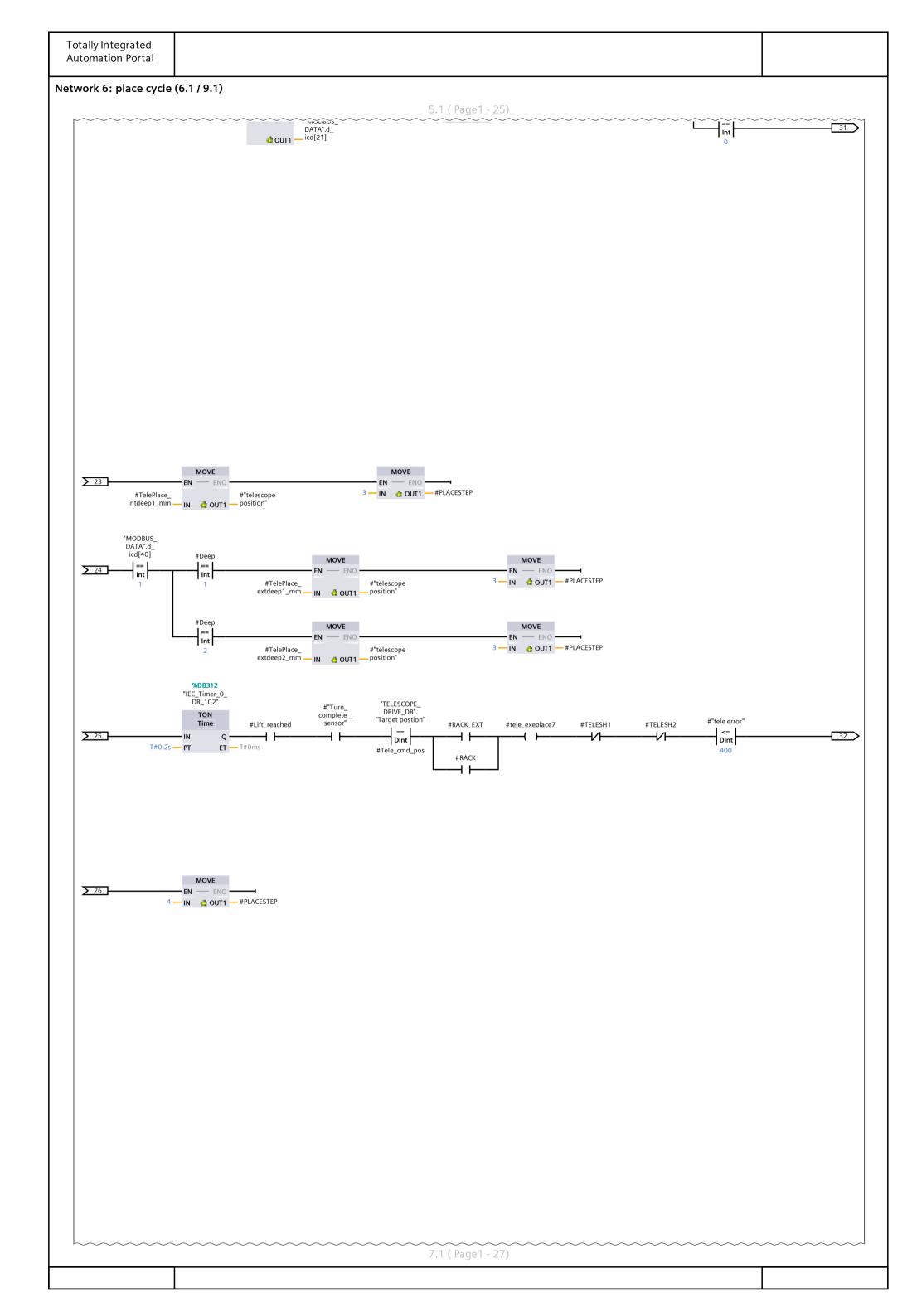
Totally Integrated **Automation Portal** Network 6: place cycle (1.1 / 9.1) **%DB99**"IEC\_Timer\_0\_
DB\_19" "PDO read Comp\_DB". Telescope\_ stalled "Operation\_ Mode\_DB". Auto\_Mode TON Time Q = #t2 #PLACESTEP #reset #PLACE MOVE #place\_comp | <> |nt| == | Int | 1 — EN — ENO -01 — IN 👍 OUT1 — #Turn\_mode t#3s — **PT** ET — T#0ms #PLACE #place\_comp MOVE EN - ENO 0 — IN ♣ OUT1 — #PLACESTEP #STO #PICK

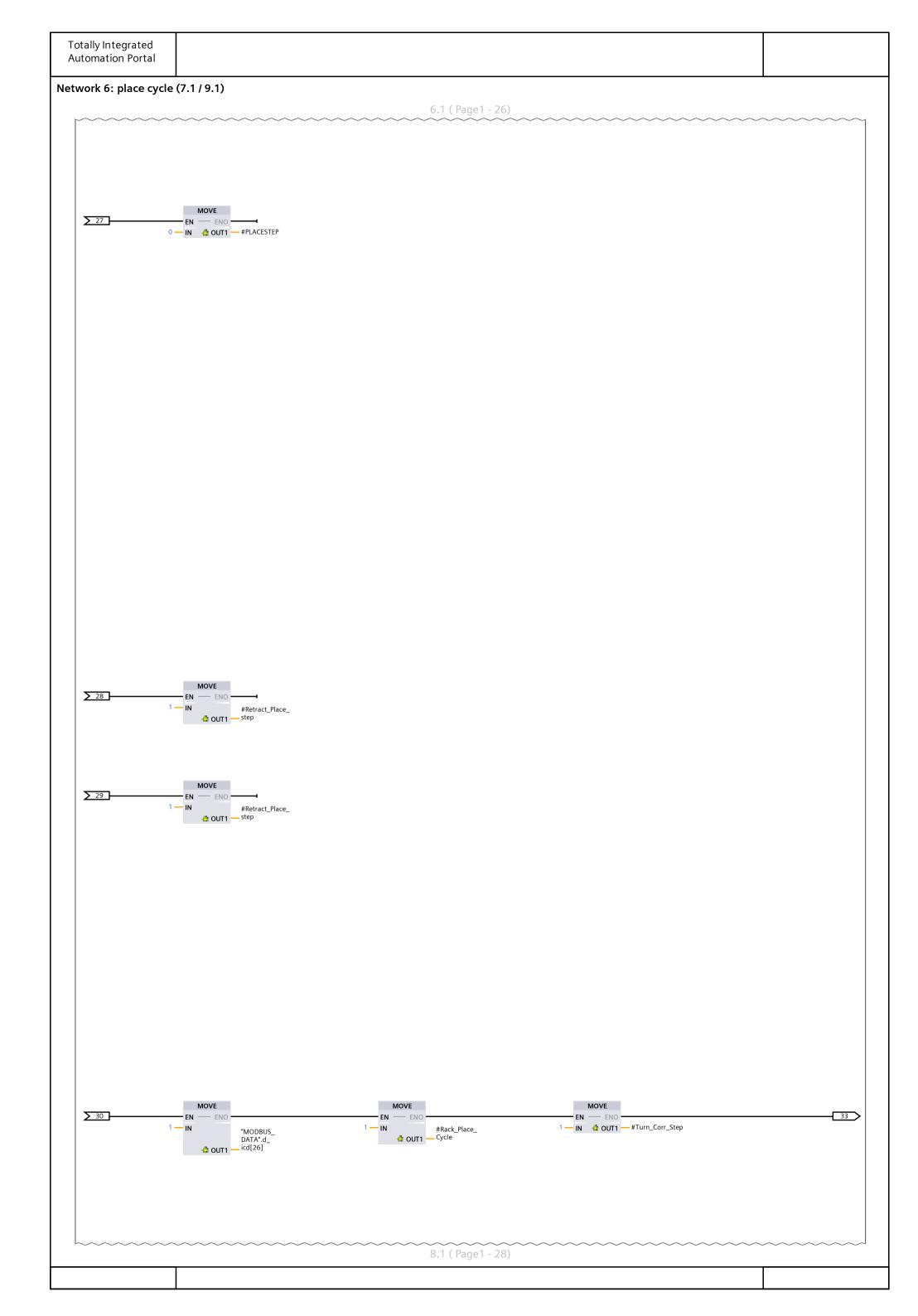
MOVE <del>-</del>|/|-EN - ENO 0 — IN "MODBUS\_ DATA".d\_ OUT1 — icd[24] #t2 == Int MOVE MOVE EN - ENO EN - ENO 0 — IN 0 — IN 👍 OUT1 — #Lift\_pick\_offset "MODBUS\_ DATA".d\_ icd[23] #PLACESTEP

2.1 ( Page1 - 22)

Totally Integrated **Automation Portal** Network 6: place cycle (2.1 / 9.1) 1.1 ( Page1 - 21) #Rack\_Place\_ Cycle #Turn\_Corr\_Step == | Int == | Int | #Rack\_Place\_ Cycle #PLACESTEP == Int == | Int | #Rack\_Place\_ Cycle #PLACESTEP == | Int | 2 #PLACESTEP #turn\_exeplace == Int **-1**/1-#PLACESTEP #forks\_up | == | Int | 8 "TELESCOPE\_ DRIVE\_DB". "Target postion" == DInt #Tele\_cmd\_pos #PLACESTEP #"tele error" == | | Int | | 5 <= DInt #"Turn\_ complete \_ sensor" 3.1 ( Page1 - 23)







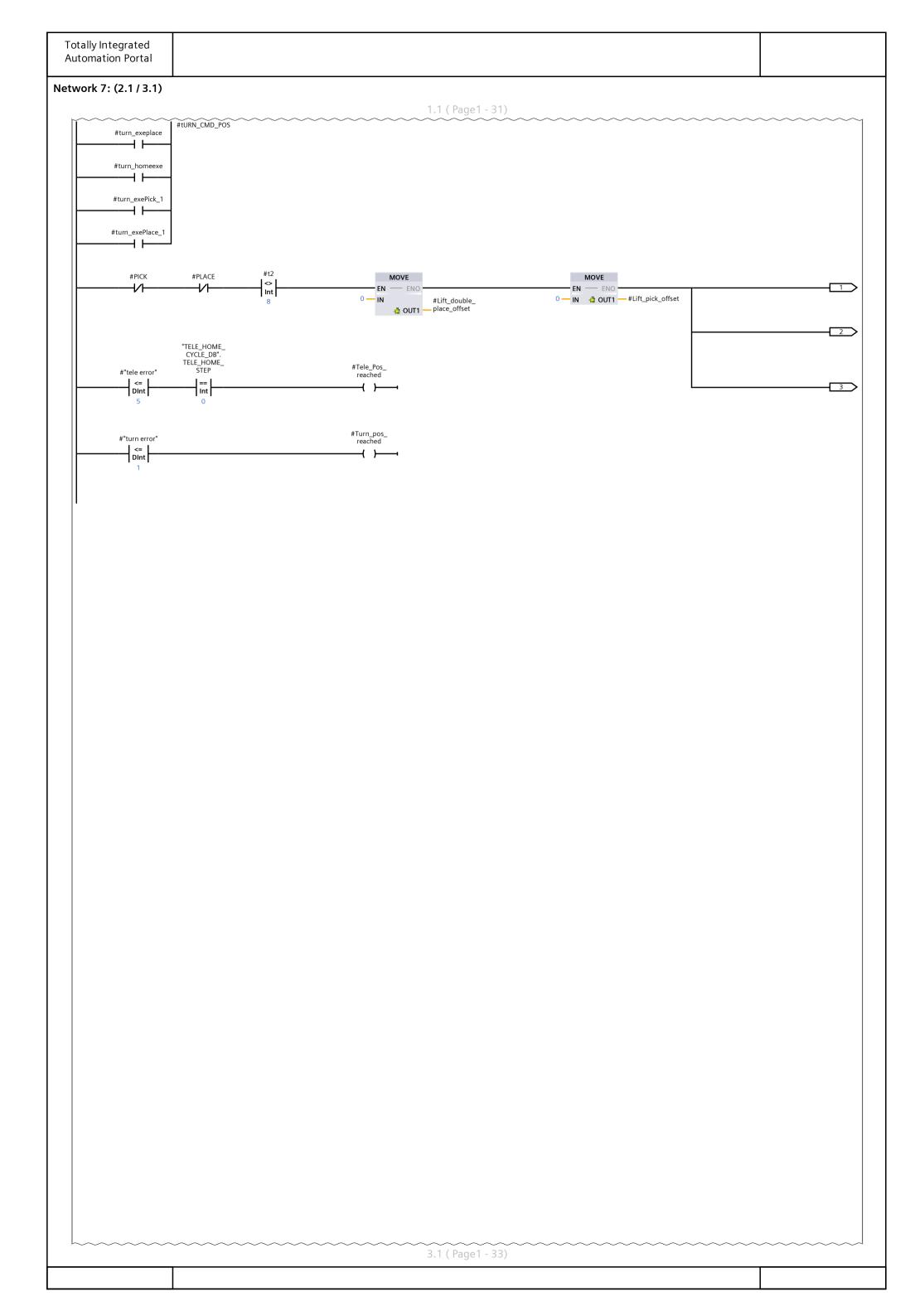
Totally Integrated								
Automation Portal					_			
Network 6: place cycle (8.1 / 9.1)  7.1 ( Page1 - 27)								
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
31	MOVE EN — ENO	MOVE EN — ENO — #Turn Corr Stop	MOVE EN ENO					
3	── IN #Rack_Place_	2 — IN 👍 OUT1 — #Turn_Corr_Step	2 — IN 👍 OUT1 — #PLACESTEP					
	MOVE	MOVE						
2	EN ENO IN OUT1 #forkuppick	4 — IN OUT1 — #PLACESTEP						
		9.1 ( Page1 - 29)			_			

T A	otally Integrated utomation Portal		
	work 6: place cycle		
Net	33	(9.119-1) 8.1 (Pagel - 28) 8.3 on — masur	

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Totally Integrated Automation Portal	
Network 7:	

Totally Integrated **Automation Portal** Network 7: (1.1 / 3.1) #"Turn\_ complete \_ sensor" #Telescope\_ execute #tele\_exePick1  $\dashv$   $\vdash$  $\prec$   $\vdash$ #tele\_exePick2  $\dashv$   $\vdash$ #tele\_exepick4  $\dashv \vdash$ #tele\_exepick3 #tele\_exeplace1  $\dashv \vdash$ #tele\_exePlace2  $\dashv \vdash$ #tele\_exepick5  $\dashv \vdash$ #tele\_exepick6  $\dashv$   $\vdash$ #tele\_exePlace4  $\dashv \vdash$ #tele\_exePlace5  $\dashv$   $\vdash$ #tele\_exePlace6  $\dashv \vdash$ #tele\_exehome1  $\dashv$   $\vdash$ #Tele\_exepick7  $\dashv \vdash$ #Tele\_Jog\_pick  $\dashv \vdash$ #tele\_exehome  $\dashv \vdash$ #tele\_exehome1  $\dashv \vdash$ #tele\_exePlace3  $\dashv \vdash$ #tele\_exeplace7  $\dashv \vdash$ #tele\_execute\_4  $\dashv$   $\vdash$ #tele\_exePick8  $\dashv \vdash$ #Lift\_execute #Lift\_exePick  $\dashv \vdash$ #Lift\_exePlace #lift\_exe\_picko1  $\dashv \vdash$ #lift\_homeexe #lift\_exe\_placeo1  $\dashv \vdash$ #LIFT\_EXE\_ PICK\_SINGLE #Lift\_QR\_scan\_ exe #Lift\_Place\_ QR\_CMD  $\dashv \vdash$ #Lift\_D\_exe  $\dashv \vdash$ "TURNTABLE\_ DB"."Target postion" #Turntable\_ execute #turn\_exePick == Dint 2.1 ( Page1 - 32)



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Netw	ork 7: (3.1 / 3.1)	2.1 ( Page1 - 32)	
	2 0	2.1 ( Page 1 - 32 )  2.1 ( Pag	

Totally Integrated Automation Portal		
Network 8:		
	#forkuppick  #fork	
	#"Material_ operation cmd"  == Int Nove EN ENO IN #Lift_double_ place_offset	
Network 9: Homing	<u>I</u>	

Totally Integrated **Automation Portal Network 9: Homing (1.1 / 2.1)** %DB99 "IEC\_Timer\_0\_ DB\_19" "IEC\_Timer\_0\_ DB\_120" "PDO read Comp\_DB". Telescope\_ stalled "Operation\_ Mode\_DB". Auto\_Mode TON TON #t2 #TELESH2 #TELESH1 #lift\_homeexe #reset == Int Q · Q· t#3s — **PT ET** — T#0ms #STO MOVE #home\_tele\_ step1 EN - ENO #"tele Act pos" 0 — IN #home\_tele\_ ♣ OUT1 — step1 #TELESH1 #TURNATEXT == Int #reset DInt #TELESH2 <del>-</del>//-#TURNATEXT ---#"tele Act pos" DInt %DB283 "IEC\_Timer\_0\_ DB\_177" #home\_tele\_ step1 TON == Int 4 - IN #home\_tele\_ step1 MOVE #forks\_up == Int EN --- ENO -2 — IN 🐴 OUT1 — #forkuppick #home\_step #TELESH1 #TELESH2 MOVE #turn\_homeexe | == | Int | EN - ENO 11000000 — IN %MD26 "TURNTABLE\_
VELOCITY" **%DB121**"IEC\_Timer\_O\_
DB\_40" TON #home\_step Time == Int · IN Q· #home\_888  $\leftarrow$   $\succ$ MOVE EN - ENO 1 — IN 👍 OUT1 — #home\_step #"tele Act pos" #"tele Act pos" MOVE #tele\_exehome MOVE >= DInt - | < Dint EN - ENO EN - ENO 830 — IN 1 — IN #home\_tele\_ #"telescope 820 835 - OUT1 — position" d OUT1 — step1 MOVE EN ENO #home\_tele\_
data OUT1 step1 #"tele Act pos" #"tele Act pos" MOVE >= Dint | < | Dint 820 #home\_tele\_ - step1 %DB284 "IEC\_Timer\_0\_ DB\_178" TON 2.1 ( Page1 - 36)

### And 13  **TORK, UP. CMD**  **MASS**  **TORK, UP. CMD**  **MASS**  **TORK, UP. CMD.*
### ### ### ### ######################
Network 11: Traction_Safety_Stop  #### PELESH1 #TELESH2 #*Net Act pos* **Always #A.SE* #Traction_Estop1
Network 11: Traction_Safety_Stop  ##Um_act_deg ##um_act_d
Network 11: Traction_Safety_Stop  ##ELESH1 #TELESH2 #*tele Act poo' *Always ALS*  #fork.up
Network 11: Traction_Safety_Stop  #TELESH1 #TELESH2 #"tele Act pos" "AlwaysFAISE" #Traction_Estop1    #Tomacl_deg #turn_acl_deg #turn_acl_deg "AlwaysFAISE"   #Traction_Estop2   #Traction_Estop3   #Tracti
Network 11: Traction_Safety_Stop  #TELESH1 #TELESH2 #*tele Act pos' "AlwaysFALSE" #Traction_Estop1  #Tum_act_deg #tum_act_deg "AlwaysFALSE" #Traction_Estop2  #Tum_act_deg #tum_sct_deg "AlwaysFALSE" #Traction_Estop2
#TELESH1 #TELESH2 #*tele Act pos* *AlwaysFALSE* #Traction_Estop1  20  #turn_act_deg #turn_act_deg *AlwaysFALSE*    Dint   Dint   South Shows Sho
#TELESH1 #TELESH2 #*tele Act pos* *AlwaysFALSE* #Traction_Estop1  20  #turn_act_deg #turn_act_deg *AlwaysFALSE*    Dint   Dint   South Shows Sho
#turn_act_deg #turn_act_deg "AlwaysFALSE"    Dint   Dint   Dint   -800   800   -800
#turn_act_deg #turn_act_deg "AlwaysFALSE"    Dint
-800 800
Network 12: Process Error Feedback

Totally Integrated **Automation Portal** Network 12: Process Error Feedback (1.1 / 3.1) %DB218 "PICK\_TO" TON #PICKSTEP Time #PICK #TELESH1 MOVE == | Int | ---IN Q - EN --- ENO -16#1001 — IN 👍 OUT1 — #process\_error #TELESH1 <del>-//</del>| %DB232 "PICK\_T0\_1" TON #BINC1 MOVE -|/| - EN - ENO -16#1002 — IN 👍 OUT1 — #process\_error #BINC2  $\dashv \prime \vdash$ %DB261 "PICK\_T0\_2" TON #BIN\_DETECT Time · IN Q -- EN --- ENO -16#1080 IN d OUT1 — #process\_error **T#15s** — **PT ET** — **T#**0ms %DB263 "PICK\_T0\_3" TON IN Q "PICK\_T1" TON #PICKSTEP #TELESH1 EN - ENO -Q-Int #TELESH1  $\dashv \prime \vdash$ TON %M1.2 #PICKSTEP "AlwaysTRUE" Time IN Q EN - ENO -%DB235 "MODBUS\_ DATA".d\_ "PICK\_T3" MOVE EN — ENO -TON #PICKSTEP icd[40] ACK\_EXT Time

IN Q

T#15s PT ET T#0ms #Deep Int Int Int 16#1004 — IN 🍓 OUT1 — #process\_error %DB236 "PICK\_T3\_1" MOVE #Deep #RACK #RACK\_EXT |==| Int| T#15s PT ET T#0ms 16#1008 IN ♣ OUT1 #process\_error %DB237 #"Turn\_ TON complete \_ sensor" Time EN - ENO -16#1010 IN d OUT1 — #process\_error %DB237 "PICK\_T3\_2" #"Turn\_ complete \_ #TELESH1 Time sensor"

 $\dashv \vdash$ - IN Q -EN - ENO 16#1001 IN OUT1 - #process\_error T#15s — PT ET — T#0ms #TELESH2 %DB238 "PICK\_T4" TON #PICKSTEP #BINC1 Time MOVE == Int <del>-//</del>} EN - ENO Q T#15s — PT 16#1002 — IN 👍 OUT1 — #process\_error ET — T#0ms #BINC2 <del>-//</del>| **%DB241**"PICK\_T5" #PICKSTEP #forks\_down Time MOVE EN - ENO Int 16#1020 — IN ... OUT1 — #process\_error T#15s -2.1 ( Page1 - 39)