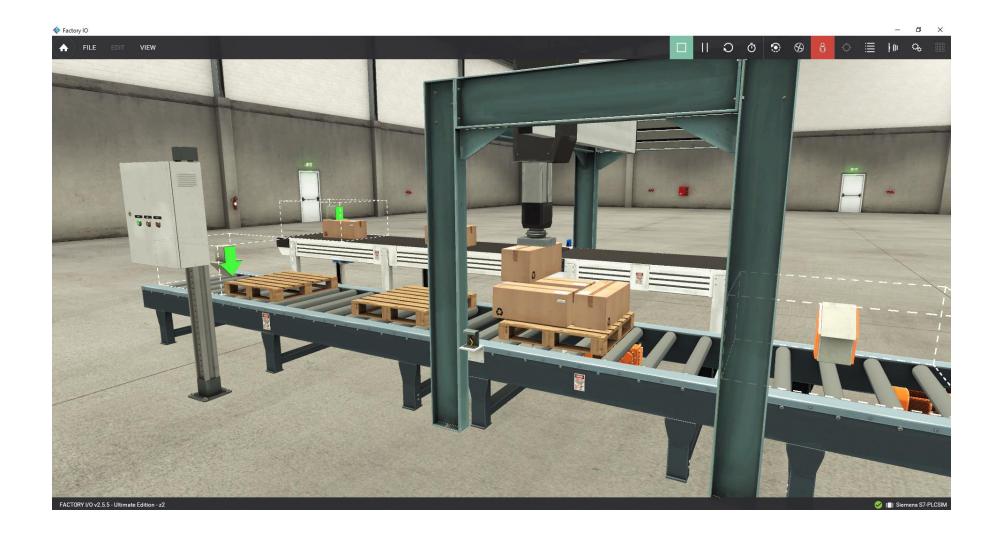
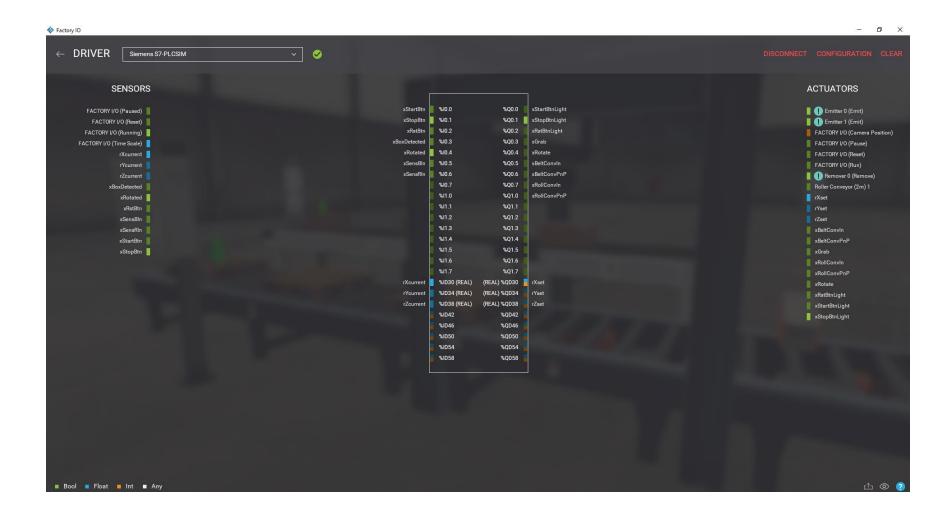
## **Z2**

# Szymon Hrehorowicz 13A6 GP03





|--|

## **Program blocks**

## Main [OB1]

| <b>Main Properties</b> |                                   |                 |   |         |    |          |     |
|------------------------|-----------------------------------|-----------------|---|---------|----|----------|-----|
| General                |                                   |                 |   |         |    |          |     |
| Name                   | Main                              | Number          | 1 | Туре    | ОВ | Language | LAD |
| Numbering              | Automatic                         |                 |   |         |    |          |     |
| Information            |                                   |                 |   |         |    |          |     |
|                        | "Main Program Sweep (Cy-<br>cle)" | Author          |   | Comment |    | Family   |     |
| Version                | 0.1                               | User-defined ID |   |         |    |          |     |

| Name           | Data type | Default value | Comment                               |
|----------------|-----------|---------------|---------------------------------------|
| <b>▼</b> Input |           |               |                                       |
| Initial_Call   | Bool      |               | Initial call of this OB               |
| Remanence      | Bool      |               | =True, if remanent data are available |
| Temp           |           |               |                                       |
| ▼ Constant     |           |               |                                       |
| iSTATE_STOP    | Int       | 0             |                                       |
| iSTATE_WORKING | Int       | 1             |                                       |
| iSTATE_PAUSE   | Int       | 2             |                                       |

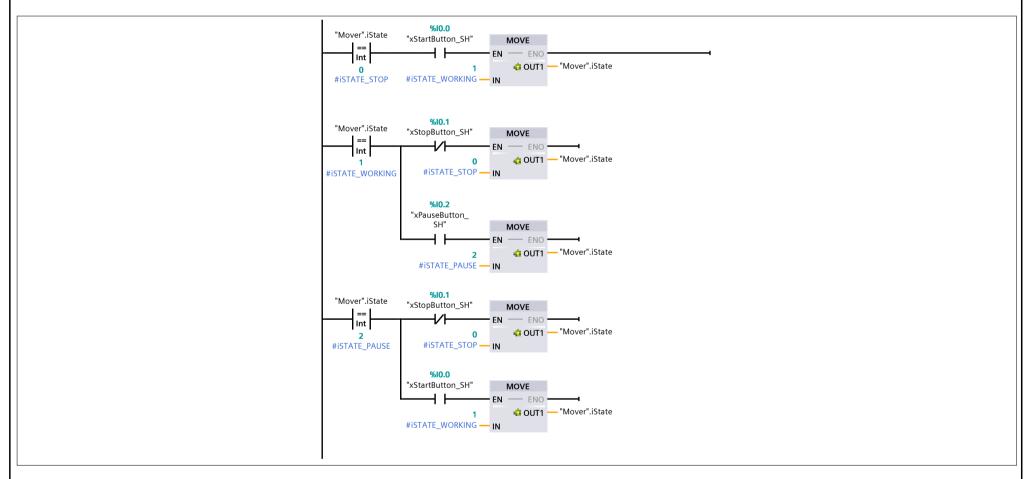
## Network 1: Komunikacja z FIO

```
*FC9000

"MHJ-PLC-Lab-Function-S71200"

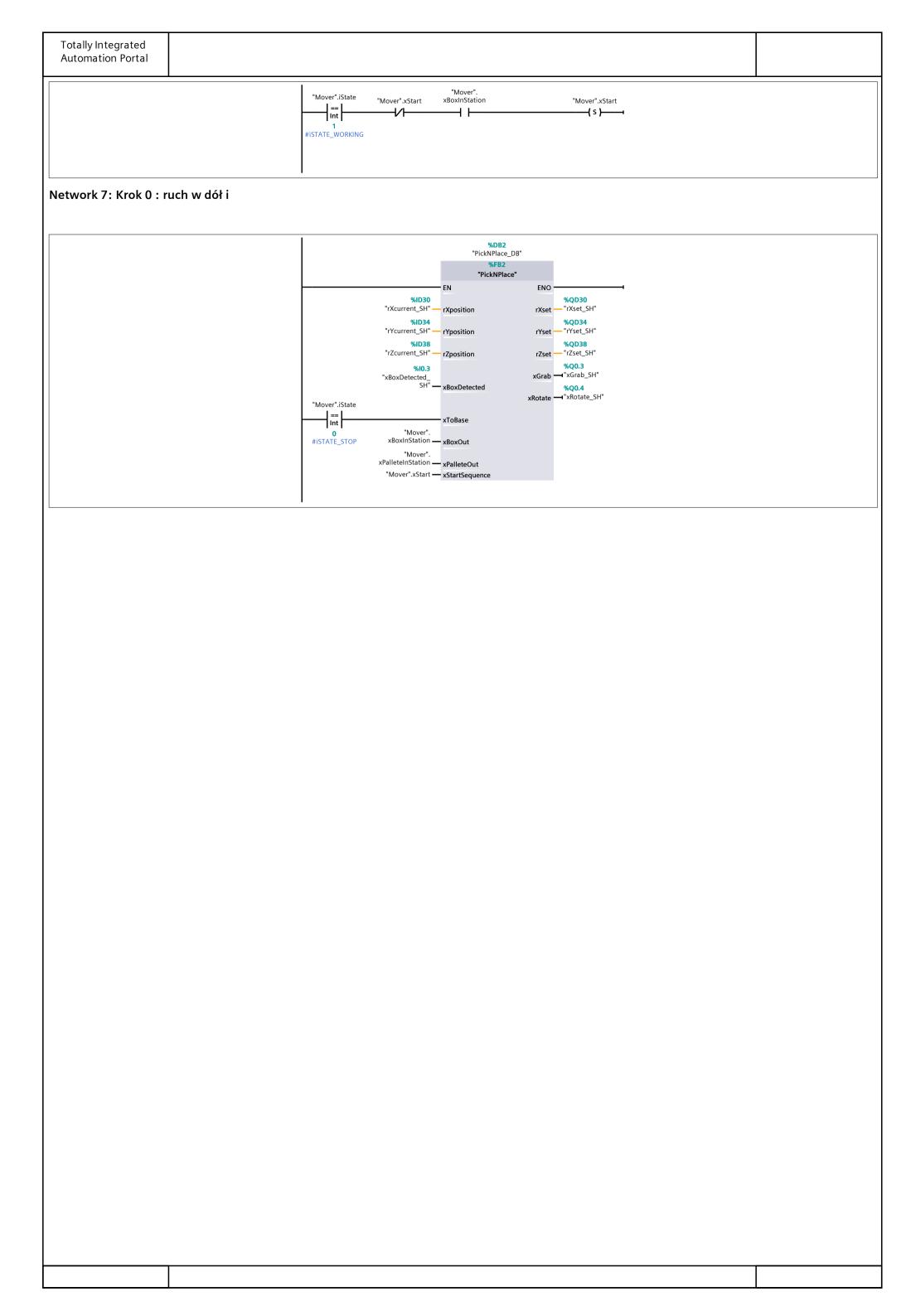
EN ENO
```

## Network 2: Obsługa stanów maszyny



Network 3: Sygnalizacja stanów pracy

Totally Integrated **Automation Portal** %Q0.1 "xStopButtonLight \_SH" "Mover".iState == Int #iSTATE\_STOP %Q0.0 "xStartButtonLight \_SH" -( R )-**%Q0.2**"xPauseButtonLig
ht\_SH" -( R )-%Q0.1 "xStopButtonLight \_SH" "Mover".iState == Int #iSTATE\_WORKING %Q0.0 "xStartButtonLight \_SH" **-(** s **)**− %Q0.2 "xPauseButtonLig ht\_SH" -( R )-%Q0.1 "xStopButtonLight \_SH" "Mover".iState Int #iSTATE\_PAUSE %Q0.0 "xStartButtonLight \_SH" -( R )-%Q0.2 "xPauseButtonLig ht\_SH" %M0.5 "Clock\_1Hz" **-(** s **)**--%Q0.2 **%M0.5** "Clock\_1Hz" "xPauseButtonLig ht\_SH" **-(** R **)**-Network 4: Obsługa przenośników taśmowych i rolkowych do stanowiska Pick'n'Place "Mover". xBoxInStation %Q0.5 "Mover".iState "xBeltConvIn\_SH" == Int  $\leftarrow$ #iSTATE\_WORKING %Q0.6 "xBeltConvPnP\_ SH" **⊣** ⊢ "Mover". %Q0.7 xPalleteInStation "xRollConvIn\_SH" %Q1.0 "xRollConvPnP\_ SH" Network 5: Obsługa stanów pracy stanowiska Pick'n'Place %I0.5 "xSensBIn\_SH" "Mover". xBoxInStation  $\dashv$   $\bowtie$   $\vdash$ **-(** s **)**-%M1.0 "xPrevBInState\_ SH" "Mover". xPalleteInStation %10.6 "xSensRIn\_SH" **-(** s **)**--%M1.1 "xPrevRInState\_ SH" Network 6: Wyzwolenie ruchu manipulatora



| Totally Integrated       |
|--------------------------|
| <b>Automation Portal</b> |

# Program blocks MHJ-PLC-Lab-Function-S71200 [FC9000]

| MHJ-PLC-Lab-Function-S71200 Properties |                                 |                 |      |         |    |          |     |  |  |
|--|---------------------------------|-----------------|------|---------|----|----------|-----|--|--|
| General                                |                                 |                 |      |         |    |          |     |  |  |
| Name                                   | MHJ-PLC-Lab-Function-<br>S71200 | Number          | 9000 | Туре    | FC | Language | SCL |  |  |
| Numbering                              | Manual                          |                 |      |         |    |          |     |  |  |
| Information                            |                                 |                 |      |         |    |          |     |  |  |
| Title                                  |                                 | Author          |      | Comment |    | Family   |     |  |  |
| Version                                | 0.1                             | User-defined ID |      |         |    |          |     |  |  |

| Marra a                     | D - 4 - 4 | D - f l + l   | C       |  |
|-----------------------------|-----------|---------------|---------|--|
| Name                        | Data type | Default value | Comment |  |
| Input                       |           |               |         |  |
| Output                      |           |               |         |  |
| InOut                       |           |               |         |  |
| <b>▼</b> Temp               |           |               |         |  |
| rdTimeReturn                | Int       |               |         |  |
| ▼ outputTime                | DTL       |               |         |  |
| YEAR                        | UInt      |               |         |  |
| MONTH                       | USInt     |               |         |  |
| DAY                         | USInt     |               |         |  |
| WEEKDAY                     | USInt     |               |         |  |
| HOUR                        | USInt     |               |         |  |
| MINUTE                      | USInt     |               |         |  |
| SECOND                      | USInt     |               |         |  |
| NANOSECOND                  | UDInt     |               |         |  |
| SyncVal                     | Byte      |               |         |  |
| forVal                      | Int       |               |         |  |
| forVal_2                    | Int       |               |         |  |
| Value                       | Byte      |               |         |  |
| ▼ Constant                  |           |               |         |  |
| CompVal                     | Byte      | 16#34         |         |  |
| Value_01                    | Byte      | 16#11         |         |  |
| Value_01_DW                 | DWord     | 16#A165_D992  |         |  |
| Value_02_DW                 | DWord     | 16#58BE_4401  |         |  |
| ▼ Return                    |           |               |         |  |
| MHJ-PLC-Lab-Function-S71200 | Void      |               |         |  |

```
0001
0002 #Value:=PEEK(area := 16#82,
0003
       dbNumber := 0,
0004
       byteOffset := 511);
0005 #Value := #Value + 1;
0006
0007 POKE (area := 16#82,
     dbNumber := 0,
0008
0009
       byteOffset := 511,
0010
      value := #Value);
0011
0012 POKE (area:=16#81,
0013 dbNumber:=0,
0014
       byteOffset:=1016,
0015
      value:=#Value_01_DW);
0016 POKE (area := 16\#81,
0017 dbNumber := 0,
0018
       byteOffset := 1020,
0019
       value := #Value_02_DW);
0020
0021 POKE (area := 16#81,
0022
       dbNumber := 0,
0023
       byteOffset := 511,
0024
       value := B#16#00);
0025
0026 FOR #forVal := 0 TO 120 DO
0027
      FOR #forVal_2:=0 TO 10 DO
0028
         #rdTimeReturn:=RD_SYS_T(#outputTime);
0029
         #rdTimeReturn := WR_SYS_T(#outputTime);
         #rdTimeReturn := RD_SYS_T(#outputTime);
0030
0031
         #rdTimeReturn := WR_SYS_T(#outputTime);
0032
      END FOR;
0033
      #SyncVal:= PEEK(area := 16#81,
0034
               dbNumber := 0,
0035
               byteOffset := 511);
0036
      IF #SyncVal = #CompVal THEN
0037
          GOTO M 1;
0038
     END IF;
0039 END FOR;
0040 RETURN;
0041
0042 M 1:
0043 POKE (area := 16#81,
```

```
0044 dbNumber := 0,
0045 byteOffset := 511,
0046 value := B#16#0);
0047
0048
0049
```

| Symbol        | Address      | Туре  | Comment |
|---------------|--------------|-------|---------|
| #CompVal      | 16#34        | Byte  |         |
| #forVal       |              | Int   |         |
| #forVal_2     |              | Int   |         |
| #outputTime   |              | DTL   |         |
| #rdTimeReturn |              | Int   |         |
| #SyncVal      |              | Byte  |         |
| #Value        |              | Byte  |         |
| #Value_01_DW  | 16#A165_D992 | DWord |         |
| #Value 02 DW  | 16#58BE 4401 | DWord |         |

|                               |           |   |              |       |                |   |                |                                  |              |                      |                |          |       | ·   |  |
|-------------------------------|-----------|---|--------------|-------|----------------|---|----------------|----------------------------------|--------------|----------------------|----------------|----------|-------|-----|--|
| rogram                        |           |   |              |       |                |   |                |                                  |              |                      |                |          |       |     |  |
| over [DB]                     |           |   |              |       |                |   |                |                                  |              |                      |                |          |       |     |  |
| eneral<br>ame                 | Mover     |   |              | Numb  | or             | 1 |                | Type                             | DI           | D.                   |                | Langus   | 200   | DB  |  |
| ame<br>umbering<br>Iformation | Automatic | 2 |              | Numb  | er             | I |                | Туре                             | וטו          | <b>5</b>             |                | Langua   | ige   | DR  |  |
| itle<br>ersion                | 0.1       |   |              | Autho | r<br>efined ID |   |                | Comment                          |              |                      |                | Family   |       |     |  |
| ame                           | 0.1       |   | Data typ     |       | Start val      |   | Retain         | Accessible                       | Writ-        | Visible in           | Setpoint       | Supervi- | Comme | ent |  |
|                               |           |   |              |       |                |   |                | from<br>HMI/OPC<br>UA/Web<br>API | able         | HMI engi-<br>neering |                | sion     |       |     |  |
| <b>▼</b> Static               |           |   | D I          |       | £ 1-           |   | F 1.           | <b>T</b>                         |              | <b>T</b>             | F. I.          |          |       |     |  |
| xStart<br>xBoxInSta           | ation     |   | Bool<br>Bool |       | false<br>false |   | False<br>False | True<br>True                     | True<br>True |                      | False<br>False |          |       |     |  |
| xPalleteIn                    |           |   | Bool         |       | false          |   | False          | True                             | True         |                      | False          |          |       |     |  |
| iState                        |           |   | Int          |       | 0              |   | False          | True                             | True         | True                 | False          |          |       |     |  |
| xBoxOut                       |           |   | Bool         |       | false          |   | False          | True                             | True         |                      | False          |          |       |     |  |
| xPalleteO                     | ut        |   | Bool         |       | false          |   | <br>False      | True                             | True         | True                 | False          |          |       |     |  |
|                               |           |   |              |       |                |   |                |                                  |              |                      |                |          |       |     |  |
|                               |           |   |              |       |                |   |                |                                  |              |                      |                |          |       |     |  |

# Program blocks

## PickNPlace [FB2]

| PickNPlace Prop | erties     |                 |   |         |    |          |     |
|-----------------|------------|-----------------|---|---------|----|----------|-----|
| General         |            |                 |   |         |    |          |     |
| Name            | PickNPlace | Number          | 2 | Type    | FB | Language | LAD |
| Numbering       | Automatic  |                 |   |         |    |          |     |
| Information     |            |                 |   |         |    |          |     |
| Title           |            | Author          |   | Comment |    | Family   |     |
| Version         | 0.1        | User-defined ID |   |         |    |          |     |
|                 |            |                 |   |         |    |          |     |

|                          | Data tura | Defections    | Datain      | A:bl-  | \A/:+ | \/:=!bl= !::                       | C - 4 1 4 | C    | Commont |
|--------------------------|-----------|---------------|-------------|--|-------|------------------------------------|-----------|------|---------|
| me                       | Data type | Default value | Retain      | Accessible<br>from<br>HMI/OPC<br>UA/Web<br>API | able  | Visible in<br>HMI engi-<br>neering | Setpoint  | sion | Comment |
| Input                    |           |               |             |  |       |                                    |           |      |         |
| rXposition               | Real      | 0.0           | Non-retain  | True   | True  |                                    | False     |      |         |
| rYposition               | Real      | 0.0           | Non-retain  | True   | True  |                                    | False     |      |         |
| rZposition               | Real      | 0.0           | Non-retain  | True   | True  | True                               | False     |      |         |
| xBoxDetected             | Bool      | false         | Non-retain  | True   | True  | True                               | False     |      |         |
| xToBase                  | Bool      | false         | Non-retain  | True   | True  | True                               | False     |      |         |
| Output                   |           |               |             |  |       |                                    |           |      |         |
| rXset                    | Real      | 0.0           | Non-retain  | True   | True  | True                               | False     |      |         |
| rYset                    | Real      | 0.0           | Non-retain  | True   | True  | True                               | False     |      |         |
| rZset                    | Real      | 0.0           | Non-retain  | True   | True  | True                               | False     |      |         |
| xGrab                    | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| xRotate                  | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| <b>r</b> InOut           |           |               |             |  |       |                                    |           |      |         |
| xBoxOut                  | Bool      | false         | Non-retain  | True   | True  | True                               | False     |      |         |
| xPalleteOut              | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| xStartSequence           | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| ▼ Static                 | 5001      | Tuise         | Non Tetaill | True   | iiue  |                                    | 1 4136    |      |         |
|                          | Lar       |               | <u></u>     | -  | -     | <b>T</b> .                         | F '       |      |         |
| iStep                    | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| iXposition_cm            | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| iYposition_cm            | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| iZposition_cm            | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| iXset_cm                 | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| iYset_cm                 | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| iZset_cm                 | Int       | 0             | Non-retain  | True   | True  |                                    | False     |      |         |
| xPnPXok                  | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| xPnPYok                  | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| xPnPZok                  | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| ▼ IEC_Timer_0_Instance   | TON_TIME  |               | 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     |      |         |
| ▼ IEC_Timer_0_Instance_1 | TON_TIME  |               | Non-retain  | True   | True  | True                               | True      |      |         |
| PT                       | Time      | T#0ms         | Non-retain  | True   | True  | True                               | False     |      |         |
| ET                       | Time      | T#0ms         | Non-retain  | True   | False |                                    | False     |      |         |
| IN                       | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
|                          | Bool      | false         | Non-retain  | True   | False |                                    | False     |      |         |
| Q IEC Timor O Instance 2 | TON_TIME  | laise         | Non-retain  | True   | True  |                                    | True      |      |         |
| ▼ IEC_Timer_0_Instance_2 |           |               |             |  |       |                                    |           |      |         |
| PT                       | Time      | T#0ms         | Non-retain  | True   | True  |                                    | False     |      |         |
| ET                       | Time      | T#0ms         | Non-retain  | True   | False |                                    | False     |      |         |
| IN                       | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| Q                        | Bool      | false         | Non-retain  | True   | False |                                    | False     |      |         |
| ▼ IEC_Timer_0_Instance_3 | TON_TIME  |               | 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     |      |         |
| ▼ IEC_Timer_0_Instance_4 | TON_TIME  |               | Non-retain  | True   | True  | True                               | True      |      |         |
| PT                       | Time      | T#0ms         | Non-retain  | True   | True  | True                               | False     |      |         |
| ET                       | Time      | T#0ms         | Non-retain  | True   | False |                                    | False     |      |         |
| IN                       | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| Q                        | Bool      | false         | Non-retain  | True   | False |                                    | False     |      |         |
| ▼ IEC_Timer_0_Instance_5 | TON_TIME  | Tuise         | Non-retain  | True   | True  |                                    | True      |      |         |
|                          |           |               |             |  |       |                                    |           |      |         |
| PT                       | Time      | T#0ms         | Non-retain  | True   | True  |                                    | False     |      |         |
| ET                       | Time      | T#0ms         | Non-retain  | True   | False |                                    | False     |      |         |
| IN                       | Bool      | false         | Non-retain  | True   | True  |                                    | False     |      |         |
| Q                        | Bool      | false         | Non-retain  | True   | False |                                    | False     |      |         |
| ▼ IEC_Timer_0_Instance_6 | TON_TIME  |               | Non-retain  | True   | True  | -                                  | True      | 1    |         |

| Totally Integrated       |
|--------------------------|
| <b>Automation Portal</b> |

| Name                      | Data type | Default value | Retain     | Accessible<br>from<br>HMI/OPC<br>UA/Web<br>API | able  | HMI engi-<br>neering | Setpoint | Supervi-<br>sion | Comment |
|---------------------------|-----------|---------------|------------|--|-------|----------------------|----------|------------------|---------|
| 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 |                      | False    |                  |         |
| ▼ IEC_Timer_0_Instance_7  | TON_TIME  |               | 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    |                  |         |
| ▼ IEC_Timer_0_Instance_8  | TON_TIME  |               | 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    |                  |         |
| ▼ IEC_Timer_0_Instance_9  | TON_TIME  |               | 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    |                  |         |
| ▼ IEC_Timer_0_Instance_10 | TON_TIME  |               | 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    |                  |         |
| ▼ IEC_Timer_0_Instance_11 | TON_TIME  |               | 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    |                  |         |
| ▼ IEC_Timer_0_Instance_12 | TON_TIME  |               | 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    |                  |         |
| <b>▼</b> Temp             |           |               |            |  |       |                      |          |                  |         |
| rTemp                     | Real      |               |            |  |       |                      |          |                  |         |
| iUp                       | Int       |               |            |  |       |                      |          |                  |         |
| iDown                     | Int       |               |            |  |       |                      |          |                  |         |
| Constant                  |           |               |            |  |       |                      |          |                  |         |

## Network 1: Bazowanie

## Network 1: Bazowanie

```
#XToBase

MOVE

EN ENO

IN OUT1 #iXset_cm

MOVE

EN ENO

IN OUT1 #iXset_cm

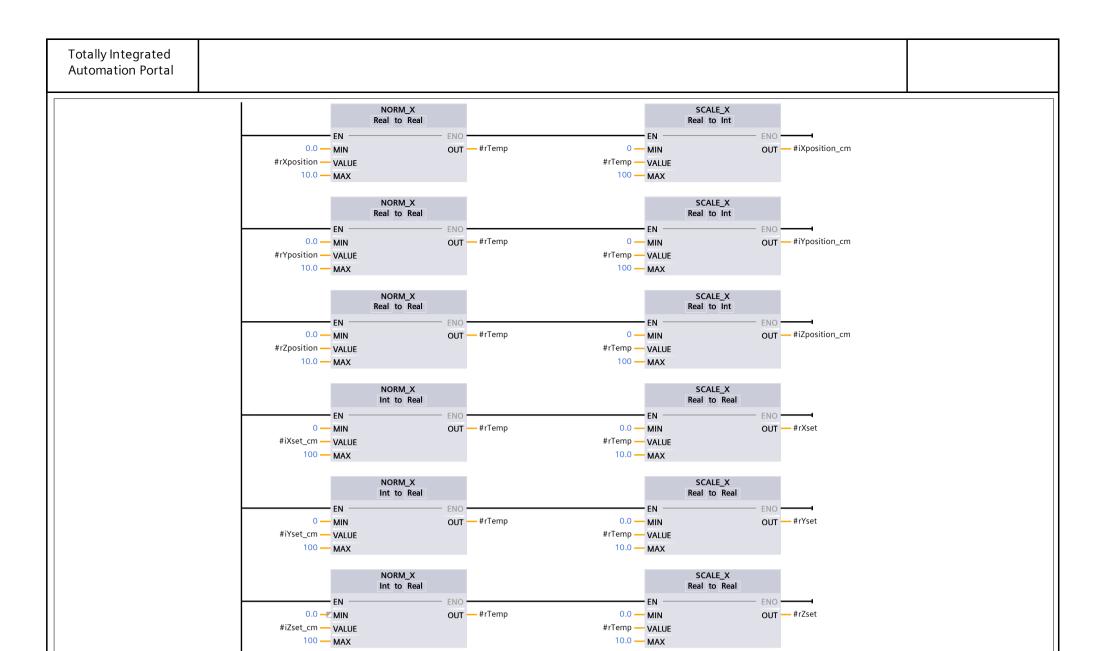
#xGrab

(R)

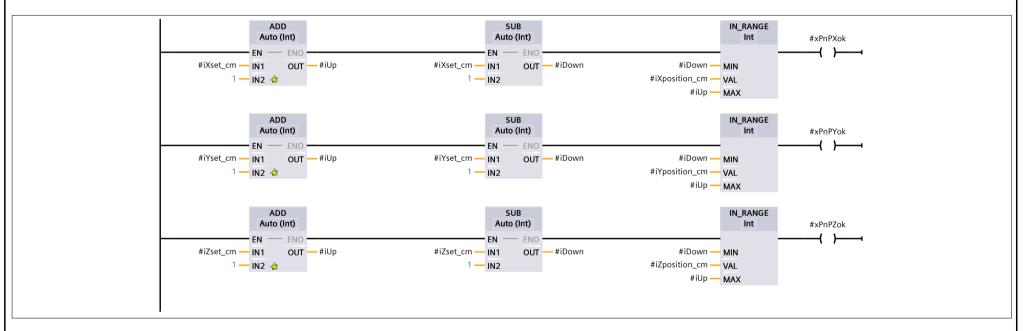
#xStartSequence

(R)
```

Network 2: Skalowanie sygnałów analogowych

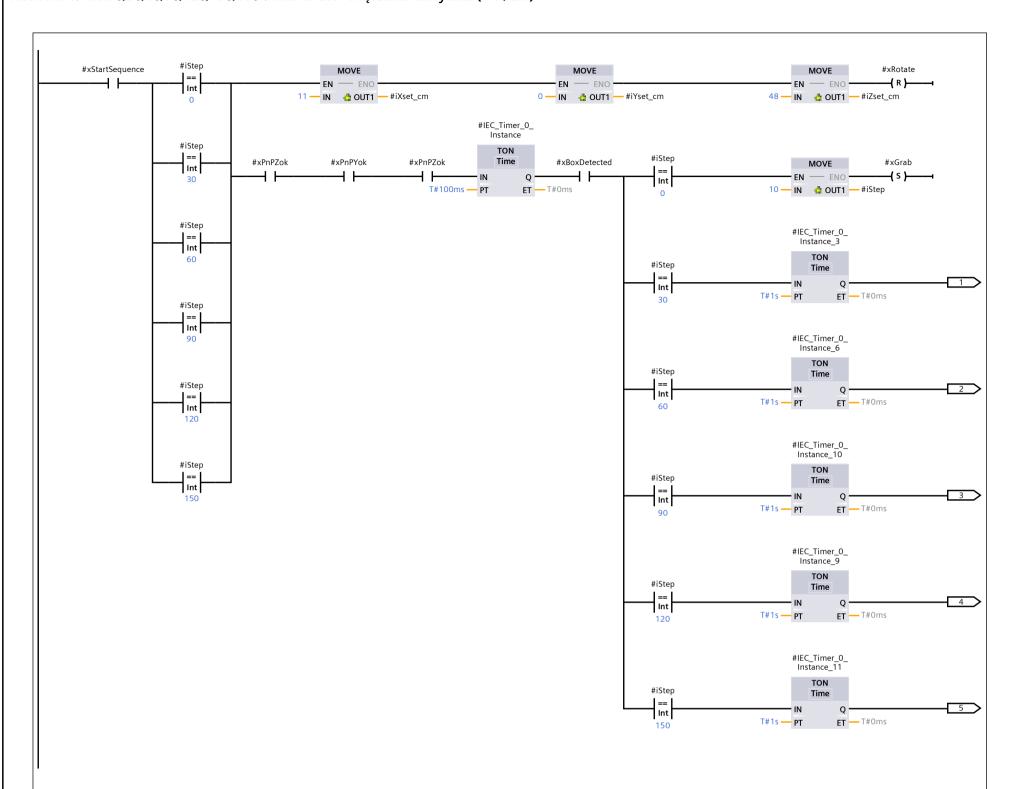


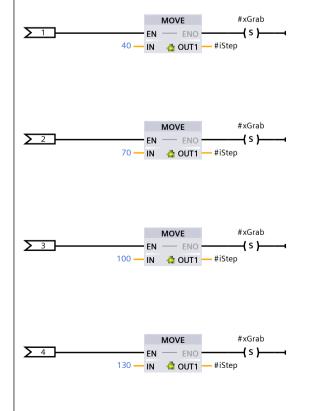
Network 3: Sprawdzanie osiągnięcia pozycji



Network 4: Krok 0/30/60/90/120/150/180 : ruch w dół i włączenie chwytaka

## Network 4: Krok 0/30/60/90/120/150/180 : ruch w dół i włączenie chwytaka (1.1 / 2.1)





| Totally Integrated<br>Automation Portal |                                       |                  |   |
|---|---------------------------------------|------------------|---|
| Network 4: Krok 0/30/60/90/120          | /150/180 : ruch w dół i włączenie chw |                  | l |
|   |                                       | 1.1 ( Page4 - 4) |   |
| MOVE                                    | #xGrab                                |                  |   |
| 5 160 — EN — EI IN ♣ OU                 | NO {S} }                              |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  |   |
|   |                                       |                  | I |

#### Network 5: Krok 10/100: ruch w górę, dojazd do miejsca odłożenia pierwszego pudełka i obrót

```
#iStep
                                                                                                                                #iStep
#xStartSequence
                                                                                                                                                           MOVE
                   ==
Int
                                                                                                                                                           EN - ENO -
                                               -EN --- ENO -
                                                                                             EN --- ENO -
                                          84 — IN 🛕 OUT1 — #iXset_cm
                                                                                         0 — IN 🦸 OUT1 — #iZset_cm
                                                                                                                                                      52 — IN di OUT1 — #iYset_cm
                    10
                   #iStep
                                                                                                                                #iStep
                                                                                                                                                           MOVE
                   == |
Int |
                                                                                                                                                            EN - ENO-
                                                                                                                                                        9 — IN 🛕 OUT1 — #iYset_cm
                    100
                                                                                                                                100
                                                                              #IEC_Timer_0_
Instance_1
                                                                                                                #iStep
                                                                                                                                            MOVE
                                                                              - IN
                                                                                                                                            - EN --- ENO -
                                                                                                                Int
                                                                                                                                       20 — IN 🔥 OUT1 — #iStep
                                                                    T#100ms — PT
                                                                                                                #iStep
                                                                                                                                            MOVE
                                                                                                                                            EN - ENO
                                                                                                                Int
                                                                                                                                      110 — IN 🧠 OUT1 — #iStep
```

Network 6: Krok 20/110/200 : ruch w dół i odstawienie paczki

```
#iStep
#xStartSequence
                                                              MOVE
                                   ==
Int
                   ==
Int
   \dashv \vdash
                                                              EN - ENO
                                                        100 — IN 👍 OUT1 — #iZset_cm
                    20
                   #iStep
                                                              MOVE
                   ==
Int
                                   ==
Int
                                                              EN - ENO
                                                          48 — IN 👍 OUT1 — #iZset_cm
                    110
                                               #IEC_Timer_0_
                                                  TON
                                                                                 #iStep
                                 #xPnPZok
                                                                                                                               #xGrab
                                                                                                                                              #xBoxOut
                                                                                                              EN - ENO
                                                                                                                                 -( R )-
                                                                                                                                                -( ℝ )-
                                                        Q-
                                                       ET — T#0ms
                                     T#100ms — PT
                                                                                                         30 — IN 👍 OUT1 — #iStep
                                                                                   20
                                                                                 #iStep
                                                                                                             MOVE
                                                                                                                                #xGrab
                                                                                                                                              #xBoxOut
                                                                                                              EN - ENO
                                                                                                                                 -(R)-
                                                                                                                                                --( ℝ )--
                                                                                  Int
                                                                                                        120 — IN 👍 OUT1 — #iStep
```

Network 7: Krok 40/130: ruch w górę, dojazd do miejsca odłożenia drugiego pudełka

```
#iStep
                                                                                                                                   #iStep
#xStartSequence
                                                                                                MOVE
                                                                                                                                                                MOVE
                                                                                                                                   ==
Int
                                                - EN --- ENO -
                                                                                               - EN --- ENO -
                                                                                                                                                                EN - ENO
                    Int |
                                                                                            0 — IN 👍 OUT1 — #iZset_cm
                                            93 — IN 🛕 OUT1 — #iXset_cm
                                                                                                                                                           15 — IN 👍 OUT1 — #iYset_cm
                    #iStep
                                                                                                                                   #iStep
                                                                                                                                                               MOVE
                                                                                                                                                               - EN --- ENO -
                                                                                                                                    Int
                    Int
                                                                                                                                                           39 — IN 👍 OUT1 — #iYset_cm
                                                                                #IEC_Timer_0_
Instance_4
                                                                                    TON
                                                                                                                   #iStep
                                  #xPnPXok
                                                  #xPnPYok
                                                                  #xPnPZok
                                                                                    Time
                                                                                                                                                MOVE
                                                                                                                   ==
Int
                                                                                         ET — T#0ms
                                                                                                                                           50 — IN 👍 OUT1 — #iStep
                                                                                                                   #iStep
                                                                                                                                                MOVE
                                                                                                                   ==
Int
                                                                                                                                          140 — IN 👍 OUT1 — #iStep
                                                                                                                    130
```

Network 8: Krok 50/140 : ruch w dół i odstawienie paczki

```
#iStep
                    #iStep
#xStartSequence
                                                                 MOVE
                    Int
    \dashv \vdash
                                                                  EN - ENO -
                                                           100 — IN 👍 OUT1 — #iZset_cm
                                    #iStep
                    #iStep
                                                                 MOVE
                    == |
Int |
                                                                 EN - ENO
                                                             48 — IN 👍 OUT1 — #iZset_cm
                                                 #IEC_Timer_0_
Instance_5
                                   #xPnPZok
                                                                                                                  MOVE
                                                                                                                                                     #xBoxOut
                                                                                      ==
Int
                                                                                                                                                       _( R )_
                                                                                                                  EN - ENO -
                                                           Q
                                                          ET — T#0ms
                                                                                                             60 — IN 👍 OUT1 — #iStep
                                       T#100ms -
                                                                                     == I
                                                                                                                                                      —( R )—
                                                                                                                  - EN --- ENO --
                                                                                                             150 — IN 👍 OUT1 — #iStep
```

Network 9: Krok 70: Ruch w górę, dojazd do miejsca odłożenia 3 pudełka

```
#iStep
                                                                                                                              #iStep
#xStartSequence
                                              MOVE
                                                                                             MOVE
                                                                                                                                                          MOVE
                   == |
Int |
                                                                                                                               ==
Int
                                              EN - ENO
                                                                                            - EN --- ENO -
                                                                                                                                                          - EN --- ENO -
                                                                                        0 — IN d OUT1 — #iZset_cm
                                          77 — IN 🦸 OUT1 — #iXset_cm
                                                                                                                                                     15 — IN di OUT1 — #iYset_cm
                   #iStep
                                                                                                                              #iStep
                                                                                                                                                          MOVE
                                                                                                                               ==
Int
                   == |
Int |
                                                                                                                                                          - EN --- ENO -
                                                                                                                                                     39 — IN 🙀 OUT1 — #iYset_cm
                    160
                                                                                                                               160
                                                                             #IEC_Timer_0_
Instance_7
                                                                                                               #iStep
                                                #xPnPYok
                                                               #xPnPZok
                                                                                                                                          MOVE
                                 #xPnPXok
                                                                             - IN
                                                                                                                                           - EN --- ENO -
                                                                                                                                      80 — IN 🍓 OUT1 — #iStep
                                                                   T#100ms — PT ET — T#0ms
                                                                                                                70
                                                                                                               #iStep
                                                                                                                                          MOVE
                                                                                                                                           EN -- ENO
                                                                                                                                     170 — IN 🍓 OUT1 — #iStep
```

Network 10: Krok 80: ruch w dół i odstawienie paczki

```
#iStep
                                #iStep
#xStartSequence
                                                         MOVE
                                                         EN - ENO
                  Int
                                Int
                                                    100 — IN • OUT1 — #iZset_cm
                               #iStep
                 #iStep
                                                         MOVE
                                                         EN - ENO -
                  Int
                                Int
                                                     48 — IN 🛕 OUT1 — #iZset_cm
                                          #IEC_Timer_0_
Instance_8
                                              TON
                                                                          #iStep
                                                                                                                                 #xBoxOut
                               #xPnPZok
                                              Time
                                                                                                   MOVE
                                                                                                                    #xGrab
                               T#100ms PT ET T#0ms
                                                                          Int
                                                                                              90 — IN 🔥 OUT1 — #iStep
                                                                          #iStep
                                                                                                   MOVE
                                                                                                                    #xGrab
                                                                                                                                 #xBoxOut
                                                                                                                                             #xStartSequence #xPalleteOut
                                                                          | == |
Int |
                                                                                                   - EN --- ENO -
                                                                                                                                   -( R )-
                                                                                                                                                 _( R )_
                                                                                                170
```

| Totally Integrated       |
|--------------------------|
| <b>Automation Portal</b> |

# **Program blocks**

## PickNPlace\_DB [DB2]

| PickNPlace_DB | Properties    |                 |   |         |    |          |    |
|---------------|---------------|-----------------|---|---------|----|----------|----|
| General       |               |                 |   |         |    |          |    |
| Name          | PickNPlace_DB | Number          | 2 | Туре    | DB | Language | DB |
| Numbering     | Automatic     |                 |   |         |    |          |    |
| Information   |               |                 |   |         |    |          |    |
| Title         |               | Author          |   | Comment |    | Family   |    |
| Version       | 0.1           | User-defined ID |   |         |    |          |    |
|               | -             |                 |   | -       |    |          |    |

| la ma a                          | Data tura     | Ctout value    | Datain         | A sassaible                      | \A/::+        | Vicible in                         | Cathaint       | Cupani | Commont |
|----------------------------------|---------------|----------------|----------------|----------------------------------|---------------|------------------------------------|----------------|--------|---------|
| ame                              | Data type     | Start value    | Retain         | from<br>HMI/OPC<br>UA/Web<br>API | able          | Visible in<br>HMI engi-<br>neering | Setpoint       | sion   | Comment |
| ✓ Input                          |               |                |                |                                  |               |                                    |                |        |         |
| rXposition                       | Real          | 0.0            | False          | True                             | True          | True                               | False          |        |         |
| rYposition                       | Real          | 0.0            | False          | True                             | True          | True                               | False          |        |         |
| rZposition                       | Real          | 0.0            | False          | True                             | True          |                                    | False          |        |         |
| xBoxDetected                     | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| xToBase                          | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| Output                           |               |                |                |                                  |               |                                    |                |        |         |
| rXset                            | Real          | 0.0            | False          | True                             | True          |                                    | False          |        |         |
| rYset                            | Real          | 0.0            | False          | True                             | True          | True                               | False          |        |         |
| rZset                            | Real          | 0.0            | False          | True                             | True          |                                    | False          |        |         |
| xGrab                            | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| xRotate                          | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| <b>▼</b> InOut                   |               |                |                |                                  |               |                                    |                |        |         |
| xBoxOut                          | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| xPalleteOut                      | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| xStartSequence                   | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| ▼ Static                         |               |                |                |                                  |               |                                    |                |        |         |
| iStep                            | Int           | 0              | False          | True                             | True          | True                               | False          |        |         |
| iXposition_cm                    | Int           | 0              | False          | True                             | True          |                                    | False          |        |         |
| iYposition_cm                    | Int           | 0              | False          | True                             | True          |                                    | False          |        |         |
| iZposition_cm                    | Int           | 0              | False          | True                             | True          |                                    | False          |        |         |
| iXset_cm                         | Int           | 0              | False          | True                             | True          |                                    | False          |        |         |
| iYset_cm                         | Int           | 0              | False          | True                             | True          |                                    | False          |        |         |
| iZset_cm                         | Int           | 0              | False          | True                             | True          |                                    | False          |        |         |
| xPnPXok                          | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| xPnPYok                          | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| xPnPZok                          | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| ▼ IEC_Timer_0_Instan             |               | 14.50          | False          | True                             | True          |                                    | True           |        |         |
|                                  |               | T#0ms          |                |                                  |               |                                    |                |        |         |
| PT                               | Time          | T#0ms<br>T#0ms | False<br>False | True                             | True          |                                    | False<br>False |        |         |
| ET                               | Time<br>Bool  | false          | False          | True<br>True                     | False<br>True |                                    | False          |        |         |
| IN O                             | Bool          | false          | False          | True                             | False         | -                                  | False          |        |         |
| Q<br><b>▼</b> IEC_Timer_0_Instan |               | laise          | False          | True                             | True          |                                    | True           |        |         |
|                                  | _             |                |                |                                  |               |                                    |                |        |         |
| PT                               | Time          | T#0ms          | False          | True                             | True          |                                    | False          |        |         |
| ET                               | Time          | T#0ms          | False          | True                             | False         |                                    | False          |        |         |
| IN                               | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| Q                                | Bool          | false          | False          | True                             | False         |                                    | False          |        |         |
| ▼ IEC_Timer_0_Instan             | ce_2 TON_TIME |                | False          | True                             | True          | True                               | True           |        |         |
| PT                               | Time          | T#0ms          | False          | True                             | True          | True                               | False          |        |         |
| ET                               | Time          | T#0ms          | False          | True                             | False         | True                               | False          |        |         |
| IN                               | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| Q                                | Bool          | false          | False          | True                             | False         |                                    | False          |        |         |
| ▼ IEC_Timer_0_Instan             | ce_3 TON_TIME |                | False          | True                             | True          | True                               | True           |        |         |
| PT                               | Time          | T#0ms          | False          | True                             | True          | True                               | False          |        |         |
| ET                               | Time          | T#0ms          | False          | True                             | False         | True                               | False          |        |         |
| IN                               | Bool          | false          | False          | True                             | True          | True                               | False          |        |         |
| Q                                | Bool          | false          | False          | True                             | False         | True                               | False          |        |         |
| ▼ IEC_Timer_0_Instan             | ce_4 TON_TIME |                | False          | True                             | True          | True                               | True           |        |         |
| PT                               | Time          | T#0ms          | False          | True                             | True          | True                               | False          |        |         |
| ET                               | Time          | T#0ms          | False          | True                             | False         |                                    | False          |        |         |
| IN                               | Bool          | false          | False          | True                             | True          |                                    | False          |        |         |
| Q                                | Bool          | false          | False          | True                             | False         |                                    | False          |        |         |
| ✓ IEC_Timer_0_Instan             |               |                | False          | True                             | True          |                                    | True           |        |         |
|                                  |               | T#0ms          |                |                                  |               |                                    |                |        |         |
| PT                               | Time          | T#0ms          | False          | True                             | True          |                                    | False          |        |         |
| ET                               | Time          | T#0ms          | False          | True                             | False         |                                    | False          |        |         |
| IN                               | Bool          | false          | False<br>False | True<br>True                     | True<br>False |                                    | False<br>False |        |         |
| Q                                | Bool          | false          |                |                                  |               |                                    |                |        |         |

| Totally Integrated       |
|--------------------------|
| <b>Automation Portal</b> |

| Jame                      | Data type | Start value | Retain | Accessible<br>from<br>HMI/OPC<br>UA/Web<br>API | Writ- Visible in<br>able HMI engi-<br>from neering<br>HMI/<br>OPC<br>UA/<br>Web<br>API | Setpoint | Supervi-<br>sion | Comment |
|---------------------------|-----------|-------------|--------|--|--|----------|------------------|---------|
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |
| ▼ IEC_Timer_0_Instance_7  | TON_TIME  |             | False  | True   | True True  | True     |                  |         |
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |
| ▼ IEC_Timer_0_Instance_8  | TON_TIME  |             | False  | True   | True True  | True     |                  |         |
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |
| ▼ IEC_Timer_0_Instance_9  | TON_TIME  |             | False  | True   | True True  | True     |                  |         |
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |
| ▼ IEC_Timer_0_Instance_10 | TON_TIME  |             | False  | True   | True True  | True     |                  |         |
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |
| ▼ IEC_Timer_0_Instance_11 | TON_TIME  |             | False  | True   | True True  | True     |                  |         |
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |
| ▼ IEC_Timer_0_Instance_12 | TON_TIME  |             | False  | True   | True True  | True     |                  |         |
| PT                        | Time      | T#0ms       | False  | True   | True True  | False    |                  |         |
| ET                        | Time      | T#0ms       | False  | True   | False True   | False    |                  |         |
| IN                        | Bool      | false       | False  | True   | True True  | False    |                  |         |
| Q                         | Bool      | false       | False  | True   | False True   | False    |                  |         |

| Totally Integrated<br>Automation Portal |                 |  |
|---|-----------------|--|
| Program blocks                          | / System blocks |  |
| Program resource                        |                 |  |
| This folder is empty.                   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
|   |                 |  |
| I                                       |                 |  |

L

| otally Integrated |  |
|-------------------|--|
| tomation Portal   |  |
|                   |  |

# PLC tags

| con      | Name                                  | Data type | Address        | Visible in HMI engineering | Accessible from HMI/OPC | Comment |
|----------|---------------------------------------|-----------|----------------|----------------------------|-------------------------|---------|
|          |                                       |           |                |                            | UA/Web API              |         |
| 3        | Clock_0.5Hz                           | Bool      | %M0.7          | True                       | True                    |         |
| 100      | Clock_0.625Hz                         | Bool      | %M0.6          | True                       | True                    |         |
|          | Clock_1.25Hz                          | Bool      | %M0.4          | True                       | True                    |         |
| FIGURE 1 | Clock_1Hz                             | Bool      | %M0.5          | True                       | True                    |         |
| 100      | Clock_2.5Hz                           | Bool      | %M0.2          | True                       | True                    |         |
| 101      | Clock_2Hz                             | Bool      | %M0.3          | True                       | True                    |         |
| TON      | Clock_5Hz                             | Bool      | %M0.1          | True                       | True                    |         |
| 101      | Clock_10Hz                            | Bool      | %M0.0          | True                       | True                    |         |
| 0        | Clock_Byte                            | Byte      | %MBO           | True                       | True                    |         |
|          | rXcurrent_SH                          | Real      | %ID30          | True                       | True                    |         |
| (D)      | rXset_SH                              | Real      | %QD30          | True                       | True                    |         |
|          | rYcurrent_SH                          | Real      | %ID34          | True                       | True                    |         |
|          | rYset_SH                              | Real      | %QD34          | True                       | True                    |         |
| 101      | rZcurrent_SH                          | Real      | %ID38          | True                       | True                    |         |
| - TOTAL  | rZset_SH                              | Real      | %QD38          | True                       | True                    |         |
| 101      | xBeltConvIn_SH                        | Bool      | %Q0.5          | True                       | True                    |         |
| 101      | xBeltConvPnP_SH                       | Bool      | %Q0.6          | True                       | True                    |         |
| 101      | xBoxDetected_SH                       | Bool      | %I0.3          | True                       | True                    |         |
| 101      | xGrab_SH                              | Bool      | %Q0.3          | True                       | True                    |         |
|          | xPauseButton_SH                       | Bool      | %I0.2          | True                       | True                    |         |
| 101      | xPauseButtonLight_SH                  | Bool      | %Q0.2          | True                       | True                    |         |
| 101      | xPrevBInState_SH                      | Bool      | %M1.0          | True                       | True                    |         |
| <u> </u> | xPrevRInState_SH                      | Bool      | %M1.1          | True                       | True                    |         |
| (O)      | xRollConvln_SH                        | Bool      | %Q0.7          | True                       | True                    |         |
| [0]      | xRollConvPnP_SH                       | Bool      | %Q1.0          | True                       | True                    |         |
| (0)      | xRotate_SH                            | Bool      | %Q0.4          | True                       | True                    |         |
|          | xRotated_SH                           | Bool      | %I0.4          | True                       | True                    |         |
|          | xSensBln_SH                           | Bool      | %I0.5          | True                       | True                    |         |
| 3        | xSensRIn_SH                           | Bool      | %I0.6          | True                       | True                    |         |
| 101      | xStartButton_SH                       | Bool      | %IO.0          | True                       | True                    |         |
| 101      |                                       | Bool      |                |                            | True                    |         |
| <b>1</b> | xStartButtonLight_SH                  |           | %Q0.0          |                            |                         |         |
| (10)     | xStopButton_SH<br>xStopButtonLight_SH | Bool      | %I0.1<br>%Q0.1 | True<br>True               | True<br>True            |         |

# **PLC** tags

## Standard-Variablentabelle [61]

| con          | Name                 | Data type | Address | Visible in HMI engineering | Accessible from HMI/OPC UA/Web API | Comment |
|--------------|----------------------|-----------|---------|----------------------------|------------------------------------|---------|
| 01           | Clock_0.5Hz          | Bool      | %M0.7   | True                       | True                               |         |
| 0            | Clock_0.625Hz        | Bool      | %M0.6   | True                       | True                               |         |
| 3            | Clock_1.25Hz         | Bool      | %M0.4   | True                       | True                               |         |
| 101          | Clock_1Hz            | Bool      | %M0.5   | True                       | True                               |         |
| 0            | Clock_2.5Hz          | Bool      | %M0.2   | True                       | True                               |         |
| 0            | Clock_2Hz            | Bool      | %M0.3   | True                       | True                               |         |
| 101          | Clock_5Hz            | Bool      | %M0.1   | True                       | True                               |         |
| 0            | Clock_10Hz           | Bool      | %M0.0   | True                       | True                               |         |
| 01           | Clock_Byte           | Byte      | %MB0    | True                       | True                               |         |
| TON .        | rXcurrent_SH         | Real      | %ID30   | True                       | True                               |         |
| 0            | rXset_SH             | Real      | %QD30   | True                       | True                               |         |
| 101          | rYcurrent_SH         | Real      | %ID34   | True                       | True                               |         |
| 01           | rYset_SH             | Real      | %QD34   | True                       | True                               |         |
| 3            | rZcurrent_SH         | Real      | %ID38   | True                       | True                               |         |
| TON .        | rZset_SH             | Real      | %QD38   | True                       | True                               |         |
| ion .        | xBeltConvIn_SH       | Bool      | %Q0.5   | True                       | True                               |         |
| 0            | xBeltConvPnP_SH      | Bool      | %Q0.6   | True                       | True                               |         |
| 101          | xBoxDetected_SH      | Bool      | %10.3   | True                       | True                               |         |
| 01           | xGrab_SH             | Bool      | %Q0.3   | True                       | True                               |         |
| OI .         | xPauseButton_SH      | Bool      | %10.2   | True                       | True                               |         |
| 101          | xPauseButtonLight_SH | Bool      | %Q0.2   | True                       | True                               |         |
| 01           | xPrevBInState_SH     | Bool      | %M1.0   | True                       | True                               |         |
| 101          | xPrevRInState_SH     | Bool      | %M1.1   | True                       | True                               |         |
| 01           | xRollConvIn_SH       | Bool      | %Q0.7   | True                       | True                               |         |
| 31           | xRollConvPnP_SH      | Bool      | %Q1.0   | True                       | True                               |         |
| 01           | xRotate_SH           | Bool      | %Q0.4   | True                       | True                               |         |
| 01           | xRotated_SH          | Bool      | %IO.4   | True                       | True                               |         |
| 01           | xSensBln_SH          | Bool      | %I0.5   | True                       | True                               |         |
| 01           | xSensRln_SH          | Bool      | %I0.6   | True                       | True                               |         |
| TOTAL STREET | xStartButton_SH      | Bool      | %IO.O   | True                       | True                               |         |
| TON .        | xStartButtonLight_SH | Bool      | %Q0.0   | True                       | True                               |         |
| 101          | xStopButton_SH       | Bool      | %IO.1   | True                       | True                               |         |
| 101          | xStopButtonLight_SH  | Bool      | %Q0.1   | True                       | True                               |         |