MainRoutine - Ladder Diagram   **Page 1**
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BOTONES HMI

Rung 0:
```
START                    JA0    JA18   JA36   JA54   JA72   JA90   PC1    PC2    PC3
 ] [                     (L)    (L)    (L)    (L)    (L)    (L)    (L)    (L)    (L)
```

TALADRADO - REPISA

Rung 1:
```
PC1      REPISA    SIN1_TAL                                              Go_Tal
] [       ] [       ] [                                                  (L)
                  SIN2_TAL
                   ] [
                  SIN3_TAL
                   ] [
```

Rung 2:
```
PC1      REPISA   SIN4_TAL                                              Back_Tal
] [       ] [      ] [                                                  (L)
```

TALADRADO - ORGANIZADOR

Rung 3:
```
PC2    ORGANIZADOR    SIN1_TAL                                          Go_Tal
] [       ] [          ] [                                              (L)
                     SIN2_TAL
                      ] [
```

TALADRADO - COMEDOR

Rung 4:
```
PC3    COMEDERO    SIN1_TAL                                             Back_Tal
] [       ] [       ] [                                                 (L)
                  SIN2_TAL
                   ] [
                  SIN3_TAL
                   ] [
                  SIN4_TAL
                   ] [
```

ACTUADOR HACIA TALADRADO

Rung 5:
```
Go_Tal                                        PC1    PC2    PC3    PC4
 ] [                                          (U)    (U)    (U)    (L)
Back_Tal
 ] [
```

Rung 6:
```
PC4                                              TON
] [                                         ──Timer On Delay──        (EN)
                                            Timer         T_Tal
                                            Preset         5000        (DN)
                                            Accum             0
```

Rung 7:
```
T_Tal.DN                              PC4    PC1    PC2    PC3    Go_Tal  Back_Tal
 ] [                                  (U)    (L)    (L)    (L)    (U)     (U)
```

MainRoutine - Ladder Diagram   **Page 2**
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DISTRIBUIDOR HACIA REBORDEADORA 1

8

SIN_REB1   Back_Reb1

LEQ
Less Than or Eql (A<=B)
Source A   Est_Reb1.ACC
                        0
Source B   Est_Reb2.ACC
                        0

LEQ
Less Than or Eql (A<=B)
Source A   Est_Reb1.ACC
                        0
Source B   Est_Reb3.ACC
                        0

LEQ
Less Than or Eql (A<=B)
Source A   Est_Reb1.ACC
                        0
Source B   Est_Reb4.ACC
                        0

Go_Reb1
(L)

9

SIN_REB1   Go_Reb1

GRT
Greater Than (A>B)
Source A   Est_Reb1.ACC
                        0
Source B   Est_Reb2.ACC
                        0

GRT
Greater Than (A>B)
Source A   Est_Reb1.ACC
                        0
Source B   Est_Reb3.ACC
                        0

GRT
Greater Than (A>B)
Source A   Est_Reb1.ACC
                        0
Source B   Est_Reb4.ACC
                        0

Back_Reb1
(L)

10

Go_Reb1

Back_Reb1

TON
Timer On Delay   (EN)
Timer   T_Reb1
Preset   5000   (DN)
Accum   0

11

Go_Reb1

CTU
Count Up   (CU)
Counter   Est_Reb1
Preset   100   (DN)
Accum   0

12

T_Reb1.DN

Go_Reb1   Back_Reb1
(U)   (U)

DISTRIBUIDOR HACIA REBORDEADORA 2

13

SIN_REB2   Back_Reb2

LEQ
Less Than or Eql (A<=B)
Source A   Est_Reb2.ACC
                        0
Source B   Est_Reb3.ACC
                        0

LEQ
Less Than or Eql (A<=B)
Source A   Est_Reb2.ACC
                        0
Source B   Est_Reb4.ACC
                        0

Go_Reb2
(L)

MainRoutine – Ladder Diagram
Page 3
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14

SIN_REB2 — Go_Reb2 —

GRT
Greater Than (A>B)
Source A Est_Reb2.ACC
0
Source B Est_Reb3.ACC
0

GRT
Greater Than (A>B)
Source A Est_Reb2.ACC
0
Source B Est_Reb4.ACC
0

Back_Reb2 (L)

15

Go_Reb2
Back_Reb2

TON
Timer On Delay — (EN)
Timer   T_Reb2
Preset   5000 — (DN)
Accum   0

16

Go_Reb2

CTU
Count Up — (CU)
Counter   Est_Reb2
Preset   100 — (DN)
Accum   0

17

T_Reb2.DN

Go_Reb2 (U)   Back_Reb2 (U)

18

DISTRIBUIDOR HACIA REBORDEADORA 3

SIN_REB3 — Back_Reb3 —

LEQ
Less Than or Eql (A<=B)
Source A Est_Reb3.ACC
0
Source B Est_Reb4.ACC
0

Go_Reb3 (L)

19

SIN_REB3 — Go_Reb3 —

GRT
Greater Than (A>B)
Source A Est_Reb3.ACC
0
Source B Est_Reb4.ACC
0

Back_Reb3 (L)

20

Go_Reb3
Back_Reb3

TON
Timer On Delay — (EN)
Timer   T_Reb3
Preset   5000 — (DN)
Accum   0

21

Go_Reb3

CTU
Count Up — (CU)
Counter   Est_Reb3
Preset   100 — (DN)
Accum   0

22

T_Reb3.DN

Go_Reb3 (U)   Back_Reb3 (U)

23

DISTRIBUIDOR HACIA REBORDEADORA 4

SIN_REB4

Go_Reb4 (L)

MainRoutine – Ladder Diagram   **Page 4**

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24
```
Go_Reb4                                        TON
  ] [                                   Timer On Delay        (EN)
                                        Timer      T_Reb4
                                        Preset        5000     (DN)
                                        Accum            0
```

25
```
Go_Reb4                                        CTU
  ] [                                   Count Up              (CU)
                                        Counter   Est_Reb4
                                        Preset         100     (DN)
                                        Accum            0
```

26
```
T_Reb4.DN                                               Go_Reb4
  ] [                                                     (U)
```

SALIDA REBORDEADORA 1

27
```
SIN_Up_REB1                                    CTD
  ] [                                   Count Down           (CD)
                                        Counter   Est_Reb1
                                        Preset         100     (DN)
                                        Accum            0

                                                        Stop_Reb1
                                                          (L)
```

28
```
Stop_Reb1                                      TON
  ] [                                   Timer On Delay        (EN)
                                        Timer    T_Stop_Reb1
                                        Preset        5000     (DN)
                                        Accum            0
```

29
```
T_Stop_Reb1.DN                                          Stop_Reb1
  ] [                                                     (U)
```

SALIDA REBORDEADORA 2

30
```
SIN_Up_Reb2                                    CTD
  ] [                                   Count Down           (CD)
                                        Counter   Est_Reb2
                                        Preset         100     (DN)
                                        Accum            0

                                                        Stop_Reb2
                                                          (L)
```

31
```
Stop_Reb2                                      TON
  ] [                                   Timer On Delay        (EN)
                                        Timer    T_Stop_Reb2
                                        Preset        5000     (DN)
                                        Accum            0
```

32
```
T_Stop_Reb2.DN                                          Stop_Reb2
  ] [                                                     (U)
```

SALIDA REBORDEADORA 3

33
```
SIN_Up_Reb3                                    CTD
  ] [                                   Count Down           (CD)
                                        Counter   Est_Reb3
                                        Preset         100     (DN)
                                        Accum            0

                                                        Stop_Reb3
                                                          (L)
```

```
34   Stop_Reb3                                          TON
     ] [                                        Timer On Delay        (EN)
                                                Timer    T_Stop_Reb3
                                                Preset          5000  (DN)
                                                Accum              0

35   T_Stop_Reb3.DN                                               Stop_Reb3
     ] [                                                             (U)
```

                                      SALIDA REBORDEADORA 4

```
36   SIN_Up_Reb4                                        CTD
     ] [                                        Count Down           (CD)
                                                Counter    Est_Reb4
                                                Preset           100  (DN)
                                                Accum              0

                                                                 Stop_Reb4
                                                                   (L)

37   Stop_Reb4                                          TON
     ] [                                        Timer On Delay        (EN)
                                                Timer    T_Stop_Reb4
                                                Preset          5000  (DN)
                                                Accum              0

38   T_Stop_Reb4.DN                                               Stop_Reb4
     ] [                                                             (U)
```

                                        ENTRADA ROBOT

```
39   SIN_Rob    SIN5_Rob                                           Go_Rob
     ] [        ]/[                                                   (L)

40   SIN_Rob    SIN5_Rob                                          Back_Rob
     ] [        ] [                                                  (L)

41      Go_Rob                                          TON
        ] [                                      Timer On Delay        (EN)
                                                Timer         T_Rob
       Back_Rob                                 Preset          5000  (DN)
        ] [                                     Accum              0

42   T_Rob.DN                                           Go_Rob    Back_Rob
     ] [                                                   (U)        (U)
```

                                         SALIDA ROBOT

```
43   SOUT_Rob                                                     Down_Rob
     ] [                                                            (L)

44   Down_Rob                                           TON
     ] [                                        Timer On Delay        (EN)
                                                Timer    T_Rob_Down
                                                Preset          5000  (DN)
                                                Accum              0

45   T_Rob_Down.DN                                                Down_Rob
     ] [                                                             (U)
```

                                       EMPAQUETADORA 1

```
46   JA0                                                 JA16      JA17
     ] [                                                   (U)        (U)
```

MainRoutine – Ladder Diagram   **Page 6**
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EMPAQUETADORA 1 SENSOR 1

47
JA0   SIN1_DIST1   JA1
                                                                   (L)

48
JA1   JA0
                                                                   (U)

49
JA1   LES   JA2
                              Less Than (A<B)   (L)
                              Source A   PART1_DIST1.ACC
                                              0
                              Source B   OBJ_PART1
                                              2

                                             EQU   JA3
                              Equal   (L)
                              Source A   PART1_DIST1.ACC
                                              0
                              Source B   OBJ_PART1
                                              2

50
JA2   CTU
                              Count Up   (CU)
                              Counter   PART1_DIST1
                              Preset   10   (DN)
                              Accum   0

51
JA2   JA1
                                                                   (U)
JA3

EMPAQUETADORA 1 SENSOR 2

52
JA0   SIN2_DIST1   JA4
                                                                   (L)

53
JA4   JA0
                                                                   (U)

54
JA4   LES   JA5
                              Less Than (A<B)   (L)
                              Source A   PART2_DIST1.ACC
                                              0
                              Source B   OBJ_PART2
                                              1

                                             EQU   JA6
                              Equal   (L)
                              Source A   PART2_DIST1.ACC
                                              0
                              Source B   OBJ_PART2
                                              1

55
JA5   CTU
                              Count Up   (CU)
                              Counter   PART2_DIST1
                              Preset   10   (DN)
                              Accum   0

56
JA5   JA4
                                                                   (U)
JA6

MainRoutine – Ladder Diagram

Page 7

Programa_Ladder_Planta:MainTask:MainProgram

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EMPAQUETADORA 1 SENSOR 3

57
```
   JA0      SIN3_DIST1                                              JA7
 --| |--------| |--                                               --(L)--
```

58
```
   JA7                                                             JA0
 --| |--                                                         --(U)--
```

59
```
   JA7                                    ┌─────LES─────┐          JA8
 --| |----------------------------------┤ Less Than (A<B)├       --(L)--
                                         │ Source A  PART3_DIST1.ACC
                                         │               0
                                         │ Source B      OBJ_PART3
                                         │               2
                                         └─────────────┘

                                         ┌─────EQU─────┐          JA9
                                       ──┤ Equal       ├         --(L)--
                                         │ Source A  PART3_DIST1.ACC
                                         │               0
                                         │ Source B      OBJ_PART3
                                         │               2
                                         └─────────────┘
```

60
```
   JA8                                    ┌─────CTU─────┐
 --| |----------------------------------┤ Count Up     ├--(CU)--
                                         │ Counter  PART3_DIST1
                                         │ Preset        10  --(DN)--
                                         │ Accum          0
                                         └─────────────┘
```

61
```
   JA8                                                             JA7
 --| |--                                                         --(U)--
   JA9
 --| |--
```

EMPAQUETADORA 1 SENSOR 4

62
```
   JA0      SIN4_DIST1                                             JA10
 --| |--------| |--                                               --(L)--
```

63
```
   JA10                                                            JA0
 --| |--                                                         --(U)--
```

64
```
   JA10                                   ┌─────LES─────┐          JA11
 --| |----------------------------------┤ Less Than (A<B)├       --(L)--
                                         │ Source A  PART4_DIST1.ACC
                                         │               0
                                         │ Source B      OBJ_PART4
                                         │               0
                                         └─────────────┘

                                         ┌─────EQU─────┐          JA12
                                       ──┤ Equal       ├         --(L)--
                                         │ Source A  PART4_DIST1.ACC
                                         │               0
                                         │ Source B      OBJ_PART4
                                         │               0
                                         └─────────────┘
```

65
```
   JA11                                   ┌─────CTU─────┐
 --| |----------------------------------┤ Count Up     ├--(CU)--
                                         │ Counter  PART4_DIST1
                                         │ Preset        10  --(DN)--
                                         │ Accum          0
                                         └─────────────┘
```

66
```
   JA11                                                            JA10
 --| |--                                                         --(U)--
   JA12
 --| |--
```

MainRoutine - Ladder Diagram **Page 8**
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EMPAQUETADORA 1 SENSOR 5

67 — JA0 — SIN5_DIST1 —————————————————————————————— JA13 (L)

68 — JA13 ——— JA0 (U)

69 — JA13 ————————————————————
LES
Less Than (A<B)
Source A   PART5_DIST1.ACC
                                0
Source B   OBJ_PART5
                                0
— JA14 (L)

EQU
Equal
Source A   PART5_DIST1.ACC
                                0
Source B   OBJ_PART5
                                0
— JA15 (L)

70 — JA14 ————————————————————
CTU
Count Up
Counter   PART5_DIST1
Preset   10
Accum   0
— (CU)
— (DN)

71 — JA14 ——————————————————————————————————————— JA13 (U)
   — JA15 —

ACTUADOR DISTRIBUIDORA 1
- EMPUJAR

72 — JA2 ——— Go_Dist1 ( )
   — JA5 —
   — JA8 —
   — JA11 —
   — JA14 —

73 — Go_Dist1 ————————————————————
TON
Timer On Delay
Timer   TIMER_EMP_DIST1
Preset   5000
Accum   0
— (EN)
— (DN)

74 — TIMER_EMP_DIST1.DN —————————————————————————— JA16 (L)

75 — JA16 ——————————— JA0 (L) — JA2 (U) — JA5 (U) — JA8 (U) — JA11 (U) — JA14 (U)

MainRoutine - Ladder Diagram   **Page 9**

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ACTUADOR DISTRIBUIDORA 1
- RECOJER

76

JA3 / Back_Dist1 ( )
JA6
JA9
JA12
JA15

77

Back_Dist1

```
          TON
          Timer On Delay        (EN)
          Timer   TIMER_REC_DIST1
          Preset          5000   (DN)
          Accum              0
```

78

TIMER_REC_DIST1.DN   JA17 (L)

79

JA17 (L)   JA0 (L)   JA3 (U)   JA6 (U)   JA9 (U)   JA12 (U)   JA15 (U)

EMPAQUETADORA 2

80

JA18   JA34 (U)   JA35 (U)

EMPAQUETADORA 2 SENSOR 1

81

JA18   SIN1_DIST2   JA19 (L)

82

JA19   JA18 (U)

83

JA19

```
          LES                          JA20 (L)
          Less Than (A<B)
          Source A   PART1_DIST2.ACC
                             0
          Source B        OBJ_PART1
                             2
```

```
          EQU                          JA21 (L)
          Equal
          Source A   PART1_DIST2.ACC
                             0
          Source B        OBJ_PART1
                             2
```

84

JA20

```
          CTU                          (CU)
          Count Up
          Counter   PART1_DIST2
          Preset            10   (DN)
          Accum              0
```

MainRoutine - Ladder Diagram **Page 10**
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```
                 JA20                                                              JA19
85      +--------] [--------+                                                      (U)
        |                   |
        |         JA21      |
        +--------] [--------+


                        EMPAQUETADORA 2 SENSOR 2

         JA18      SIN2_DIST2                                                       JA22
86      --] [------] [----                                                         (L)


         JA22                                                                       JA18
87      --] [----                                                                  (U)


         JA22                                    LES                  JA23
88      --] [----                                Less Than (A<B)      (L)
                                                 Source A   PART2_DIST2.ACC
                                                                     0
                                                 Source B        OBJ_PART2
                                                                     1

                                                 EQU                  JA24
                                                 Equal                (L)
                                                 Source A   PART2_DIST2.ACC
                                                                     0
                                                 Source B        OBJ_PART2
                                                                     1


         JA23                                    CTU
89      --] [----                                Count Up             (CU)
                                                 Counter   PART2_DIST2
                                                 Preset            10  (DN)
                                                 Accum              0


                 JA23                                                              JA22
90      +--------] [--------+                                                      (U)
        |                   |
        |         JA24      |
        +--------] [--------+


                        EMPAQUETADORA 2 SENSOR 3

         JA18      SIN3_DIST2                                                       JA25
91      --] [------] [----                                                         (L)


         JA25                                                                       JA18
92      --] [----                                                                  (U)


         JA25                                    LES                  JA26
93      --] [----                                Less Than (A<B)      (L)
                                                 Source A   PART3_DIST2.ACC
                                                                     0
                                                 Source B        OBJ_PART3
                                                                     2

                                                 EQU                  JA27
                                                 Equal                (L)
                                                 Source A   PART3_DIST2.ACC
                                                                     0
                                                 Source B        OBJ_PART3
                                                                     2


         JA26                                    CTU
94      --] [----                                Count Up             (CU)
                                                 Counter   PART3_DIST2
                                                 Preset            10  (DN)
                                                 Accum              0
```
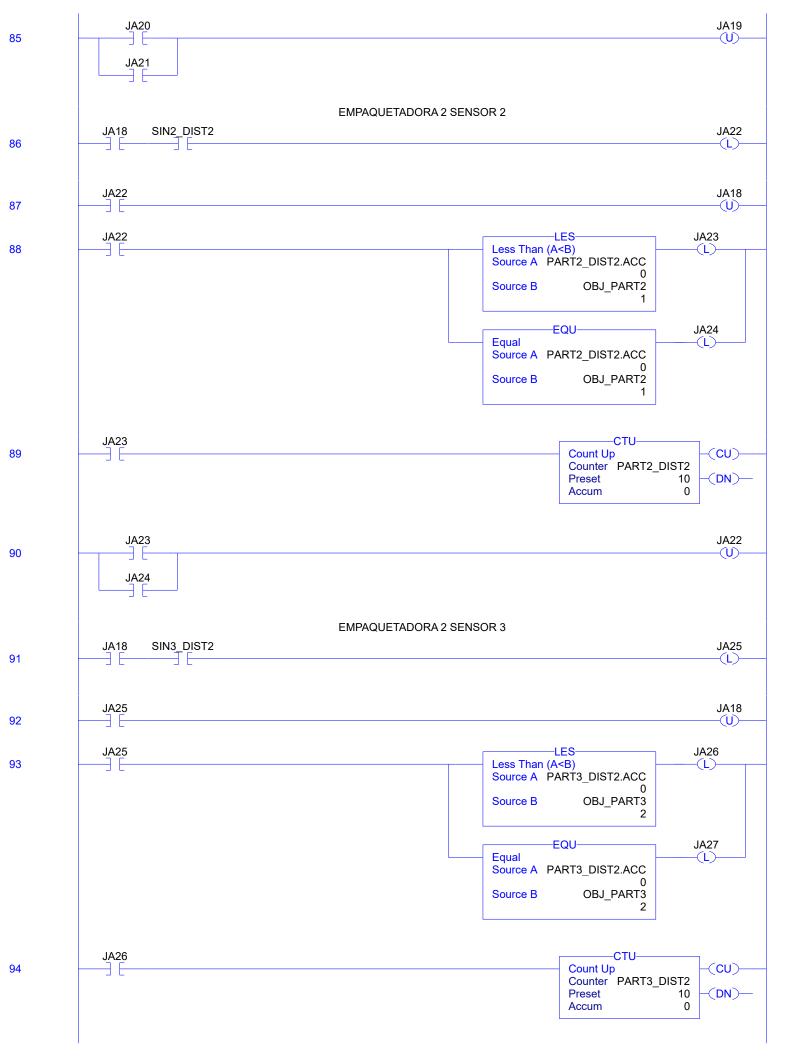
MainRoutine - Ladder Diagram

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Programa_Ladder_Planta:MainTask:MainProgram

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95 — JA26 / JA27 parallel — (U) JA25

EMPAQUETADORA 2 SENSOR 4

96 — JA18 — SIN4_DIST2 — (L) JA28

97 — JA28 — (U) JA18

98 — JA28 —
- LES — Less Than (A<B) — Source A PART4_DIST2.ACC 0 — Source B OBJ_PART4 0 — (L) JA29
- EQU — Equal — Source A PART4_DIST2.ACC 0 — Source B OBJ_PART4 0 — (L) JA30

99 — JA29 —
CTU — Count Up — Counter PART4_DIST2 — Preset 10 — Accum 0 — (CU) (DN)

100 — JA29 / JA30 parallel — (U) JA28

EMPAQUETADORA 2 SENSOR 5

101 — JA18 — SIN5_DIST2 — (L) JA31

102 — JA31 — (U) JA18

103 — JA31 —
- LES — Less Than (A<B) — Source A PART5_DIST2.ACC 0 — Source B OBJ_PART5 0 — (L) JA32
- EQU — Equal — Source A PART5_DIST2.ACC 0 — Source B OBJ_PART5 0 — (L) JA33

104 — JA32 —
CTU — Count Up — Counter PART5_DIST2 — Preset 10 — Accum 0 — (CU) (DN)

MainRoutine - Ladder Diagram   **Page 12**
Programa_Ladder_Planta:MainTask:MainProgram   29/05/2023 9:22:33 p. m.
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105

```
        JA32                                                              JA31
    +---| |---+                                                         --(U)--
    |  JA33   |
    +---| |---+
```

ACTUADOR DISTRIBUIDORA 2
- EMPUJAR

106

```
        JA20                                                            Go_Dist2
    +---| |---+                                                         --( )--
    |  JA23   |
    +--| |----+
    |    JA26 |
    +---| |---+
    |     JA29|
    +---| |---+
    |      JA32
    +---| |---+
```

107

```
    Go_Dist2                                       +--------TON--------+
    --| |--                                        | Timer On Delay    |--(EN)--
                                                   | Timer TIMER_EMP_DIST2 |
                                                   | Preset        5000 |--(DN)--
                                                   | Accum            0 |
                                                   +-------------------+
```

108

```
    TIMER_EMP_DIST2.DN                                                    JA34
    --| |--                                                             --(L)--
```

109

```
    JA34                          JA18    JA20    JA23    JA26    JA29    JA32
    --| |--                      --(L)-- --(U)-- --(U)-- --(U)-- --(U)-- --(U)--
```

ACTUADOR DISTRIBUIDORA 2
- RECOJER

110

```
        JA21                                                          Back_Dist2
    +---| |---+                                                         --( )--
    |  JA24   |
    +--| |----+
    |    JA27 |
    +---| |---+
    |     JA30|
    +---| |---+
    |      JA33
    +---| |---+
```

111

```
    Back_Dist2                                     +--------TON--------+
    --| |--                                        | Timer On Delay    |--(EN)--
                                                   | Timer TIMER_REC_DIST2 |
                                                   | Preset        5000 |--(DN)--
                                                   | Accum            0 |
                                                   +-------------------+
```

112

```
    TIMER_REC_DIST2.DN                                                   JA35
    --| |--                                                             --(L)--
```

113

```
    JA35                          JA18    JA21    JA24    JA27    JA30    JA33
    --| |--                      --(L)-- --(U)-- --(U)-- --(U)-- --(U)-- --(U)--
```

MainRoutine – Ladder Diagram
Programa_Ladder_Planta:MainTask:MainProgram
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EMPAQUETADORA 3

114
```
JA36                                                    JA52    JA53
─┤ ├─────────────────────────────────────────────────(U)─────(U)─
```

EMPAQUETADORA 3 SENSOR 1

115
```
JA36      SIN1_DIST3                                              JA37
─┤ ├───────┤ ├──────────────────────────────────────────────────(L)─
```

116
```
JA37                                                             JA36
─┤ ├─────────────────────────────────────────────────────────────(U)─
```

117
```
JA37                        ┌─────────LES─────────┐              JA38
─┤ ├────────────────────────┤ Less Than (A<B)     │             (L)
                            │ Source A  PART1_DIST3.ACC │
                            │                     0│
                            │ Source B     OBJ_PART1 │
                            │                     2│
                            └─────────────────────┘
                            ┌─────────EQU─────────┐              JA39
                            │ Equal               │             (L)
                            │ Source A  PART1_DIST3.ACC │
                            │                     0│
                            │ Source B     OBJ_PART1 │
                            │                     2│
                            └─────────────────────┘
```

118
```
JA38                                  ┌─────────CTU─────────┐   
─┤ ├──────────────────────────────────┤ Count Up            │──(CU)─
                                      │ Counter  PART1_DIST3 │
                                      │ Preset           10│──(DN)─
                                      │ Accum             0│
                                      └─────────────────────┘
```

119
```
    JA38                                                          JA37
────┤ ├──────┬────────────────────────────────────────────────(U)─
    JA39     │
────┤ ├──────┘
```

EMPAQUETADORA 3 SENSOR 2

120
```
JA36      SIN2_DIST3                                              JA40
─┤ ├───────┤ ├──────────────────────────────────────────────────(L)─
```

121
```
JA40                                                             JA36
─┤ ├─────────────────────────────────────────────────────────────(U)─
```

122
```
JA40                        ┌─────────LES─────────┐              JA41
─┤ ├────────────────────────┤ Less Than (A<B)     │             (L)
                            │ Source A  PART2_DIST3.ACC │
                            │                     0│
                            │ Source B     OBJ_PART2 │
                            │                     1│
                            └─────────────────────┘
                            ┌─────────EQU─────────┐              JA42
                            │ Equal               │             (L)
                            │ Source A  PART2_DIST3.ACC │
                            │                     0│
                            │ Source B     OBJ_PART2 │
                            │                     1│
                            └─────────────────────┘
```

123
```
JA41                                  ┌─────────CTU─────────┐   
─┤ ├──────────────────────────────────┤ Count Up            │──(CU)─
                                      │ Counter  PART2_DIST3 │
                                      │ Preset           10│──(DN)─
                                      │ Accum             0│
                                      └─────────────────────┘
```

MainRoutine - Ladder Diagram   **Page 14**
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```
                  JA41                                                              JA40
124   ├──────┬────┤ ├────┬─────────────────────────────────────────────────────────( U )──
      │      │    JA42   │
      │      └────┤ ├────┘
```
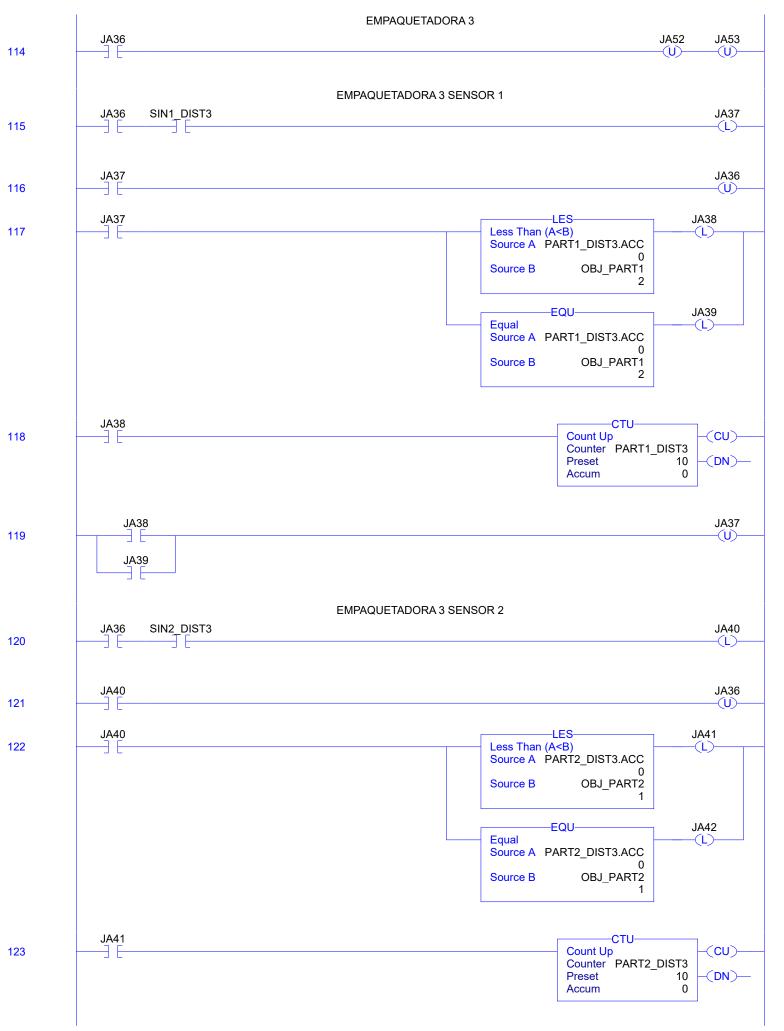
EMPAQUETADORA 3 SENSOR 3

```
              JA36      SIN3_DIST3                                                  JA43
125   ├────────┤ ├────────┤ ├───────────────────────────────────────────────────────( L )──

              JA43                                                                  JA36
126   ├────────┤ ├─────────────────────────────────────────────────────────────────( U )──

              JA43                                    ┌─────LES─────────────┐        JA44
127   ├────────┤ ├─────────────────────────┬─────────┤ Less Than (A<B)      ├────────( L )──┐
                                            │         │ Source A  PART3_DIST3.ACC    │         │
                                            │         │                     0 │       │
                                            │         │ Source B      OBJ_PART3    │       │
                                            │         │                     2 │       │
                                            │         └─────────────────────┘        │
                                            │         ┌─────EQU─────────────┐        JA45 │
                                            └─────────┤ Equal               ├────────( L )──┘
                                                      │ Source A  PART3_DIST3.ACC    │
                                                      │                     0 │
                                                      │ Source B      OBJ_PART3    │
                                                      │                     2 │
                                                      └─────────────────────┘

              JA44                                    ┌─────CTU─────────────┐
128   ├────────┤ ├──────────────────────────────────┤ Count Up            ├────(CU )──
                                                      │ Counter   PART3_DIST3│
                                                      │ Preset           10 ├────(DN )──
                                                      │ Accum             0 │
                                                      └─────────────────────┘

                  JA44                                                              JA43
129   ├──────┬────┤ ├────┬─────────────────────────────────────────────────────────( U )──
      │      │    JA45   │
      │      └────┤ ├────┘
```

EMPAQUETADORA 3 SENSOR 4

```
              JA36      SIN4_DIST3                                                  JA46
130   ├────────┤ ├────────┤ ├───────────────────────────────────────────────────────( L )──

              JA46                                                                  JA36
131   ├────────┤ ├─────────────────────────────────────────────────────────────────( U )──

              JA46                                    ┌─────LES─────────────┐        JA47
132   ├────────┤ ├─────────────────────────┬─────────┤ Less Than (A<B)      ├────────( L )──┐
                                            │         │ Source A  PART4_DIST3.ACC    │         │
                                            │         │                     0 │       │
                                            │         │ Source B      OBJ_PART4    │       │
                                            │         │                     0 │       │
                                            │         └─────────────────────┘        │
                                            │         ┌─────EQU─────────────┐        JA48 │
                                            └─────────┤ Equal               ├────────( L )──┘
                                                      │ Source A  PART4_DIST3.ACC    │
                                                      │                     0 │
                                                      │ Source B      OBJ_PART4    │
                                                      │                     0 │
                                                      └─────────────────────┘

              JA47                                    ┌─────CTU─────────────┐
133   ├────────┤ ├──────────────────────────────────┤ Count Up            ├────(CU )──
                                                      │ Counter   PART4_DIST3│
                                                      │ Preset           10 ├────(DN )──
                                                      │ Accum             0 │
                                                      └─────────────────────┘
```

MainRoutine - Ladder Diagram

Programa_Ladder_Planta:MainTask:MainProgram

Total number of rungs in routine: 250

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134

JA47
JA48
JA46
(U)

EMPAQUETADORA 3 SENSOR 5

135

JA36   SIN5_DIST3
JA49
(L)

136

JA49
JA36
(U)

137

JA49

LES
Less Than (A<B)
Source A   PART5_DIST3.ACC
0
Source B   OBJ_PART5
0

JA50
(L)

EQU
Equal
Source A   PART5_DIST3.ACC
0
Source B   OBJ_PART5
0

JA51
(L)

138

JA50

CTU
Count Up
Counter   PART5_DIST3
Preset   10
Accum   0

(CU)
(DN)

139

JA50
JA51
JA49
(U)

ACTUADOR DISTRIBUIDORA 3
- EMPUJAR

140

JA38
JA41
JA44
JA47
JA50
Go_Dist3
( )

141

Go_Dist3

TON
Timer On Delay
Timer   TIMER_EMP_DIST3
Preset   5000
Accum   0

(EN)
(DN)

142

TIMER_EMP_DIST3.DN
JA52
(L)

MainRoutine – Ladder Diagram　　**Page 16**
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143 — JA52 — JA36 (L) — JA38 (U) — JA41 (U) — JA44 (U) — JA47 (U) — JA50 (U)

ACTUADOR DISTRIBUIDORA 3
- RECOJER

144 — JA39 — Back_Dist3 ( )
- JA42
- JA45
- JA48
- JA51

145 — Back_Dist3 — TON
Timer On Delay — EN
Timer TIMER_REC_DIST3
Preset 5000 — DN
Accum 0

146 — TIMER_REC_DIST3.DN — JA53 (L)

147 — JA53 — JA36 (L) — JA39 (U) — JA42 (U) — JA45 (U) — JA48 (U) — JA51 (U)

EMPAQUETADORA 4

148 — JA54 — JA70 (U) — JA71 (U)

EMPAQUETADORA 4 SENSOR 1

149 — JA54 — SIN1_DIST4 — JA55 (L)

150 — JA55 — JA54 (U)

151 — JA55 — LES
Less Than (A<B) — JA56 (L)
Source A PART1_DIST4.ACC
0
Source B OBJ_PART1
2

EQU
Equal — JA57 (L)
Source A PART1_DIST4.ACC
0
Source B OBJ_PART1
2

152 — JA56 — CTU
Count Up — CU
Counter PART1_DIST4
Preset 10 — DN
Accum 0

MainRoutine - Ladder Diagram   **Page 17**
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```
          JA56                                                              JA55
153  ──┬──┤ ├──┬──────────────────────────────────────────────────────────(U)──
        │  JA57 │
        └──┤ ├──┘


                          EMPAQUETADORA 4 SENSOR 2

          JA54   SIN2_DIST4                                                 JA58
154  ─────┤ ├────┤ ├──────────────────────────────────────────────────────(L)──


          JA58                                                              JA54
155  ─────┤ ├────────────────────────────────────────────────────────────(U)──


          JA58                              ┌─────LES─────┐              JA59
156  ─────┤ ├─────────────────────────────┤ Less Than (A<B)├────────────(L)──
                                           │ Source A  PART2_DIST4.ACC │
                                           │                        0  │
                                           │ Source B       OBJ_PART2  │
                                           │                        1  │
                                           └──────────────────────────┘
                                            ┌─────EQU─────┐              JA60
                                           ┤ Equal        ├────────────(L)──
                                           │ Source A  PART2_DIST4.ACC │
                                           │                        0  │
                                           │ Source B       OBJ_PART2  │
                                           │                        1  │
                                           └──────────────────────────┘


          JA59                              ┌─────CTU─────┐
157  ─────┤ ├─────────────────────────────┤ Count Up      ├──(CU)──
                                           │ Counter  PART2_DIST4 │
                                           │ Preset          10   │──(DN)──
                                           │ Accum            0   │
                                           └──────────────────────┘


          JA59                                                              JA58
158  ──┬──┤ ├──┬──────────────────────────────────────────────────────────(U)──
        │  JA60 │
        └──┤ ├──┘


                          EMPAQUETADORA 4 SENSOR 3

          JA54   SIN3_DIST4                                                 JA61
159  ─────┤ ├────┤ ├──────────────────────────────────────────────────────(L)──


          JA61                                                              JA54
160  ─────┤ ├────────────────────────────────────────────────────────────(U)──


          JA61                              ┌─────LES─────┐              JA62
161  ─────┤ ├─────────────────────────────┤ Less Than (A<B)├────────────(L)──
                                           │ Source A  PART3_DIST4.ACC │
                                           │                        0  │
                                           │ Source B       OBJ_PART3  │
                                           │                        2  │
                                           └──────────────────────────┘
                                            ┌─────EQU─────┐              JA63
                                           ┤ Equal        ├────────────(L)──
                                           │ Source A  PART3_DIST4.ACC │
                                           │                        0  │
                                           │ Source B       OBJ_PART3  │
                                           │                        2  │
                                           └──────────────────────────┘


          JA62                              ┌─────CTU─────┐
162  ─────┤ ├─────────────────────────────┤ Count Up      ├──(CU)──
                                           │ Counter  PART3_DIST4 │
                                           │ Preset          10   │──(DN)──
                                           │ Accum            0   │
                                           └──────────────────────┘
```
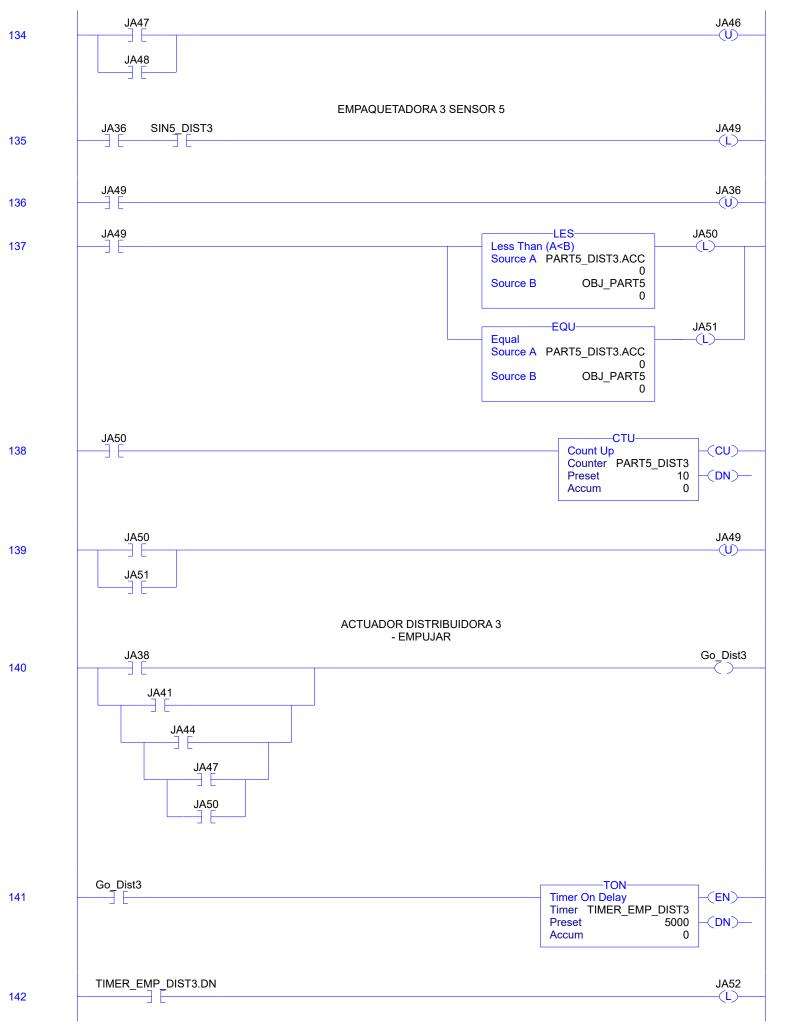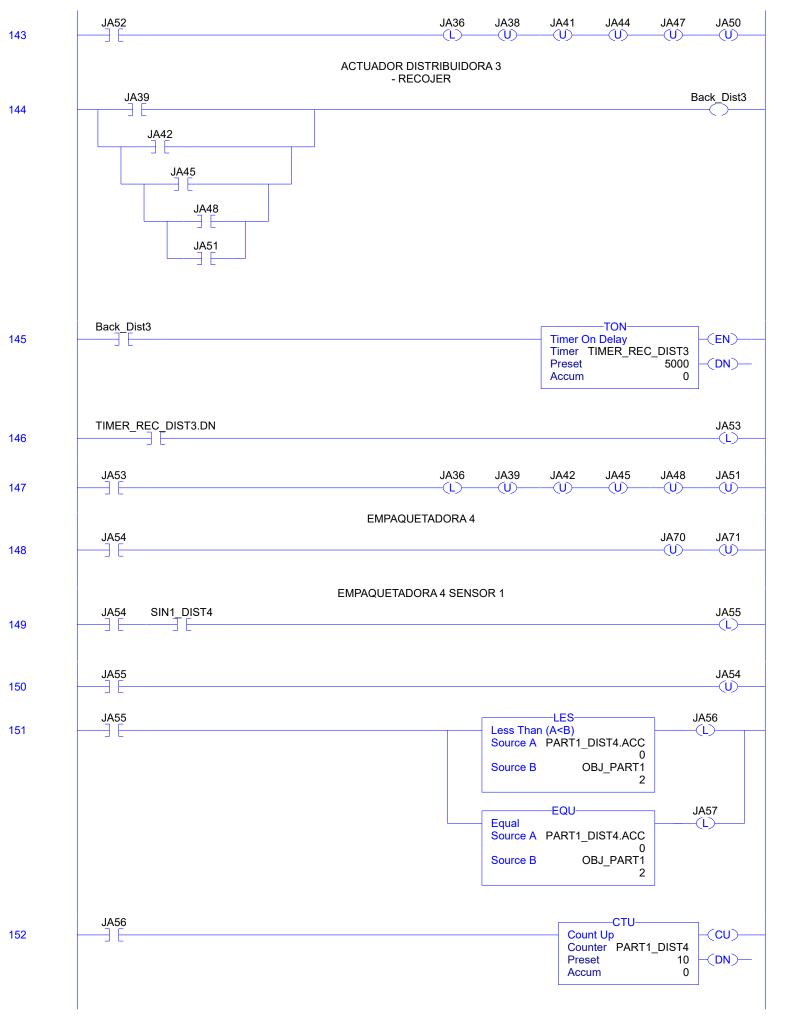
MainRoutine – Ladder Diagram **Page 18**
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163
```
        JA62                                                              JA61
   +----] [----+                                                         (U)
   |    JA63   |
   +----] [----+
```

EMPAQUETADORA 4 SENSOR 4

164
```
   JA54      SIN4_DIST4                                                   JA64
  --] [--------] [--                                                     (L)
```

165
```
   JA64                                                                  JA54
  --] [--                                                               (U)
```

166
```
   JA64                           LES                              JA65
  --] [--                   Less Than (A<B)                        (L)
                           Source A  PART4_DIST4.ACC
                                               0
                           Source B      OBJ_PART4
                                               0

                                 EQU                              JA66
                           Equal                                 (L)
                           Source A  PART4_DIST4.ACC
                                               0
                           Source B      OBJ_PART4
                                               0
```

167
```
   JA65                                           CTU
  --] [--                                   Count Up              (CU)
                                           Counter  PART4_DIST4
                                           Preset            10   (DN)
                                           Accum              0
```

168
```
        JA65                                                              JA64
   +----] [----+                                                         (U)
   |    JA66   |
   +----] [----+
```

EMPAQUETADORA 4 SENSOR 5

169
```
   JA54      SIN5_DIST4                                                   JA67
  --] [--------] [--                                                     (L)
```

170
```
   JA67                                                                  JA54
  --] [--                                                               (U)
```

171
```
   JA67                           LES                              JA68
  --] [--                   Less Than (A<B)                        (L)
                           Source A  PART5_DIST4.ACC
                                               0
                           Source B      OBJ_PART5
                                               0

                                 EQU                              JA69
                           Equal                                 (L)
                           Source A  PART5_DIST4.ACC
                                               0
                           Source B      OBJ_PART5
                                               0
```

172
```
   JA68                                           CTU
  --] [--                                   Count Up              (CU)
                                           Counter  PART5_DIST4
                                           Preset            10   (DN)
                                           Accum              0
```

MainRoutine - Ladder Diagram   **Page 19**
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173
```
    JA68                                                      JA67
 ┤ ├──┬──────────────────────────────────────────────────────(U)──
    JA69│
 ┤ ├──┘
```

ACTUADOR DISTRIBUIDORA 4
- EMPUJAR

174
```
    JA56                                                      Go_Dist4
 ┤ ├──┬──────────────────────────┬────────────────────────────( )──
       JA59                        │
    ┤ ├──┬───────────────┤
          JA62            │
       ┤ ├──┬──────┤
             JA65   │
          ┤ ├──┬──┤
                JA68│
             ┤ ├──┘
```

175
```
 Go_Dist4                              ┌────────TON────────┐
 ┤ ├──────────────────────────────────┤Timer On Delay     ├(EN)──
                                       │Timer  TIMER_EMP_DIST4│
                                       │Preset         5000 ├(DN)──
                                       │Accum             0 │
                                       └───────────────────┘
```

176
```
 TIMER_EMP_DIST4.DN                                           JA70
 ┤ ├──────────────────────────────────────────────────────────(L)──
```

177
```
    JA70                    JA54   JA56   JA59   JA62   JA65   JA68
 ┤ ├─────────────────────────(L)────(U)────(U)────(U)────(U)────(U)──
```

ACTUADOR DISTRIBUIDORA 4
- RECOJER

178
```
    JA57                                                      Back_Dist4
 ┤ ├──┬──────────────────────────┬────────────────────────────( )──
       JA60                        │
    ┤ ├──┬───────────────┤
          JA63            │
       ┤ ├──┬──────┤
             JA66   │
          ┤ ├──┬──┤
                JA69│
             ┤ ├──┘
```

179
```
 Back_Dist4                            ┌────────TON────────┐
 ┤ ├──────────────────────────────────┤Timer On Delay     ├(EN)──
                                       │Timer  TIMER_REC_DIST4│
                                       │Preset         5000 ├(DN)──
                                       │Accum             0 │
                                       └───────────────────┘
```

180
```
 TIMER_REC_DIST4.DN                                           JA71
 ┤ ├──────────────────────────────────────────────────────────(L)──
```

181
```
    JA71                    JA54   JA57   JA60   JA63   JA66   JA69
 ┤ ├─────────────────────────(L)────(U)────(U)────(U)────(U)────(U)──
```

EMPAQUETADORA 5

182
JA72
JA88 (U)
JA89 (U)

EMPAQUETADORA 5 SENSOR 1

183
JA72
SIN1_DIST5
JA73 (L)

184
JA73
JA72 (U)

185
JA73
LES
Less Than (A<B)
Source A   PART1_DIST5.ACC
0
Source B   OBJ_PART1
2
JA74 (L)

EQU
Equal
Source A   PART1_DIST5.ACC
0
Source B   OBJ_PART1
2
JA75 (L)

186
JA74
CTU
Count Up
Counter   PART1_DIST5
Preset   10
Accum   0
(CU)
(DN)

187
JA74
JA75
JA73 (U)

EMPAQUETADORA 5 SENSOR 2

188
JA72
SIN2_DIST5
JA76 (L)

189
JA76
JA72 (U)

190
JA76
LES
Less Than (A<B)
Source A   PART2_DIST5.ACC
0
Source B   OBJ_PART2
1
JA77 (L)

EQU
Equal
Source A   PART2_DIST5.ACC
0
Source B   OBJ_PART2
1
JA78 (L)

191
JA77
CTU
Count Up
Counter   PART2_DIST5
Preset   10
Accum   0
(CU)
(DN)

MainRoutine - Ladder Diagram **Page 21**
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```
        JA77                                                          JA76
192  ────┤ ├────┬──────────────────────────────────────────────────────(U)────
        JA78    │
     ────┤ ├────┘


                        EMPAQUETADORA 5 SENSOR 3

        JA72   SIN3_DIST6                                             JA79
193  ────┤ ├────┤ ├──────────────────────────────────────────────────(L)────


        JA79                                                          JA72
194  ────┤ ├──────────────────────────────────────────────────────────(U)────


        JA79                              ┌─────LES─────┐             JA80
195  ────┤ ├────────────────────────┬─────┤Less Than (A<B)├───────────(L)────┬──
                                     │     │Source A  PART3_DIST5.ACC│        │
                                     │     │                    0    │        │
                                     │     │Source B      OBJ_PART3  │        │
                                     │     │                    2    │        │
                                     │     └──────────────────────────┘        │
                                     │            ┌─────EQU─────┐      JA81     │
                                     └────────────┤Equal         ├──────(L)────┘
                                                  │Source A  PART3_DIST5.ACC│
                                                  │                    0    │
                                                  │Source B      OBJ_PART3  │
                                                  │                    2    │
                                                  └──────────────────────────┘

        JA80                                  ┌─────CTU─────┐
196  ────┤ ├──────────────────────────────────┤Count Up        ├──(CU)──
                                               │Counter  PART3_DIST5│
                                               │Preset          10 ├──(DN)──
                                               │Accum            0 │
                                               └──────────────────────┘

        JA80                                                          JA79
197  ────┤ ├────┬──────────────────────────────────────────────────────(U)────
        JA81    │
     ────┤ ├────┘


                        EMPAQUETADORA 5 SENSOR 4

        JA72   SIN4_DIST5                                             JA82
198  ────┤ ├────┤ ├──────────────────────────────────────────────────(L)────


        JA82                                                          JA72
199  ────┤ ├──────────────────────────────────────────────────────────(U)────


        JA82                              ┌─────LES─────┐             JA83
200  ────┤ ├────────────────────────┬─────┤Less Than (A<B)├───────────(L)────┬──
                                     │     │Source A  PART4_DIST5.ACC│        │
                                     │     │                    0    │        │
                                     │     │Source B      OBJ_PART4  │        │
                                     │     │                    0    │        │
                                     │     └──────────────────────────┘        │
                                     │            ┌─────EQU─────┐      JA84     │
                                     └────────────┤Equal         ├──────(L)────┘
                                                  │Source A  PART4_DIST5.ACC│
                                                  │                    0    │
                                                  │Source B      OBJ_PART4  │
                                                  │                    0    │
                                                  └──────────────────────────┘

        JA83                                  ┌─────CTU─────┐
201  ────┤ ├──────────────────────────────────┤Count Up        ├──(CU)──
                                               │Counter  PART4_DIST5│
                                               │Preset          10 ├──(DN)──
                                               │Accum            0 │
                                               └──────────────────────┘
```

MainRoutine - Ladder Diagram   **Page 22**

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202

JA83 / JA84 → JA82 (U)

EMPAQUETADORA 5 SENSOR 5

203

JA72 SIN5_DIST5 → JA85 (L)

204

JA85 → JA72 (U)

205

JA85 →

LES
Less Than (A<B)
Source A   PART5_DIST5.ACC
                          0
Source B   OBJ_PART5
                          0
→ JA86 (L)

EQU
Equal
Source A   PART5_DIST5.ACC
                          0
Source B   OBJ_PART5
                          0
→ JA87 (L)

206

JA86 →

CTU
Count Up
Counter   PART5_DIST5
Preset   10
Accum   0
→ CU
→ DN

207

JA86 / JA87 → JA85 (U)

**ACTUADOR DISTRIBUIDORA 5
- EMPUJAR**

208

JA74 / JA77 / JA80 / JA83 / JA86 → Go_Dist5

209

Go_Dist5 →

TON
Timer On Delay
Timer   TIMER_EMP_DIST5
Preset   5000
Accum   0
→ EN
→ DN

210

TIMER_EMP_DIST5.DN → JA88 (L)

MainRoutine – Ladder Diagram
Programa_Ladder_Planta:MainTask:MainProgram
Total number of rungs in routine: 250

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211 JA88 ── JA72 (L) JA74 (U) JA77 (U) JA80 (U) JA83 (U) JA86 (U)

ACTUADOR DISTRIBUIDORA 5
- RECOJER

212 JA75 ──┐   Back_Dist5 ( )
          │
     JA78 ─┤
          │
     JA81 ─┤
          │
     JA84 ─┤
          │
     JA87 ─┘

213 Back_Dist5 ──
```
                              ┌────── TON ──────┐
                              │ Timer On Delay      ┤(EN)
                              │ Timer  TIMER_REC_DIST5
                              │ Preset          5000 ┤(DN)
                              │ Accum              0 │
                              └─────────────────┘
```

214 TIMER_REC_DIST5.DN ──   JA89 (L)

215 JA89 ── JA72 (L) JA75 (U) JA78 (U) JA81 (U) JA84 (U) JA87 (U)

EMPAQUETADORA 6

216 JA90 ──   JA106 (U) JA107 (U)

EMPAQUETADORA 6 SENSOR 1

217 JA90 ── SIN1_DIST6 ──   JA91 (L)

218 JA91 ──   JA90 (U)

219 JA91 ──
```
              ┌────── LES ──────┐       JA92 (L)
              │ Less Than (A<B)   │
              │ Source A  PART1_DIST6.ACC
              │                  0 │
              │ Source B   OBJ_PART1
              │                  2 │
              └─────────────────┘
              ┌────── EQU ──────┐       JA93 (L)
              │ Equal             │
              │ Source A  PART1_DIST6.ACC
              │                  0 │
              │ Source B   OBJ_PART1
              │                  2 │
              └─────────────────┘
```

220 JA92 ──
```
              ┌────── CTU ──────┐
              │ Count Up          ┤(CU)
              │ Counter  PART1_DIST6
              │ Preset           10 ┤(DN)
              │ Accum             0 │
              └─────────────────┘
```

MainRoutine - Ladder Diagram   **Page 24**
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```
221    JA92                                                                          JA91
       ┤ ├                                                                           (U)
       JA93
       ┤ ├


                              EMPAQUETADORA 6 SENSOR 2

222    JA90    SIN2_DIST6                                                            JA94
       ┤ ├      ┤ ├                                                                   (L)


223    JA94                                                                          JA90
       ┤ ├                                                                           (U)


224    JA94                                          ┌─────LES─────┐                 JA95
       ┤ ├                                           │Less Than (A<B)│               (L)
                                                     │Source A  PART2_DIST6.ACC
                                                     │                   0
                                                     │Source B      OBJ_PART2
                                                     │                   1
                                                     └─────────────┘
                                                     ┌─────EQU─────┐                 JA96
                                                     │Equal        │                 (L)
                                                     │Source A  PART2_DIST6.ACC
                                                     │                   0
                                                     │Source B      OBJ_PART2
                                                     │                   1
                                                     └─────────────┘

225    JA95                                          ┌─────CTU─────┐
       ┤ ├                                           │Count Up     │                (CU)
                                                     │Counter  PART2_DIST6
                                                     │Preset          10            (DN)
                                                     │Accum            0
                                                     └─────────────┘

226    JA95                                                                          JA94
       ┤ ├                                                                           (U)
       JA96
       ┤ ├


                              EMPAQUETADORA 6 SENSOR 3

227    JA90    SIN3_DIST5                                                            JA97
       ┤ ├      ┤ ├                                                                   (L)


228    JA97                                                                          JA90
       ┤ ├                                                                           (U)


229    JA97                                          ┌─────LES─────┐                 JA98
       ┤ ├                                           │Less Than (A<B)│               (L)
                                                     │Source A  PART3_DIST6.ACC
                                                     │                   0
                                                     │Source B      OBJ_PART3
                                                     │                   2
                                                     └─────────────┘
                                                     ┌─────EQU─────┐                 JA99
                                                     │Equal        │                 (L)
                                                     │Source A  PART3_DIST6.ACC
                                                     │                   0
                                                     │Source B      OBJ_PART3
                                                     │                   2
                                                     └─────────────┘

230    JA98                                          ┌─────CTU─────┐
       ┤ ├                                           │Count Up     │                (CU)
                                                     │Counter  PART3_DIST6
                                                     │Preset          10            (DN)
                                                     │Accum            0
                                                     └─────────────┘
```

MainRoutine - Ladder Diagram
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231

JA98 / JA99 (parallel) → JA97 (U)

EMPAQUETADORA 6 SENSOR 4

232

JA90] [SIN4_DIST6] [→ JA100 (L)

233

JA100] [→ JA90 (U)

234

JA100] [→

LES
Less Than (A<B)
Source A   PART4_DIST6.ACC
                    0
Source B   OBJ_PART4
                    0
→ JA101 (L)

EQU
Equal
Source A   PART4_DIST6.ACC
                    0
Source B   OBJ_PART4
                    0
→ JA102 (L)

235

JA101] [→

CTU
Count Up
Counter   PART4_DIST6
Preset   10
Accum   0
CU / DN

236

JA101 / JA102 (parallel) → JA100 (U)

EMPAQUETADORA 6 SENSOR 5

237

JA90] [SIN5_DIST6] [→ JA103 (L)

238

JA103] [→ JA90 (U)

239

JA103] [→

LES
Less Than (A<B)
Source A   PART5_DIST6.ACC
                    0
Source B   OBJ_PART5
                    0
→ JA104 (L)

EQU
Equal
Source A   PART5_DIST6.ACC
                    0
Source B   OBJ_PART5
                    0
→ JA105 (L)

240

JA104] [→

CTU
Count Up
Counter   PART5_DIST6
Preset   10
Accum   0
CU / DN

MainRoutine - Ladder Diagram   **Page 26**

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241

JA104 / JA105 → JA103 (U)

242

ACTUADOR DISTRIBUIDORA 6
- EMPUJAR

JA92 / JA95 / JA98 / JA101 / JA104 → Go_Dist6 ( )

243

Go_Dist6 → TON
Timer On Delay
Timer TIMER_EMP_DIST6
Preset 5000
Accum 0
(EN) (DN)

244

TIMER_EMP_DIST6.DN → JA106 (L)

245

JA106 → JA90 (L)   JA92 (U)   JA95 (U)   JA98 (U)   JA101 (U)   JA104 (U)

ACTUADOR DISTRIBUIDORA 5
- RECOJER

246

JA93 / JA96 / JA99 / JA102 / JA105 → Back_Dist6 ( )

247

Back_Dist6 → TON
Timer On Delay
Timer TIMER_REC_DIST6
Preset 5000
Accum 0
(EN) (DN)

248

TIMER_REC_DIST6.DN → JA107 (L)

249

JA107 → JA90 (L)   JA93 (U)   JA96 (U)   JA99 (U)   JA102 (U)   JA105 (U)

MainRoutine - Ladder Diagram   **Page 27**
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(End)