The Operation Block

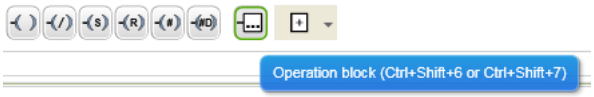
Setting Numeric Values

The setpoints for speed handling need to be set by the program at startup. SoMachine Basic provides a function for setting numeric values. It is called the Operation Block.

The Operation Block is used to perform a calculation or other operation and write the result to a register.

How to Create an Operation Block

The Operation block tool is located on the toolbar next to the Other Items button. It is a rectangle with three dots inside.



To create an Operation block select the tool and place the object on the right hand side of the rung.

Double-click the Operation Expression above the block to open an entry box and enter the required expression.

Note:

Operation blocks can only be placed on the right hand side of a ladder rung.

Conveyor Application

The speed of a conveyor will also be monitored. This speed will be represented by an analog value on input %IW0.0. A low and high setpoint will be configured and if the speed of the conveyor is outside the range of the setpoints then an indication will be made to the operator. No other automation control is required.

Exercise - Creating Setpoints

Learning Outcomes

By the completion of this exercise you will:

- Be able to use the Operation block

1 Create the ladder rung.

i. In the Speed Monitoring POU, create a rung and name it "Setpoints".

2 Create the programming for the rung.

i. Select the Operation Block tool and place the block at the right hand end of the rung. Place a second Operate block beneath it.

ii. Click the Operation Expression above the first block and an entry box will open.

Enter the expression `%MW1 := 625`

Notice that this is colon-equals, not just equals.

iii. Configure the second Operation block with the expression `%MW2 := 400`

Note:

Although this will perform the correct function and load the setpoints with the values, this will happen each time the logic is processed.

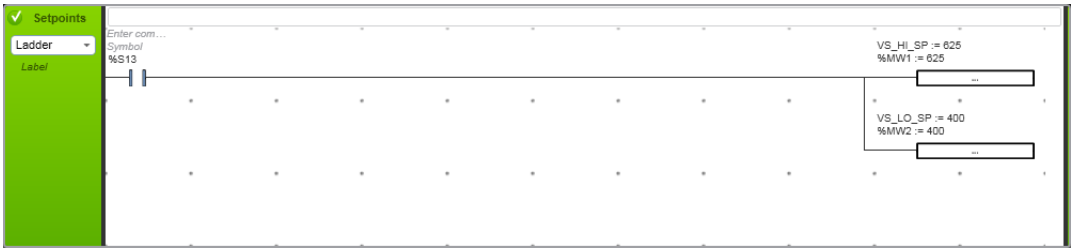
Sometimes the setpoints will need changing depending on the state of the process so it is better to load the setpoints once when the program starts up. The setpoints can then be changed without being overwritten by the program.

The system bit %S13 provides a single pulse when the program starts and remains off after that. This can be used for any initialisation in the program.

Exercise - Creating Setpoints (cont.)

3 Change the rung so that the values are loaded once when the program starts.

i. Place a normally open contact at the start of the rung and assign it to address %S13. The completed rung should look like the following.



4 Save the application.