Color Sorter Project / PLC_1 [CPU 1511-1 PN] / 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	Automation of Raw Material Sorting Station	Family	
Version	0.1	User-defined ID					

Main

Name	Data type	Default value	Comment
▼ Input			
Initial_Call	Bool		Initial call of this OB
Remanence	Bool		=True, if remanent data are available
Temp			
Constant			
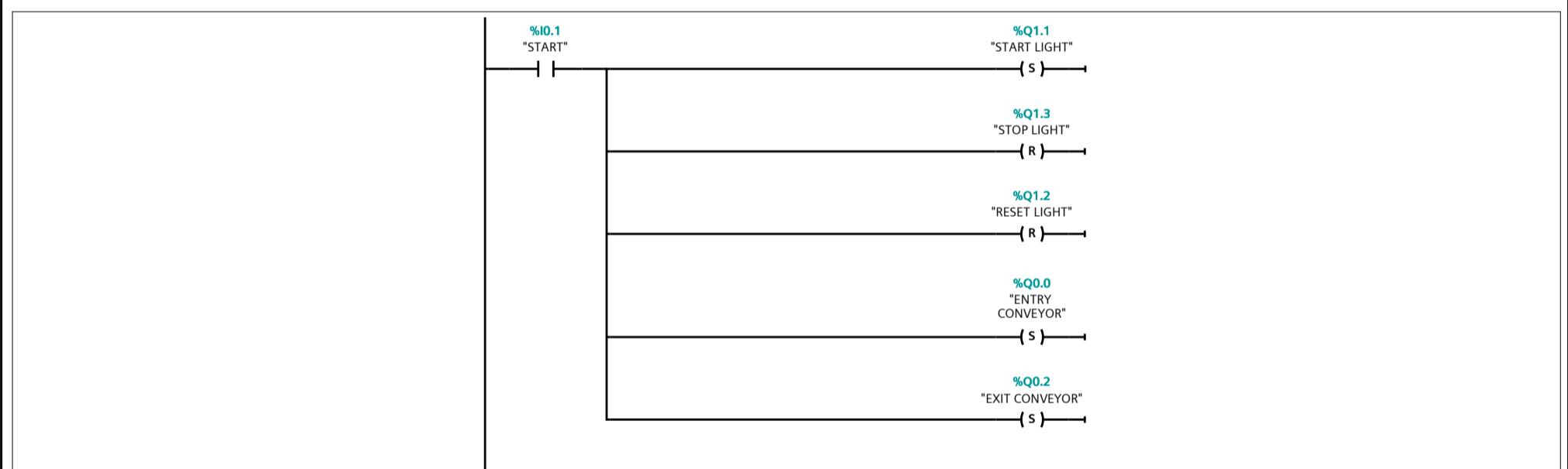
Network 1: PLC & FACTORY IO

Connects Tia Portal with Factory IO

```
                          %FC9000
                "MHJ-PLC-Lab-Function-S71500"
              EN                          ENO
```
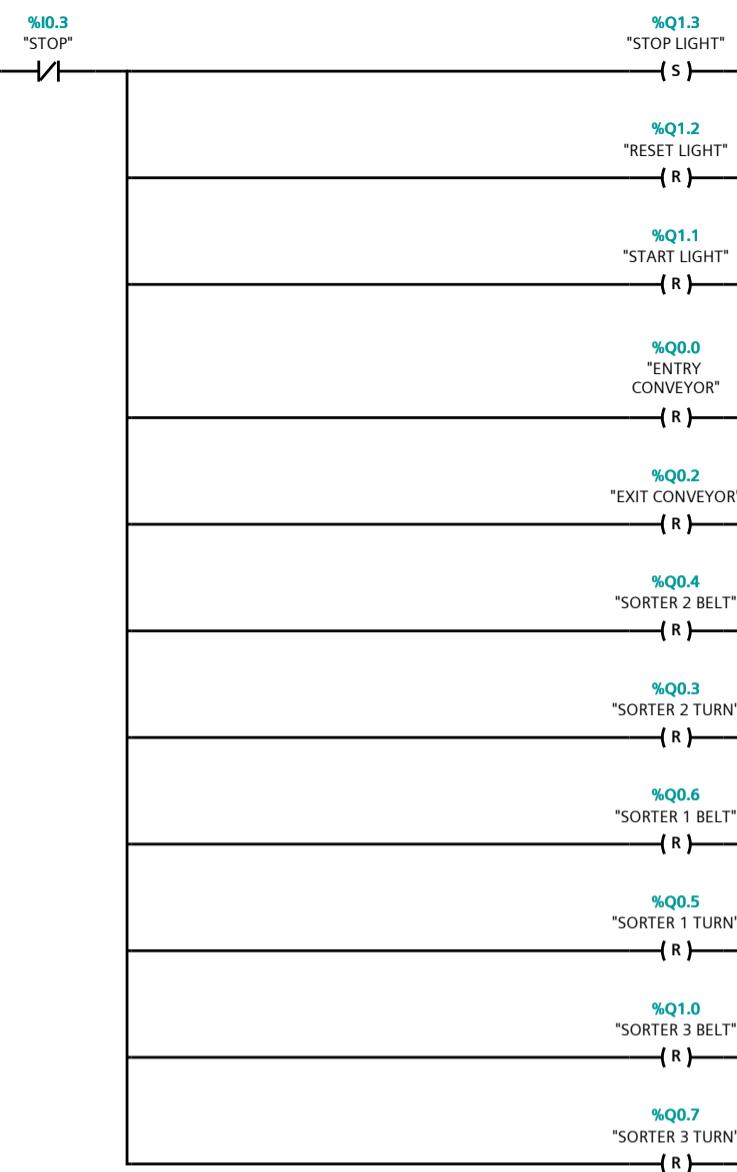
Network 2: START

Setting up the start button

```
    %I0.1                              %Q1.1
   "START"                          "START LIGHT"
    ─┤ ├──┬───────────────────────────( S )──

                                       %Q1.3
                                    "STOP LIGHT"
                         ├───────────( R )──

                                       %Q1.2
                                    "RESET LIGHT"
                         ├───────────( R )──

                                       %Q0.0
                                  "ENTRY CONVEYOR"
                         ├───────────( S )──

                                       %Q0.2
                                  "EXIT CONVEYOR"
                         └───────────( S )──
```
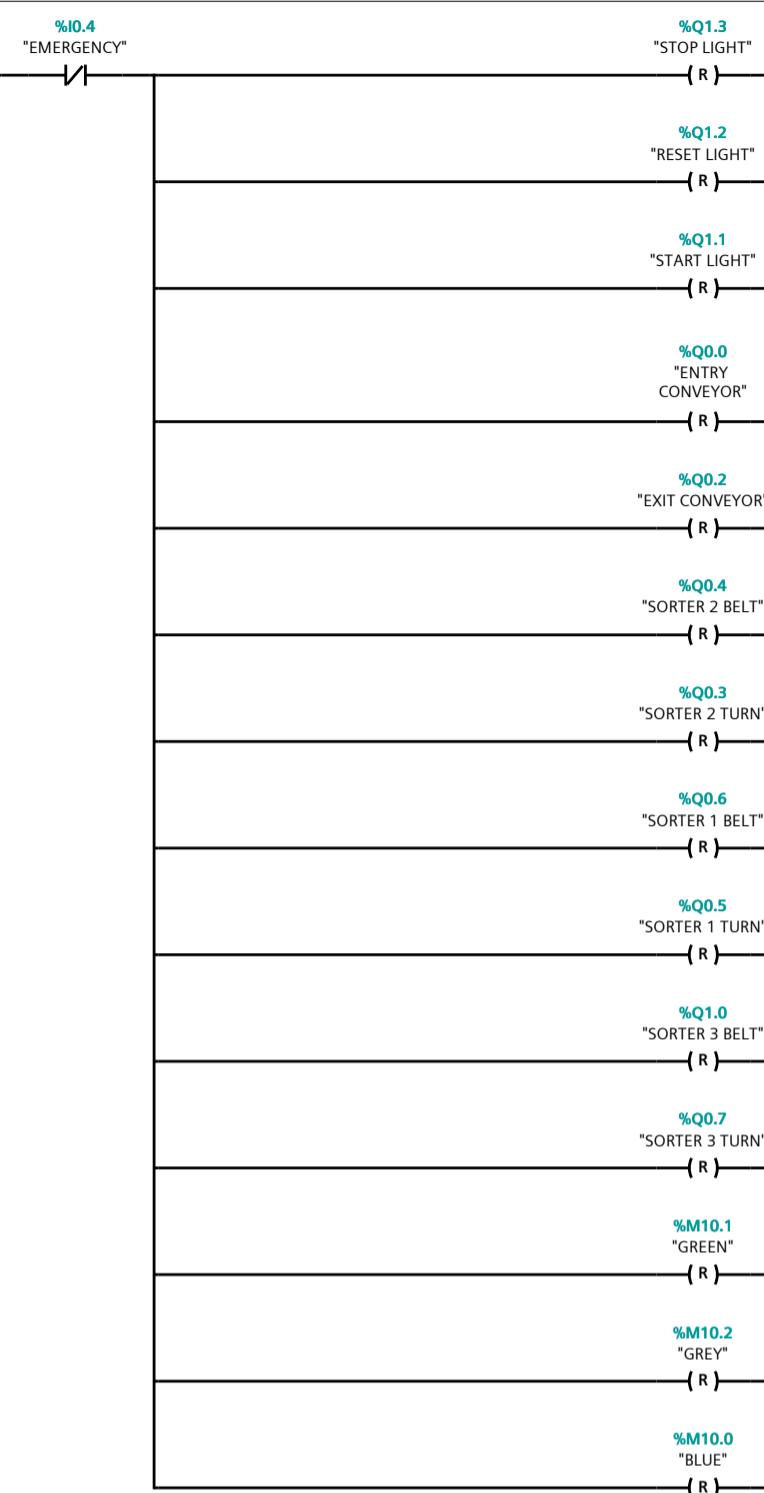
Network 3: STOP

Setting up stop button

```
        %I0.3                                    %Q1.3
        "STOP"                                 "STOP LIGHT"
        ─┤/├─┬─────────────────────────────────( S )─

                                                 %Q1.2
                                              "RESET LIGHT"
                        ├─────────────────────────( R )─

                                                 %Q1.1
                                              "START LIGHT"
                        ├─────────────────────────( R )─

                                                 %Q0.0
                                                 "ENTRY
                                               CONVEYOR"
                        ├─────────────────────────( R )─

                                                 %Q0.2
                                              "EXIT CONVEYOR"
                        ├─────────────────────────( R )─

                                                 %Q0.4
                                              "SORTER 2 BELT"
                        ├─────────────────────────( R )─

                                                 %Q0.3
                                              "SORTER 2 TURN"
                        ├─────────────────────────( R )─

                                                 %Q0.6
                                              "SORTER 1 BELT"
                        ├─────────────────────────( R )─

                                                 %Q0.5
                                              "SORTER 1 TURN"
                        ├─────────────────────────( R )─

                                                 %Q1.0
                                              "SORTER 3 BELT"
                        ├─────────────────────────( R )─

                                                 %Q0.7
                                              "SORTER 3 TURN"
                        └─────────────────────────( R )─
```
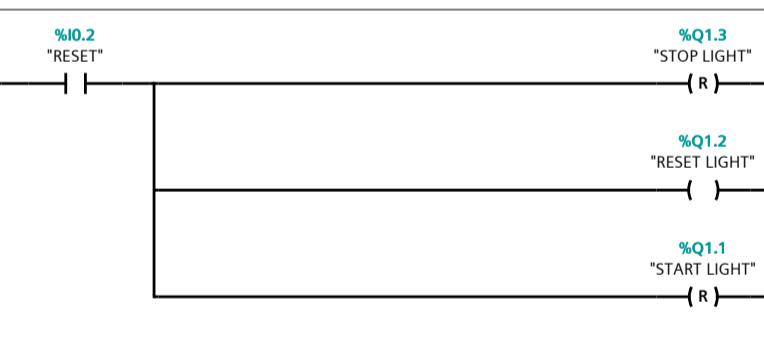
Network 4: EMEGERNCY BTN
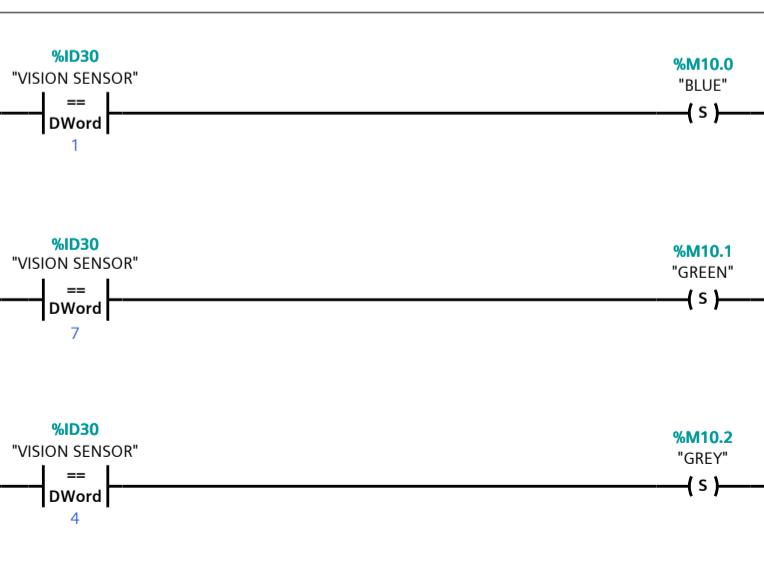
Setting up emergency button

%I0.4
"EMERGENCY"
─┤/├─

%Q1.3
"STOP LIGHT"
─(R)─

%Q1.2
"RESET LIGHT"
─(R)─

%Q1.1
"START LIGHT"
─(R)─

%Q0.0
"ENTRY
CONVEYOR"
─(R)─

%Q0.2
"EXIT CONVEYOR"
─(R)─

%Q0.4
"SORTER 2 BELT"
─(R)─

%Q0.3
"SORTER 2 TURN"
─(R)─

%Q0.6
"SORTER 1 BELT"
─(R)─

%Q0.5
"SORTER 1 TURN"
─(R)─

%Q1.0
"SORTER 3 BELT"
─(R)─

%Q0.7
"SORTER 3 TURN"
─(R)─

%M10.1
"GREEN"
─(R)─

%M10.2
"GREY"
─(R)─

%M10.0
"BLUE"
─(R)─

Network 5: RESET

Setting up reset button

%I0.2
"RESET"
─┤ ├─

%Q1.3
"STOP LIGHT"
─(R)─

%Q1.2
"RESET LIGHT"
─( )─

%Q1.1
"START LIGHT"
─(R)─
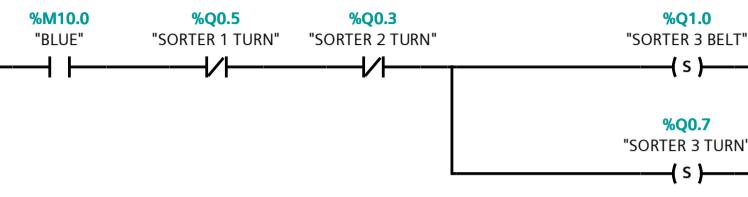
Network 6: SET BOXES

Setting up box colors with vision sensor

%ID30
"VISION SENSOR"
─┤ == ├─
 DWord
 1

%M10.0
"BLUE"
─(S)─

%ID30
"VISION SENSOR"
─┤ == ├─
 DWord
 7

%M10.1
"GREEN"
─(S)─

%ID30
"VISION SENSOR"
─┤ == ├─
 DWord
 4

%M10.2
"GREY"
─(S)─
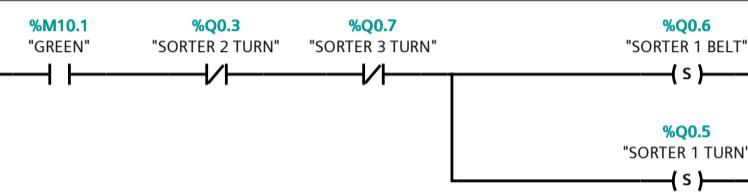
Network 7: SET SORTER 1

Setting up Sorter 1

```
   %M10.0          %Q0.5            %Q0.3                      %Q1.0
   "BLUE"      "SORTER 1 TURN"  "SORTER 2 TURN"          "SORTER 3 BELT"
    ┤ ├            ┤/├              ┤/├                      ─( S )─

                                                             %Q0.7
                                                        "SORTER 3 TURN"
                                                          ─( S )─
```
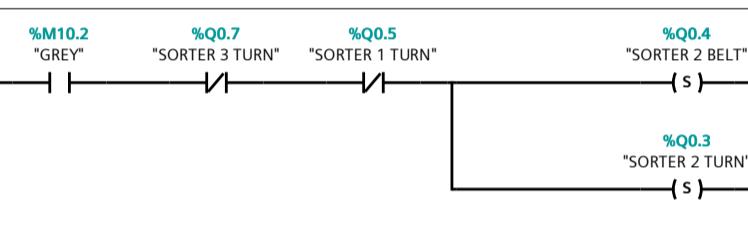
Network 8: SET SORTER 2

Setting up Sorter 2

```
   %M10.1          %Q0.3            %Q0.7                      %Q0.6
   "GREEN"     "SORTER 2 TURN"  "SORTER 3 TURN"          "SORTER 1 BELT"
    ┤ ├            ┤/├              ┤/├                      ─( S )─

                                                             %Q0.5
                                                        "SORTER 1 TURN"
                                                          ─( S )─
```
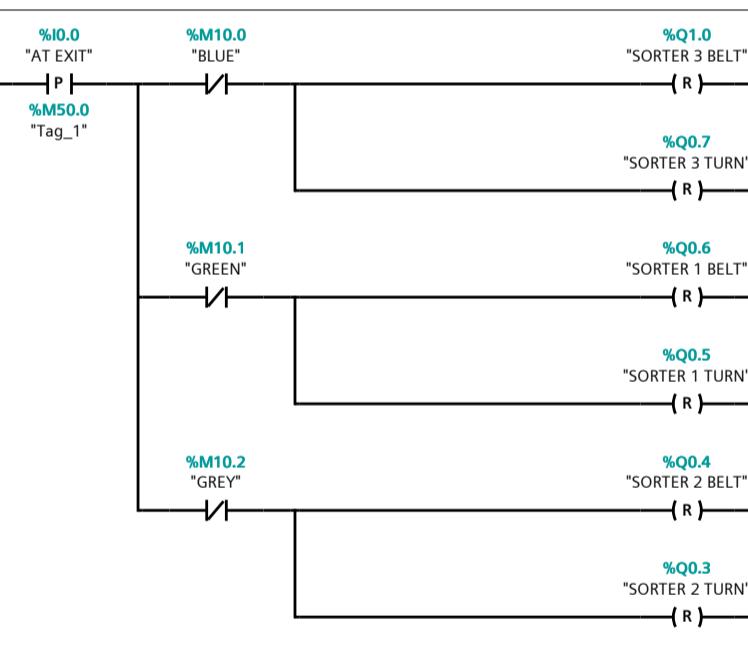
Network 9: SET SORTER 3

Setting up Sorter 3

```
   %M10.2          %Q0.7            %Q0.5                      %Q0.4
   "GREY"      "SORTER 3 TURN"  "SORTER 1 TURN"          "SORTER 2 BELT"
    ┤ ├            ┤/├              ┤/├                      ─( S )─

                                                             %Q0.3
                                                        "SORTER 2 TURN"
                                                          ─( S )─
```
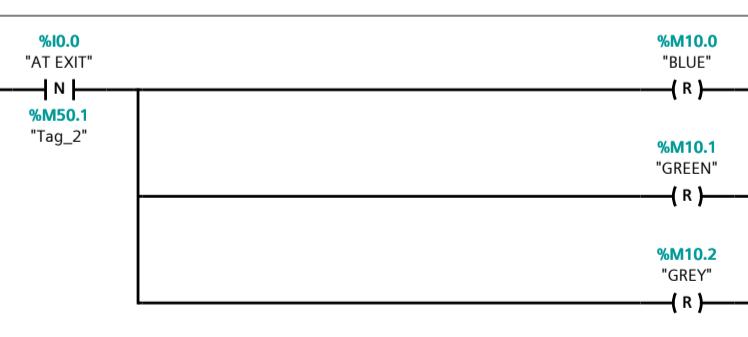
Network 10: RESET SORTER

Resetting the Sorters

```
   %I0.0           %M10.0                                     %Q1.0
  "AT EXIT"        "BLUE"                               "SORTER 3 BELT"
   ┤P├             ┤/├                                      ─( R )─
   %M50.0
   "Tag_1"                                                   %Q0.7
                                                        "SORTER 3 TURN"
                                                          ─( R )─

                   %M10.1                                    %Q0.6
                   "GREEN"                              "SORTER 1 BELT"
                   ┤/├                                     ─( R )─

                                                            %Q0.5
                                                       "SORTER 1 TURN"
                                                         ─( R )─

                   %M10.2                                    %Q0.4
                   "GREY"                               "SORTER 2 BELT"
                   ┤/├                                     ─( R )─

                                                            %Q0.3
                                                       "SORTER 2 TURN"
                                                         ─( R )─
```
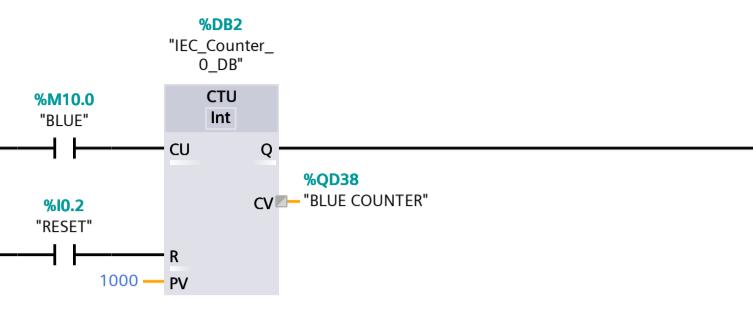
Network 11: RESET BOXES

Resetting the boxes

```
   %I0.0                                                     %M10.0
  "AT EXIT"                                                  "BLUE"
   ┤N├                                                      ─( R )─
   %M50.1
   "Tag_2"                                                   %M10.1
                                                             "GREEN"
                                                           ─( R )─

                                                             %M10.2
                                                             "GREY"
                                                           ─( R )─
```
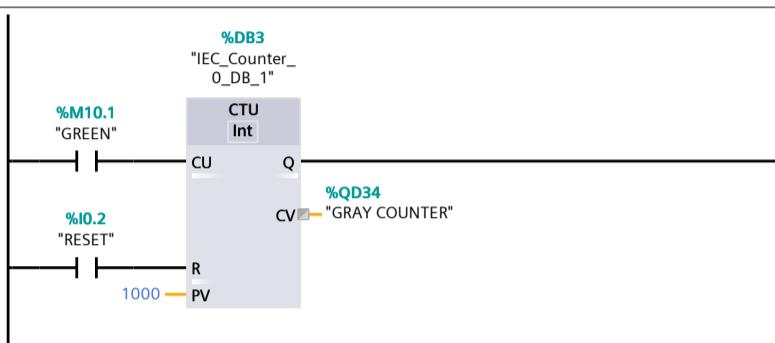
Network 12: BOX 1 COUNTER

Counter for Blue boxes

%DB2
"IEC_Counter_
0_DB"

%M10.0
"BLUE"

CTU
Int

CU   Q

%I0.2   %QD38
"RESET"   CV   "BLUE COUNTER"

R

1000 — PV

Network 13: BOX 2 COUNTER

Counter for Green boxes

%DB3
"IEC_Counter_
0_DB_1"

%M10.1
"GREEN"

CTU
Int

CU   Q

%I0.2   %QD34
"RESET"   CV   "GRAY COUNTER"

R

1000 — PV

Network 14: SET BOX 3

Counter for Grey boxes

%DB4
"IEC_Counter_
0_DB_2"

%M10.2
"GREY"

CTU
Int

CU   Q

%I0.2   %QD30
"RESET"   CV   "GREEN COUNTER"

R

1000 — PV