

Block: MAIN
Author:
Created: 2025.06.21 9:37:38
Last Modified: 2025.06.26 14:43:43

| | Address | Symbol | Var Type | Data Type | Comment |
|---|---------|--------|----------|-----------|---------|
| 1 | . | . | TEMP | . | . |
| 2 | . | . | TEMP | . | . |
| 3 | . | . | TEMP | . | . |
| 4 | . | . | TEMP | . | . |

Program Comments

Network 1

Network Comment



| Symbol | Address | Comment |
|-----------|---------|-----------|
| Always_On | SM0.0 | Always ON |

Network 2



| Symbol | Address | Comment |
|-----------|---------|-----------|
| Always_On | SM0.0 | Always ON |

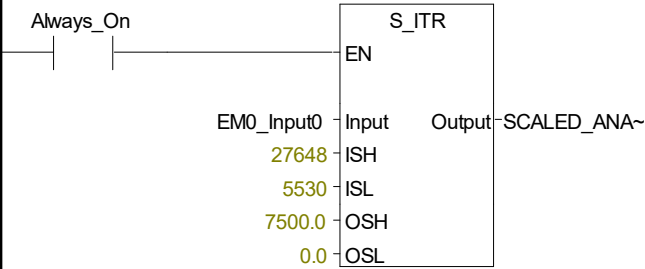
Block: SBR_0
Author:
Created: 2025.06.21 9:37:38
Last Modified: 2025.06.26 14:27:55

| | Address | Symbol | Var Type | Data Type | Comment |
|---|---------|--------|----------|-----------|---------|
| 1 | . | EN | IN | BOOL | . |
| 2 | . | . | IN | . | . |
| 3 | . | . | IN_OUT | . | . |
| 4 | . | . | OUT | . | . |
| 5 | . | . | TEMP | . | . |

Subroutine Comments

Network 1

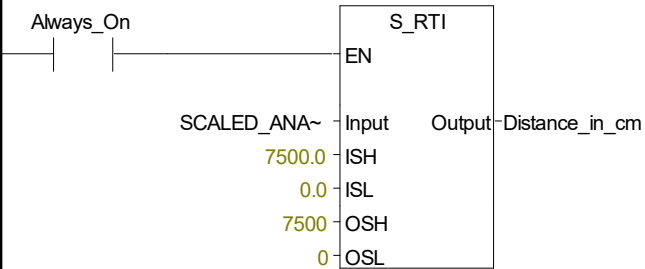
Scalling of the analog input



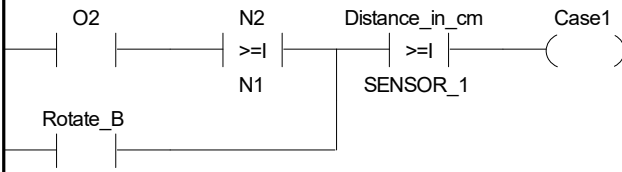
| Symbol | Address | Comment |
|---------------------|---------|-----------|
| Always_On | SM0.0 | Always ON |
| EM0_Input0 | AIW16 | |
| SCALED_ANALOG_INPUT | VD40 | |

Network 2

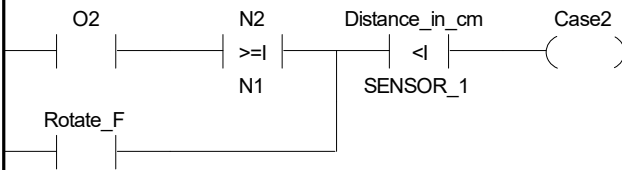
Conversion from real to integer type



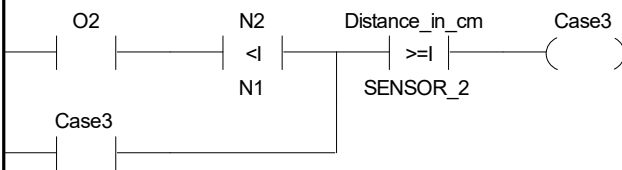
| Symbol | Address | Comment |
|---------------------|---------|--|
| Always_On | SM0.0 | Always ON |
| Distance_in_cm | VW10 | Distance calculated by the sensor in centimeters |
| SCALED_ANALOG_INPUT | VD40 | |

Network 5**Case 1**

| Symbol | Address | Comment |
|----------------|---------|---|
| Case1 | M0.3 | |
| Distance_in_cm | VW10 | Distance calculated by the sensor in centimeters |
| N1 | VW20 | distance between the first sensors and the starting point of the conveyor belt |
| N2 | VW22 | distance between the second sensors and the starting point of the conveyor belt |
| O2 | M1.1 | |
| Rotate_B | M0.7 | Rotate the shuttle trolly backward |
| SENSOR_1 | VW100 | |

Network 6**Case 2**

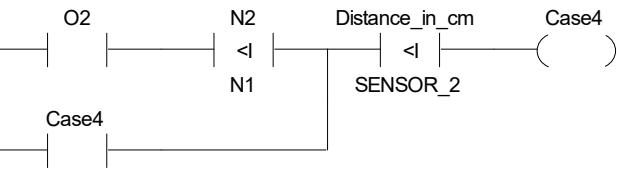
| Symbol | Address | Comment |
|----------------|---------|---|
| Case2 | M0.4 | |
| Distance_in_cm | VW10 | Distance calculated by the sensor in centimeters |
| N1 | VW20 | distance between the first sensors and the starting point of the conveyor belt |
| N2 | VW22 | distance between the second sensors and the starting point of the conveyor belt |
| O2 | M1.1 | |
| Rotate_F | M1.3 | Rotate the shuttle trolly forward |
| SENSOR_1 | VW100 | |

Network 7**Case 3**

| Symbol | Address | Comment |
|----------------|---------|---|
| Case3 | M0.5 | |
| Distance_in_cm | VW10 | Distance calculated by the sensor in centimeters |
| N1 | VW20 | distance between the first sensors and the starting point of the conveyor belt |
| N2 | VW22 | distance between the second sensors and the starting point of the conveyor belt |
| O2 | M1.1 | |
| SENSOR_2 | VW102 | |

Network 8

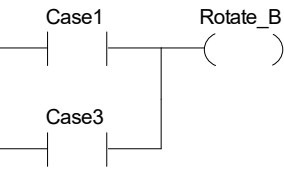
Case 4



| Symbol | Address | Comment |
|----------------|---------|---|
| Case4 | M0.6 | |
| Distance_in_cm | VW10 | Distance calculated by the sensor in centimeters |
| N1 | VW20 | distance between the first sensors and the starting point of the conveyor belt |
| N2 | VW22 | distance between the second sensors and the starting point of the conveyor belt |
| O2 | M1.1 | |
| SENSOR_2 | VW102 | |

Network 9

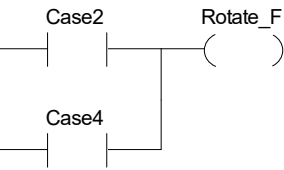
Output of Case 1 and case 3



| Symbol | Address | Comment |
|----------|---------|-------------------------------------|
| Case1 | M0.3 | |
| Case3 | M0.5 | |
| Rotate_B | M0.7 | Rotate the shuttle trolley backward |

Network 10

Output of Case 2 and case 4



| Symbol | Address | Comment |
|----------|---------|------------------------------------|
| Case2 | M0.4 | |
| Case4 | M0.6 | |
| Rotate_F | M1.3 | Rotate the shuttle trolley forward |

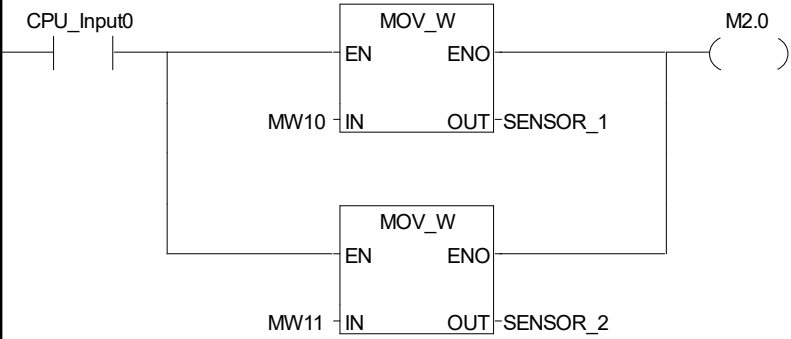
Block: SBR_1
Author:
Created: 2025.06.21 9:39:49
Last Modified: 2025.06.26 14:38:44

| | Address | Symbol | Var Type | Data Type | Comment |
|---|---------|--------|----------|-----------|---------|
| 1 | . | EN | IN | BOOL | . |
| 2 | . | . | IN | . | . |
| 3 | . | . | IN_OUT | . | . |
| 4 | . | . | OUT | . | . |
| 5 | . | . | TEMP | . | . |

Storage and selection of the bunker number

Network 1

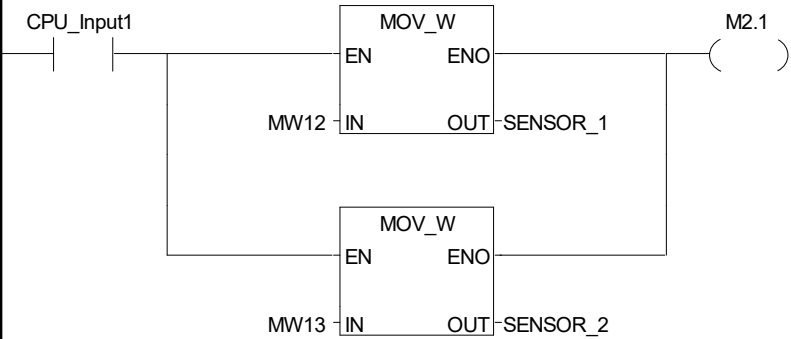
bunker number 1



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input0 | I0.0 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 2

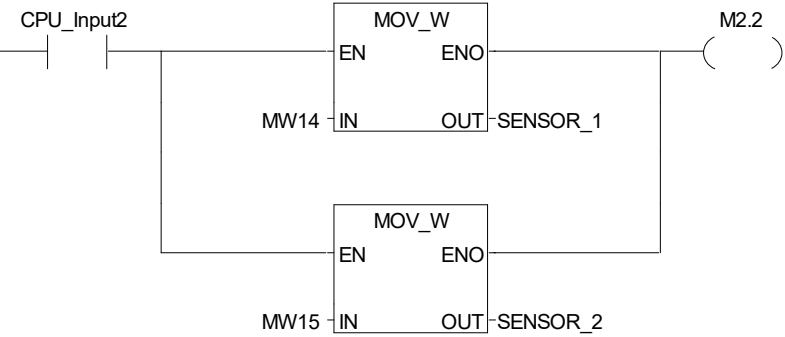
bunker number 2



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input1 | I0.1 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 3

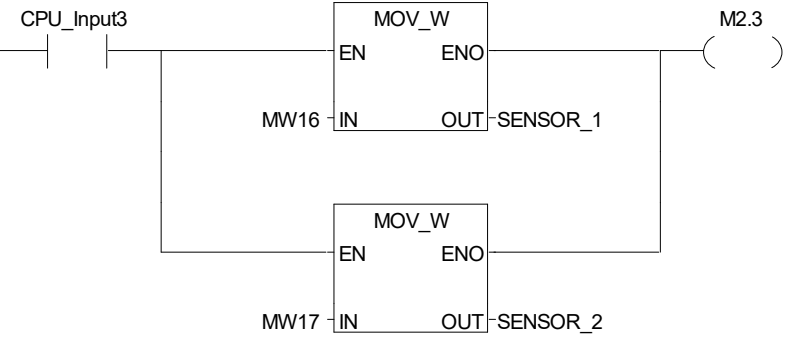
bunker number 3



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input2 | I0.2 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 4

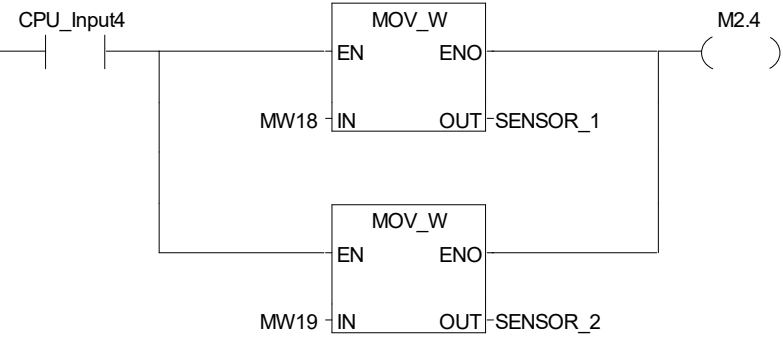
bunker number 4



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input3 | I0.3 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 5

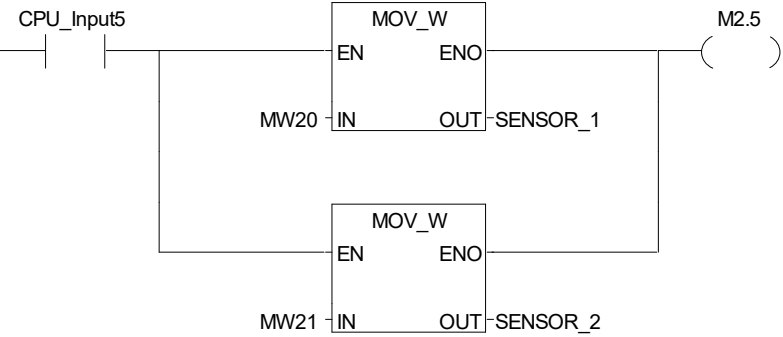
bunker number 5



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input4 | I0.4 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 6

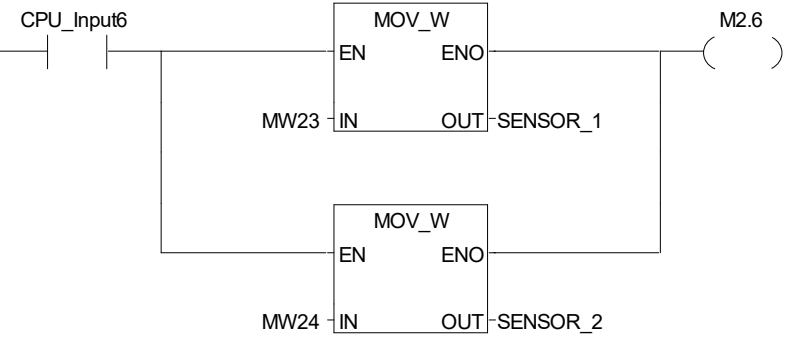
bunker number 6



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input5 | I0.5 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 7

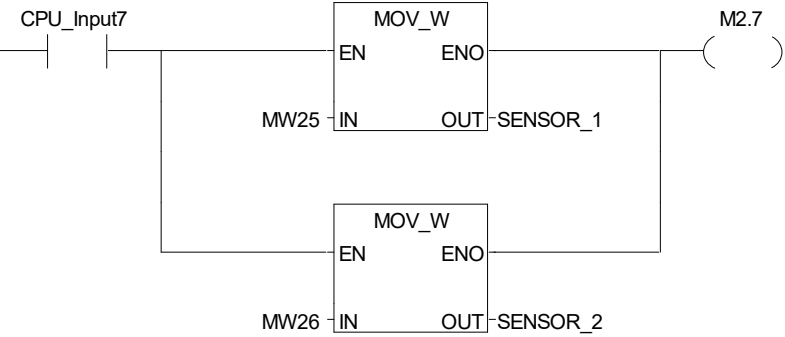
bunker number 7



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input6 | I0.6 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 8

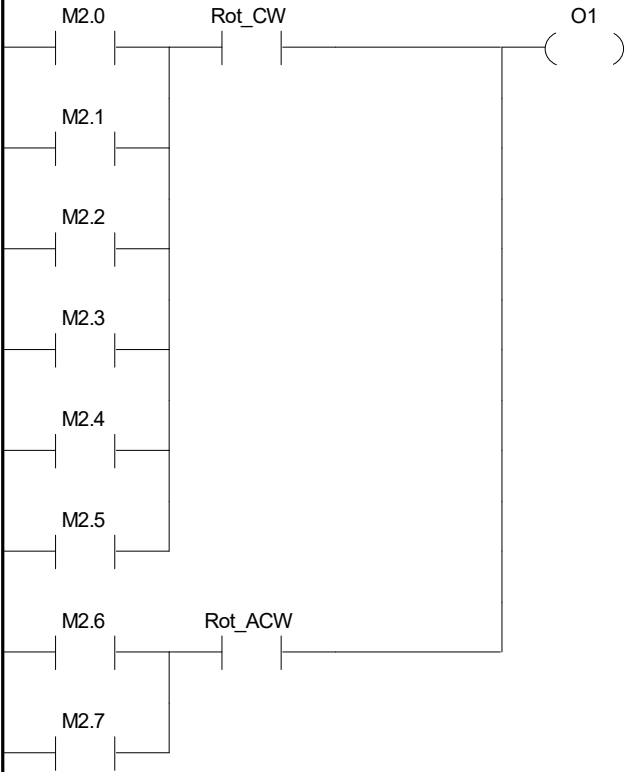
bunker number 8



| Symbol | Address | Comment |
|------------|---------|---------|
| CPU_Input7 | I0.7 | |
| SENSOR_1 | VW100 | |
| SENSOR_2 | VW102 | |

Network 9

To start the logic in SBR_0



| Symbol | Address | Comment |
|---------|---------|--|
| O1 | M1.0 | |
| Rot_ACW | M3.1 | Rotate the belt to fill from the end of the belt |
| Rot_CW | M3.0 | Rotate the belt to fill from the start of the belt |

Block: S_ITR
 Author:
 Created: 2007.12.17 15:15:23
 Last Modified: 2012.01.16 16:10:37



| | Address | Symbol | Var Type | Data Type | Comment |
|----|---------|-----------|----------|-----------|---------|
| 1 | . | EN | IN | BOOL | . |
| 2 | LW0 | Input | IN | INT | . |
| 3 | LW2 | ISH | IN | INT | . |
| 4 | LW4 | ISL | IN | INT | . |
| 5 | LD6 | OSH | IN | REAL | . |
| 6 | LD10 | OSL | IN | REAL | . |
| 7 | . | . | IN | . | . |
| 8 | . | . | IN_OUT | . | . |
| 9 | LD14 | Output | OUT | REAL | . |
| 10 | . | . | OUT | . | . |
| 11 | LD18 | Input_DI | TEMP | DINT | . |
| 12 | LD22 | ISL_DI | TEMP | DINT | . |
| 13 | LD26 | ISH_DI | TEMP | DINT | . |
| 14 | LD30 | delta_R | TEMP | REAL | . |
| 15 | LD34 | delta_max | TEMP | REAL | . |
| 16 | . | . | TEMP | . | . |

LIBRARY: Scale V1.2 (bipolar scaling)

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PASSWORD

The password of the library is "1234"

S_ITR

Scale Integer to Real

The formula is as follows:

$$Ov = [(OSH - OSL) * (Iv - ISL) / (ISH - ISL)] + OSL$$

with $ISL \leq Iv \leq ISH$

and $OSL \leq Ov \leq OSH$

| | | |
|-----|---|---|
| Ov | = | output value (REAL) |
| Iv | = | input value (INT) |
| OSH | = | high limit of the scale for the output value (REAL) |
| OSL | = | low limit of the scale for the output value (REAL) |
| ISH | = | high limit of the scale for the input value (INT) |
| ISL | = | low limit of the scale for the input value (INT) |

BIBLIOTHEK: Scale V1.2 (bipolare Skalierung)

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PASSWORT

Das Passwort der Bibliothek ist "1234"

S_ITR

Ganze Zahl in Realzahl skalieren

Die Formel lautet wie folgt:

$$Ov = [(OSH - OSL) * (lv - ISL) / (ISH - ISL)] + OSL$$

mit $ISL \leq lv \leq ISH$

und $OSL \leq Ov \leq OSH$

| | | |
|-----|---|---|
| Ov | = | Ausgangswert (REAL) |
| lv | = | Eingangswert (INT) |
| OSH | = | oberer Grenzwert der Skala für den Ausgangswert (REAL) |
| OSL | = | unterer Grenzwert der Skala für den Ausgangswert (REAL) |
| ISH | = | oberer Grenzwert der Skala für den Eingangswert (INT) |
| ISL | = | unterer Grenzwert der Skala für den Eingangswert (INT) |

Block: S_RTI
 Author:
 Created: 2007.12.17 15:16:03
 Last Modified: 2012.01.16 17:30:17



| | Address | Symbol | Var Type | Data Type | Comment |
|----|---------|--------|----------|-----------|---------|
| 1 | . | EN | IN | BOOL | . |
| 2 | LD0 | Input | IN | REAL | . |
| 3 | LD4 | ISH | IN | REAL | . |
| 4 | LD8 | ISL | IN | REAL | . |
| 5 | LW12 | OSH | IN | INT | . |
| 6 | LW14 | OSL | IN | INT | . |
| 7 | . | . | IN | . | . |
| 8 | . | . | IN_OUT | . | . |
| 9 | LW16 | Output | OUT | INT | . |
| 10 | . | . | OUT | . | . |
| 11 | LD18 | OSH_DI | TEMP | DINT | . |
| 12 | LD22 | OSH_R | TEMP | REAL | . |
| 13 | LW26 | temp_I | TEMP | INT | . |
| 14 | LD28 | OSL_DI | TEMP | DINT | . |
| 15 | . | . | TEMP | . | . |

LIBRARY: Scale V1.2 (bipolar scaling)

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LIABILITY

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WARRANTY

The program examples given are specific solutions to complex tasks which were worked on by Customer Support. We must also point out that it is not possible in the current state of the technology to exclude all errors in software programs under all conditions of use. The program examples were prepared according to the best of our knowledge. However, we cannot accept any liability beyond the standard guarantee for Class C software in accordance with our General Terms of Sale for Software Products for Automation and Drive Technology". The program examples can be purchased on the Internet as single licenses. They may not be transferred to a third party.

PASSWORD

The password of the library is "1234"

S_RTI

Scale Real to Integer

The formula is as follows:

$$Ov = [(OSH - OSL) * (Iv - ISL) / (ISH - ISL)] + OSL$$

with $ISL \leq Iv \leq ISH$

and $OSL \leq Ov \leq OSH$

| | | |
|-----|---|--|
| Ov | = | output value (INT) |
| Iv | = | input value (REAL) |
| OSH | = | high limit of the scale for the output value (INT) |
| OSL | = | low limit of the scale for the output value (INT) |
| ISH | = | high limit of the scale for the input value (REAL) |
| ISL | = | low limit of the scale for the input value (REAL) |

BIBLIOTHEK: Scale V1.2 (bipolare Skalierung)

=====

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Bei diesem Programmbaustein handelt es sich um FREEWARE.

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Kompatibilität dieser Software aus.

Die Benutzung erfolgt auf eigene Gefahr.

Da diese Software kostenlos ist, entfällt jegliche Gewährleistung, Anspruch auf Fehlerkorrektur und Hotlinesupport.

PASSWORT

Das Passwort der Bibliothek ist "1234"

S_RTI

Realzahl in ganze Zahl skalieren

Die Formel lautet wie folgt:

$$Ov = [(OSH - OSL) * (Iv - ISL) / (ISH - ISL)] + OSL$$

mit $ISL \leq Iv \leq ISH$

und $OSL \leq Ov \leq OSH$

| | | |
|-----|---|---|
| Ov | = | Ausgangswert (INT) |
| Iv | = | Eingangswert (REAL) |
| OSH | = | oberer Grenzwert der Skala für den Ausgangswert (INT) |
| OSL | = | unterer Grenzwert der Skala für den Ausgangswert (INT) |
| ISH | = | oberer Grenzwert der Skala für den Eingangswert (REAL) |
| ISL | = | unterer Grenzwert der Skala für den Eingangswert (REAL) |

Block: INT_0
Author:
Created: 2025.06.21 9:37:38
Last Modified: 2025.06.21 9:37:38





| | Address | Symbol | Var Type | Data Type | Comment |
|---|---------|--------|----------|-----------|---------|
| 1 | . | . | TEMP | . | . |
| 2 | . | . | TEMP | . | . |
| 3 | . | . | TEMP | . | . |
| 4 | . | . | TEMP | . | . |









































Interrupt routine comments
















































Network 1














































Network Comment
















































































































| |  |  | Symbol | Address | Comment |
|----|---|---|-------------------------|---------|---|
| 1 | |  | Start_0 | M0.1 | Rotate the belt to fill material from the start of the belt |
| 2 | |  | Start_End | M0.2 | Rotate the belt to fill material from the end of the belt |
| 3 | | | Case1 | M0.3 | . |
| 4 | | | Rotate_F | M1.3 | Rotate the shuttle trolley forward |
| 5 | | | Case3 | M0.5 | . |
| 6 | | | Case4 | M0.6 | . |
| 7 | | | Case2 | M0.4 | . |
| 8 | | | O1 | M1.0 | . |
| 9 | | | O2 | M1.1 | . |
| 10 | | | SCALED_ANALOG_INPU T | VD40 | . |
| 11 | | | Distance_in_cm | VW10 | Distance calculated by the sensor in centimeters |
| 12 | | | N1 | VW20 | distance between the first sensors and the starting point of the conveyor belt |
| 13 | | | N2 | VW22 | distance between the second sensors and the starting point of the conveyor belt |
| 14 | | | SENSOR_1 | VW100 | . |
| 15 | | | SENSOR_2 | VW102 | . |
| 16 | | | Rot_CW | M3.0 | Rotate the belt to fill from the start of the belt |
| 17 | | | Rot_ACW | M3.1 | Rotate the belt to fill from the end of the belt |
| 18 | | | Rotate_B | M0.7 | Rotate the shuttle trolley backward |


| |  | Symbol | Address | Comment |
|----|---|------------------|---------|--|
| 1 |  | Always_On | SM0.0 | Always ON |
| 2 |  | First_Scan_On | SM0.1 | ON for the first scan cycle only |
| 3 |  | Retentive_Lost | SM0.2 | ON for one scan cycle if retentive data is lost |
| 4 |  | RUN_Power_Up | SM0.3 | ON for 1 scan cycle when RUN mode is entered from a power-up condition |
| 5 |  | Clock_60s | SM0.4 | Clock pulse that is ON for 30 s, OFF for 30 s, for a duty cycle time of 1 min. |
| 6 |  | Clock_1s | SM0.5 | Clock pulse that is ON for 0.5 s, OFF for 0.5 s, for a duty cycle time of 1 s. |
| 7 |  | Clock_Scan | SM0.6 | Scan cycle clock which is ON for one cycle and OFF for the next cycle |
| 8 |  | RTC_Lost | SM0.7 | This bit is turned ON for one scan cycle, if system time was lost on power-up |
| 9 |  | Result_0 | SM1.0 | Set to 1 by the execution of certain instructions when the result of the operation = 0 |
| 10 |  | Overflow_Illegal | SM1.1 | Set to 1 by the execution of certain instructions on overflow or illegal numeric value |
| 11 |  | Neg_Result | SM1.2 | Set to 1 when a math operation produces a negative result |
| 12 |  | Divide_By_0 | SM1.3 | Set to 1 when an attempt is made to divide by zero |
| 13 |  | Table_Overflow | SM1.4 | Set to 1 when the Add to Table instruction attempts to overfill the table |
| 14 |  | Table_Empty | SM1.5 | Set to 1 when a LIFO or FIFO instruction attempts to read from an empty table |
| 15 |  | Not_BCD | SM1.6 | Set to 1 when an attempt is made to convert a non-BCD value to a binary value |
| 16 |  | Not_Hex | SM1.7 | Set to 1 when an ASCII value cannot be converted to a valid hexadecimal value |
| 17 |  | Receive_Char | SMB2 | Contains each character received from Port 0 or Port 1 during Freeport communication |
| 18 |  | Parity_Err | SM3.0 | Set for Port 0 or 1 if a parity error is detected in a character received by Port 0 or Port 1 |
| 19 |  | Comm_Int_Ovr | SM4.0 | Set to 1 if the communication interrupt queue overflows (interrupt routine only) |
| 20 |  | Input_Int_Ovr | SM4.1 | Set to 1 if the input interrupt queue overflows (interrupt routine only) |
| 21 |  | Timed_Int_Ovr | SM4.2 | Set to 1 if the timed interrupt queue overflows (interrupt routine only) |
| 22 |  | RUN_Err | SM4.3 | Set to 1 when a run-time programming error is detected |
| 23 |  | Int_Enable | SM4.4 | Indicates the global interrupt enable state: 1 = interrupts are enabled |
| 24 |  | Xmit0_Idle | SM4.5 | Set to 1 when the transmitter is idle (Port 0) |
| 25 |  | Xmit1_Idle | SM4.6 | Set to 1 when the transmitter is idle (Port 1) |
| 26 |  | Force_On | SM4.7 | Set to 1 when a value is forced: 1 = value forced, 0 = no value forced |
| 27 |  | IO_Err | SM5.0 | Set to 1 if any I/O errors are present |
| 28 |  | Too_Many_D_IO | SM5.1 | Set to 1 if too many digital I/O points are connected to the I/O bus |
| 29 |  | Too_Many_A_IO | SM5.2 | Set to 1 if too many analog I/O points are connected to the I/O bus |
| 30 |  | CPU_ID | SMB6 | Identifies the CPU model number |
| 31 |  | CPU_IO | SMB7 | Identifies the I/O types |
| 32 |  | EM0_ID | SMB8 | Module 0 ID register |
| 33 |  | EM0_Err | SMB9 | Module 0 error register |
| 34 |  | EM1_ID | SMB10 | Module 1 ID register |
| 35 |  | EM1_Err | SMB11 | Module 1 error register |
| 36 |  | EM2_ID | SMB12 | Module 2 ID register |
| 37 |  | EM2_Err | SMB13 | Module 2 error register |
| 38 |  | EM3_ID | SMB14 | Module 3 ID register |
| 39 | | EM3_Err | SMB15 | Module 3 error register |
| 40 | | EM4_ID | SMB16 | Module 4 ID register |
| 41 | | EM4_Err | SMB17 | Module 4 error register |
| 42 | | EM5_ID | SMB18 | Module 5 ID register |
| 43 | | EM5_Err | SMB19 | Module 5 error register |
| 44 | | Last_Scan | SMW22 | Scan time of the last scan cycle |
| 45 | | Minimum_Scan | SMW24 | Minimum scan time recorded since entering the RUN mode |
| 46 | | Maximum_Scan | SMW26 | Maximum scan time recorded since entering the RUN mode |
| 47 | | SB_ID | SMB28 | Signal board ID |
| 48 | | SB_Err | SMB29 | Signal board errors |
| 49 |  | PO_Config | SMB30 | Configure port 0 communication: parity, number of data bits per character, baud rate, and protocol |
























































| |  | Symbol | Address | Comment |
|-----|---|------------------|---------|--|
| 50 |  | P0_Config_0 | SM30.0 | Select Freeport or system protocol for Port 0 |
| 51 |  | P1_Config | SMB130 | Configure port 1 communication: parity, number of data bits per character, baud rate, and protocol |
| 52 |  | P1_Config_0 | SM130.0 | Select Freeport or system protocol for port 1 |
| 53 |  | Time_0_Intrvl | SMB34 | Specifies time interval (in 1-ms increments from 5 to 255) of interrupt 0. |
| 54 |  | Time_1_Intrvl | SMB35 | Specifies time interval (in 1-ms increments from 5 to 255) of interrupt 1. |
| 55 |  | HSC0_Status | SMB36 | HSC0 Counter Status |
| 56 |  | HSC0_Status_5 | SM36.5 | HSC0 current counting direction status: 1= counting up |
| 57 |  | HSC0_Status_6 | SM36.6 | HSC0 current value equals preset value status: 1= equal |
| 58 |  | HSC0_Status_7 | SM36.7 | HSC0 current value is greater than preset value status: 1= greater than |
| 59 |  | HSC0_Ctrl | SMB37 | Configure and control HSC0 |
| 60 |  | HSC0_Reset_Level | SM37.0 | HSC0 active level control for counter reset: 0=active high; 1=active low |
| 61 |  | HSC0_Rate | SM37.2 | HSC0 counting rate selector: 0=4x (quadrature rate); 1=1x |
| 62 |  | HSC0_Dir | SM37.3 | HSC0 counting direction control: 0=count down; 1=count up |
| 63 |  | HSC0_Dir_Update | SM37.4 | HSC0 update the counting direction: 0=no update; 1=update direction |
| 64 |  | HSC0_PV_Update | SM37.5 | HSC0 update preset value: 0=no update; 1=update preset |
| 65 |  | HSC0_CV_Update | SM37.6 | HSC0 update current value: 0=no update; 1=update current value |
| 66 |  | HSC0_Enable | SM37.7 | HSC0 enable: 0=disable; 1=enable |
| 67 |  | HSC0_CV | SMD38 | HSC0 new current value |
| 68 |  | HSC0_PV | SMD42 | HSC0 new preset value |
| 69 |  | HSC1_Status | SMB46 | HSC1 Counter Status |
| 70 |  | HSC1_Status_5 | SM46.5 | HSC1 current counting direction status: 1= counting up |
| 71 |  | HSC1_Status_6 | SM46.6 | HSC1 current value equals preset value status: 1= equal |
| 72 |  | HSC1_Status_7 | SM46.7 | HSC1 current value is greater than preset value status: 1= greater than |
| 73 |  | HSC1_Ctrl | SMB47 | Configure and control HSC1 |
| 74 |  | HSC1_Dir | SM47.3 | HSC1 counting direction control: 0=count down; 1=count up |
| 75 |  | HSC1_Dir_Update | SM47.4 | HSC1 update the counting direction: 0=no update; 1=update direction |
| 76 |  | HSC1_PV_Update | SM47.5 | HSC1 update preset value: 0=no update; 1=update preset |
| 77 |  | HSC1_CV_Update | SM47.6 | HSC1 update current value: 0=no update; 1=update current value |
| 78 |  | HSC1_Enable | SM47.7 | HSC1 enable: 0=disable; 1=enable |
| 79 |  | HSC1_CV | SMD48 | HSC1 new current value |
| 80 |  | HSC1_PV | SMD52 | HSC1 new preset value |
| 81 |  | HSC2_Status | SMB56 | HSC2 Counter Status |
| 82 |  | HSC2_Status_5 | SM56.5 | HSC2 current counting direction status: 1= counting up |
| 83 |  | HSC2_Status_6 | SM56.6 | HSC2 current value equals preset value status: 1= equal |
| 84 |  | HSC2_Status_7 | SM56.7 | HSC2 current value is greater than preset value status: 1= greater than |
| 85 |  | HSC2_Ctrl | SMB57 | Configure and control HSC2 |
| 86 |  | HSC2_Reset_Level | SM57.0 | HSC2 active level control for counter reset: 0=active high; 1=active low |
| 87 |  | HSC2_Rate | SM57.2 | HSC2 counting rate selector: 0=4x (quadrature rate); 1=1x |
| 88 |  | HSC2_Dir | SM57.3 | HSC2 counting direction control: 0=count down; 1=count up |
| 89 |  | HSC2_Dir_Update | SM57.4 | HSC2 update the counting direction: 0=no update; 1=update direction |
| 90 |  | HSC2_PV_Update | SM57.5 | HSC2 update preset value: 1 = write new preset value to HSC2 preset |
| 91 |  | HSC2_CV_Update | SM57.6 | HSC2 update current value: 0=no update; 1=update current value |
| 92 |  | HSC2_Enable | SM57.7 | HSC2 enable: 0=disable; 1=enable |
| 93 |  | HSC2_CV | SMD58 | HSC2 new current value |
| 94 |  | HSC2_PV | SMD62 | HSC2 new preset value |
| 95 |  | HSC3_Status | SMB136 | HSC3 Counter Status |
| 96 |  | HSC3_Status_5 | SM136.5 | HSC3 current counting direction status: 1= counting up |
| 97 |  | HSC3_Status_6 | SM136.6 | HSC3 current value equals preset value status: 1= equal |
| 98 |  | HSC3_Status_7 | SM136.7 | HSC3 current value is greater than preset value status: 1= greater than |
| 99 |  | HSC3_Ctrl | SMB137 | Configure and control HSC3 |
| 100 |  | HSC3_Dir | SM137.3 | HSC3 counting direction control: 0=count down; 1=count up |
| 101 | | HSC3_Dir_Update | SM137.4 | HSC3 update the counting direction: 0=no update; 1=update direction |
| 102 | | HSC3_PV_Update | SM137.5 | HSC3 update preset value: 0=no update; 1=update preset |

| |  |  | Symbol | Address | Comment |
|-----|---|---|-------------------|---------|---|
| 103 |  |  | HSC3_CV_Update | SM137.6 | HSC3 update current value: 0=no update; 1=update current value |
| 104 |  |  | HSC3_Enable | SM137.7 | HSC3 enable: 0=disable; 1=enable |
| 105 |  |  | HSC3_CV | SMD138 | HSC3 new current value |
| 106 |  |  | HSC3_PV | SMD142 | HSC3 new preset value |
| 107 |  |  | HSC4_Status | SMB146 | HSC4 Counter Status |
| 108 |  |  | HSC4_Status_5 | SM146.5 | HSC4 current counting direction status: 1= counting up |
| 109 |  |  | HSC4_Status_6 | SM146.6 | HSC4 current value equals preset value status: 1= equal |
| 110 |  |  | HSC4_Status_7 | SM146.7 | HSC4 current value is greater than preset value status: 1= greater than |
| 111 |  |  | HSC4_Ctrl | SMB147 | Configure and control HSC4 |
| 112 |  |  | HSC4_Reset_Level | SM147.0 | HSC4 active level control for counter reset: 0=active high; 1=active low |
| 113 |  |  | HSC4_Rate | SM147.2 | HSC4 counting rate selector: 0=4x (quadrature rate); 1=1x |
| 114 |  |  | HSC4_Dir | SM147.3 | HSC4 counting direction control: 0=count down; 1=count up |
| 115 |  |  | HSC4_Dir_Update | SM147.4 | HSC4 update the counting direction: 0=no update; 1=update direction |
| 116 |  |  | HSC4_PV_Update | SM147.5 | HSC4 update preset value: 0=no update; 1=update preset |
| 117 |  |  | HSC4_CV_Update | SM147.6 | HSC4 update current value: 0=no update; 1=update current value |
| 118 |  |  | HSC4_Enable | SM147.7 | HSC4 enable: 0=disable; 1=enable |
| 119 |  |  | HSC4_CV | SMD148 | HSC4 new current value |
| 120 |  |  | HSC4_PV | SMD152 | HSC4 new preset value |
| 121 |  |  | HSC5_Status | SMB156 | HSC5 Counter Status |
| 122 |  |  | HSC5_Status_5 | SM156.5 | HSC5 current counting direction status: 1= counting up |
| 123 |  |  | HSC5_Status_6 | SM156.6 | HSC5 current value equals preset value status: 1= equal |
| 124 |  |  | HSC5_Status_7 | SM156.7 | HSC5 current value is greater than preset value status: 1= greater than |
| 125 |  |  | HSC5_Ctrl | SMB157 | Configure and control HSC5 |
| 126 |  |  | HSC5_Reset_Level | SM157.0 | HSC5 active level control for counter reset: 0=active high; 1=active low |
| 127 |  |  | HSC5_Rate | SM157.2 | HSC5 counting rate selector: 0=4x (quadrature rate); 1=1x |
| 128 |  |  | HSC5_Dir | SM157.3 | HSC5 counting direction control: 0=count down; 1=count up |
| 129 |  |  | HSC5_Dir_Update | SM157.4 | HSC5 update the counting direction: 0=no update; 1=update direction |
| 130 |  |  | HSC5_PV_Update | SM157.5 | HSC5 update preset value: 0=no update; 1=update preset |
| 131 |  |  | HSC5_CV_Update | SM157.6 | HSC5 update current value: 0=no update; 1=update current value |
| 132 |  |  | HSC5_Enable | SM157.7 | HSC5 enable: 0=disable; 1=enable |
| 133 |  |  | HSC5_CV | SMD158 | HSC5 new current value |
| 134 |  |  | HSC5_PV | SMD162 | HSC5 new preset value |
| 135 |  |  | PTO0_Status | SMB66 | PTO0 Status |
| 136 |  |  | PLS0_Ovr | SM66.6 | PTO0 pipeline overflow/underflow, loading pipeline while full or transferring an empty pipeline: 0=No overflow; 1=Pipeline overflow/underflow |
| 137 |  |  | PLS0_Idle | SM66.7 | PTO0 idle: 0=PTO in progress; 1=PTO is idle |
| 138 |  |  | PLS0_Ctrl | SMB67 | Monitor and control PTO0 (Pulse Train Output) and PWM0 (Pulse Width Modulation) for Q0.0 |
| 139 |  |  | PLS0_Cycle_Update | SM67.0 | PTO0/PWM0 update the cycle time or frequency value: 0=no update; 1=write new cycle time/frequency |
| 140 |  |  | PWM0_PW_Update | SM67.1 | PWM0 update the pulse width value: 0=no update; 1=write new pulse width |
| 141 |  |  | PTO0_PC_Update | SM67.2 | PTO0 update the pulse count value: 0=no update; 1=write new pulse count |
| 142 |  |  | PWM0_TimeBase | SM67.3 | PWM0 time base: 0=1µs/tick, 1=1ms/tick |
| 143 |  |  | PLS0_Select | SM67.6 | PTO0/PWM0 mode select: 0=PWM; 1=PTO. |
| 144 |  |  | PLS0_Enable | SM67.7 | PTO0/PWM0 enable: 0=disable; 1=enable. |
| 145 |  |  | PLS0_Cycle | SMW68 | PWM0 cycle time value (2 to 65,535 units of time base); PTO0 frequency value (1 to 65,535 Hz) |
| 146 |  |  | PWM0_PW | SMW70 | PWM0 pulse width value (0 to 65,535 units of time base) |
| 147 |  |  | PTO0_PC | SMD72 | PTO0 pulse count value (1 to 2 ³² - 1) |
| 148 |  |  | PTO1_Status | SMB76 | PTO1 Status |
| 149 |  |  | PLS1_Ovr | SM76.6 | PTO1 pipeline overflow/underflow, loading pipeline while full or transferring an empty pipeline: 0=No overflow; 1=Pipeline overflow/underflow |
| 150 |  |  | PLS1_Idle | SM76.7 | PTO1 idle: 0=PTO in progress; 1=PTO is idle. |
| 151 |  |  | PLS1_Ctrl | SMB77 | Monitor and control PTO1 (Pulse Train Output) and PWM1 (Pulse Width Modulation) for Q0.1 |
| 152 |  |  | PLS1_Cycle_Update | SM77.0 | PTO1/PWM1 update the cycle time or frequency value: 0=no update; 1=write new cycle time/frequency |

| |  |  | Symbol | Address | Comment |
|-----|---|---|-------------------|---------|---|
| 153 |  |  | PWM1_PW_Update | SM77.1 | PWM1 update the pulse width value: 0=no update; 1=write new pulse width |
| 154 |  |  | PTO1_PC_Update | SM77.2 | PTO1 update the pulse count value: 0=no update; 1=write new pulse count |
| 155 |  |  | PWM1_TimeBase | SM77.3 | PWM1 time base: 0=1µs/tick, 1=1ms/tick |
| 156 |  |  | PLS1_Select | SM77.6 | PTO1/PWM1 mode select: 0=PWM; 1=PTO. |
| 157 |  |  | PLS1_Enable | SM77.7 | PTO1/PWM1 enable: 0=disable; 1=enable. |
| 158 |  |  | PLS1_Cycle | SMW78 | PWM1 cycle time value (2 to 65,535 units of time base); PTO1 frequency value (1 to 65,535 Hz) |
| 159 |  |  | PWM1_PW | SMW80 | PWM1 pulse width value (0 to 65,535 units of time base) |
| 160 |  |  | PTO1_PC | SMD82 | PTO1 pulse count value (1 to 2 ³² - 1) |
| 161 |  |  | PTO2_Status | SMB566 | PTO2 Status |
| 162 |  |  | PLS2_Ovr | SM566.6 | PTO2 pipeline overflow/underflow, loading pipeline while full or transferring an empty pipeline: 0=No overflow; 1=Pipeline overflow/underflow |
| 163 |  |  | PLS2_Idle | SM566.7 | PTO2 idle: 0 = PTO in progress; 1= PTO is idle |
| 164 |  |  | PLS2_Ctrl | SMB567 | Monitor and control PTO2 (Pulse Train Output) and PWM2 (Pulse Width Modulation) for Q0.3 |
| 165 |  |  | PLS2_Cycle_Update | SM567.0 | PTO2/PWM2 update the cycle time or frequency value: 0=no update; 1=write new cycle time/frequency |
| 166 |  |  | PWM2_PW_Update | SM567.1 | PWM2 update the pulse width value: 0=no update; 1= write new pulse width |
| 167 |  |  | PTO2_PC_Update | SM567.2 | PTO2 update the pulse count value: 0=no update; 1= write new pulse count |
| 168 |  |  | PWM2_TimeBase | SM567.3 | PWM2 time base: 0=1µs/tick, 1=1ms/tick |
| 169 |  |  | PLS2_Select | SM567.6 | PTO2/PWM2 mode select: 0=PWM; 1=PTO. |
| 170 |  |  | PLS2_Enable | SM567.7 | PTO2/PWM2 enable: 0=disable; 1=enable. |
| 171 |  |  | PLS2_Cycle | SMW568 | PWM2 cycle time value (2 to 65,535 units of time base); PTO2 frequency value (1 to 65,535 Hz) |
| 172 |  |  | PWM2_PW | SMW570 | PWM2 pulse width value (0 to 65,535 units of time base) |
| 173 |  |  | PTO2_PC | SMD572 | PTO2 pulse count value (1 to 2 ³² - 1) |
| 174 |  |  | P0_Stat_Rcv | SMB86 | Port 0 receive message status |
| 175 |  |  | P0_Stat_Rcv_0 | SM86.0 | 1=Receive message terminated: Parity error |
| 176 |  |  | P0_Stat_Rcv_1 | SM86.1 | 1=Receive message terminated: Maximum character count achieved |
| 177 |  |  | P0_Stat_Rcv_2 | SM86.2 | 1=Receive message terminated: Timer expired |
| 178 |  |  | P0_Stat_Rcv_5 | SM86.5 | 1=Receive message terminated: End character received |
| 179 |  |  | P0_Stat_Rcv_6 | SM86.6 | 1=Receive message terminated: Error in input parameter or missing start or end condition |
| 180 |  |  | P0_Stat_Rcv_7 | SM86.7 | 1=Receive message terminated: User disable command |
| 181 |  |  | P0_Ctrl_Rcv | SMB87 | Receive message control |
| 182 |  |  | P0_Ctrl_Rcv_1 | SM87.1 | 0=Ignore break conditions; 1=Use break conditions as start of message detection |
| 183 |  |  | P0_Ctrl_Rcv_2 | SM87.2 | 0=Ignore SMW92, 1= Terminate receive if the time period in SMW92 is exceeded |
| 184 |  |  | P0_Ctrl_Rcv_3 | SM87.3 | 0=Timer is an inter-character timer, 1=Timer is a message timer |
| 185 |  |  | P0_Ctrl_Rcv_4 | SM87.4 | 0=Ignore SMW90, 1=Use the value of SMW90 to detect an idle condition |
| 186 |  |  | P0_Ctrl_Rcv_5 | SM87.5 | 0=Ignore SMB89, 1=Use the value of SMB89 to detect end of message |
| 187 |  |  | P0_Ctrl_Rcv_6 | SM87.6 | 0=Ignore SMB88, 1=Use the value of SMB88 to detect start of message |
| 188 |  |  | P0_Ctrl_Rcv_7 | SM87.7 | 0=Receive message function disabled, 1=Receive message function enabled |
| 189 |  |  | P0_Start_Char | SMB88 | Start of message character |
| 190 |  |  | P0_End_Char | SMB89 | End of message character |
| 191 |  |  | P0_Idle_Time | SMW90 | Idle line time period given in milliseconds |
| 192 |  |  | P0_Timeout | SMW92 | Inter-character/message timer time-out value given in milliseconds |
| 193 |  |  | P0_Max_Char | SMB94 | Maximum number of characters to be received (1 to 255 bytes) |
| 194 |  |  | P1_Stat_Rcv | SMB186 | Port 1 receive message status |
| 195 |  |  | P1_Stat_Rcv_0 | SM186.0 | 1=Receive message terminated: Parity error |
| 196 |  |  | P1_Stat_Rcv_1 | SM186.1 | 1=Receive message terminated: Maximum character count achieved |
| 197 |  |  | P1_Stat_Rcv_2 | SM186.2 | 1=Receive message terminated: Timer expired |
| 198 |  |  | P1_Stat_Rcv_5 | SM186.5 | 1=Receive message terminated: End character received |

| |  |  | Symbol | Address | Comment |
|-----|---|---|---------------|---------|---|
| 199 |  |  | P1_Stat_Rcv_6 | SM186.6 | 1=Receive message terminated: Error in input parameter or missing start or end condition |
| 200 |  |  | P1_Stat_Rcv_7 | SM186.7 | 1=Receive message terminated: User disable command |
| 201 |  |  | P1_Ctrl_Rcv | SMB187 | Receive message control |
| 202 |  |  | P1_Ctrl_Rcv_1 | SM187.1 | 0=Ignore break conditions; 1=Use break conditions as start of message detection |
| 203 |  |  | P1_Ctrl_Rcv_2 | SM187.2 | 0=Ignore SMW192, 1= Terminate receive if the time period in SMW192 is exceeded |
| 204 |  |  | P1_Ctrl_Rcv_3 | SM187.3 | 0=Timer is an inter-character timer, 1=Timer is a message timer |
| 205 |  |  | P1_Ctrl_Rcv_4 | SM187.4 | 0=Ignore SMW190, 1=Use the value of SMW190 to detect an idle condition |
| 206 |  |  | P1_Ctrl_Rcv_5 | SM187.5 | 0=Ignore SMB189, 1=Use the value of SMB189 to detect end of message |
| 207 |  |  | P1_Ctrl_Rcv_6 | SM187.6 | 0=Ignore SMB188, 1=Use the value of SMB188 to detect start of message |
| 208 |  |  | P1_Ctrl_Rcv_7 | SM187.7 | 0=Receive message function disabled, 1=Receive message function enabled |
| 209 |  | | P1_Start_Char | SMB188 | Start of message character |
| 210 |  | | P1_End_Char | SMB189 | End of message character |
| 211 |  | | P1_Idle_Time | SMW190 | Idle line time period given in milliseconds |
| 212 |  | | P1_Timeout | SMW192 | Inter-character/message timer time-out value given in milliseconds |
| 213 |  | | P1_Max_Char | SMB194 | Maximum number of characters to be received (1 to 255 bytes) |
| 214 |  | | EM_Parity_Err | SMW98 | This word is incremented each time a parity error is detected on the expansion I/O bus. It is cleared upon power up and by the user writing a zero. |
| 215 |  | | CPU_Alarm | SMW100 | CPU |
| 216 |  | | SB_Alarm | SMW102 | Signal board |
| 217 |  | | EM0_Alarm | SMW104 | Expansion module bus slot 0 |
| 218 |  | | EM1_Alarm | SMW106 | Expansion module bus slot 1 |
| 219 |  | | EM2_Alarm | SMW108 | Expansion module bus slot 2 |
| 220 |  | | EM3_Alarm | SMW110 | Expansion module bus slot 3 |
| 221 |  | | EM4_Alarm | SMW112 | Expansion module bus slot 4 |

| |  | Symbol | Address | Comment |
|---|---|--------|---------|--|
| 1 | | SBR_0 | SBR0 | Subroutine Comments |
| 2 | | SBR_1 | SBR1 | Storage and selection of the bunker number |
| 3 | | S_ITR | SBR2 | LIBRARY: Scale V1.2 (bipolar scaling) |
| 4 | | S_RTI | SBR3 | LIBRARY: Scale V1.2 (bipolar scaling) |
| 5 | | INT_0 | INT0 | Interrupt routine comments |
| 6 | | MAIN | OB1 | Program Comments |

| |  | Symbol | Address | Comment |
|----|---|--------------|---------|---------|
| 1 | | EM0_Input0 | AIW16 | . |
| 2 |  | EM0_Input1 | AIW18 | . |
| 3 |  | EM0_Output0 | AQW16 | . |
| 4 | | CPU_Input0 | I0.0 | . |
| 5 | | CPU_Input1 | I0.1 | . |
| 6 | | CPU_Input2 | I0.2 | . |
| 7 | | CPU_Input3 | I0.3 | . |
| 8 | | CPU_Input4 | I0.4 | . |
| 9 | | CPU_Input5 | I0.5 | . |
| 10 | | CPU_Input6 | I0.6 | . |
| 11 | | CPU_Input7 | I0.7 | . |
| 12 |  | CPU_Input8 | I1.0 | . |
| 13 |  | CPU_Input9 | I1.1 | . |
| 14 |  | CPU_Input10 | I1.2 | . |
| 15 |  | CPU_Input11 | I1.3 | . |
| 16 |  | CPU_Input12 | I1.4 | . |
| 17 |  | CPU_Input13 | I1.5 | . |
| 18 |  | CPU_Input14 | I1.6 | . |
| 19 |  | CPU_Input15 | I1.7 | . |
| 20 |  | CPU_Input16 | I2.0 | . |
| 21 |  | CPU_Input17 | I2.1 | . |
| 22 |  | CPU_Input18 | I2.2 | . |
| 23 |  | CPU_Input19 | I2.3 | . |
| 24 |  | CPU_Input20 | I2.4 | . |
| 25 |  | CPU_Input21 | I2.5 | . |
| 26 |  | CPU_Input22 | I2.6 | . |
| 27 |  | CPU_Input23 | I2.7 | . |
| 28 |  | CPU_Input24 | I3.0 | . |
| 29 |  | CPU_Input25 | I3.1 | . |
| 30 |  | CPU_Input26 | I3.2 | . |
| 31 |  | CPU_Input27 | I3.3 | . |
| 32 |  | CPU_Input28 | I3.4 | . |
| 33 |  | CPU_Input29 | I3.5 | . |
| 34 |  | CPU_Input30 | I3.6 | . |
| 35 |  | CPU_Input31 | I3.7 | . |
| 36 |  | CPU_Input32 | I4.0 | . |
| 37 |  | CPU_Input33 | I4.1 | . |
| 38 |  | CPU_Input34 | I4.2 | . |
| 39 |  | CPU_Input35 | I4.3 | . |
| 40 |  | CPU_Output0 | Q0.0 | . |
| 41 |  | CPU_Output1 | Q0.1 | . |
| 42 |  | CPU_Output2 | Q0.2 | . |
| 43 |  | CPU_Output3 | Q0.3 | . |
| 44 |  | CPU_Output4 | Q0.4 | . |
| 45 |  | CPU_Output5 | Q0.5 | . |
| 46 |  | CPU_Output6 | Q0.6 | . |
| 47 |  | CPU_Output7 | Q0.7 | . |
| 48 |  | CPU_Output8 | Q1.0 | . |
| 49 |  | CPU_Output9 | Q1.1 | . |
| 50 |  | CPU_Output10 | Q1.2 | . |
| 51 |  | CPU_Output11 | Q1.3 | . |
| 52 |  | CPU_Output12 | Q1.4 | . |
| 53 |  | CPU_Output13 | Q1.5 | . |
| 54 |  | CPU_Output14 | Q1.6 | . |
| 55 |  | CPU_Output15 | Q1.7 | . |
| 56 |  | CPU_Output16 | Q2.0 | . |
| 57 |  | CPU_Output17 | Q2.1 | . |
| 58 |  | CPU_Output18 | Q2.2 | . |
| 59 |  | CPU_Output19 | Q2.3 | . |
| 60 |  | CPU_Output20 | Q2.4 | . |
| 61 |  | CPU_Output21 | Q2.5 | . |
| 62 |  | CPU_Output22 | Q2.6 | . |
| 63 |  | CPU_Output23 | Q2.7 | . |

| | | | | |
|---|---|--------|---------|---------|
|  |  | Symbol | Address | Comment |
|  |  | Symbol | Address | Comment |

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|---|---|--------|---------|---------|
|  |  | Symbol | Address | Comment |
|  |  | Symbol | Address | Comment |