PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions

How to…
Connect a 1020 to a Siemens PLC

PENKO
an ETC Company

Table of Contents

GSD File

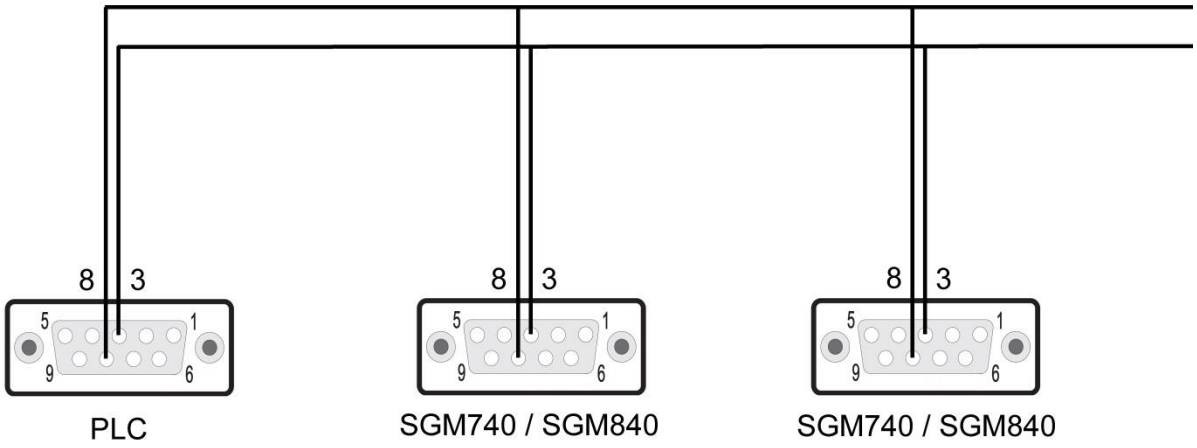
The GSD File can be found at our website www.penko.com. There are 2 GSD files, the indicator is only used for the 1020 indicator and the controller is used for the 1020 Mono Filler, Check Weigher or Belt Weigher.

Wiring

To connect the 1020 to a PLC, you only need to connect wire 3 (RxD/TxD-P) and 8 (RxD/TxD-N) of the connector as shown below. The first and last device on the chain need to have the bus termination.

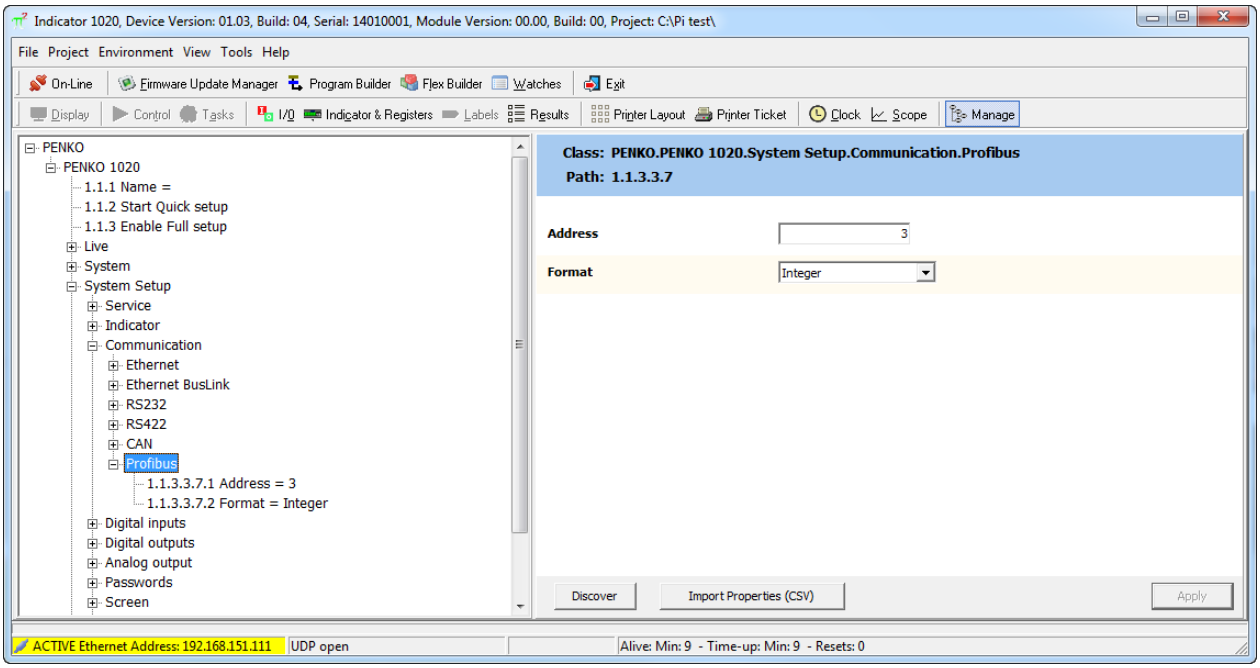
If you use an original Profibus connector make sure that you use the bus termination on the Profibus connector and not on the 1020 (the dipswitch next to the Profibus connector must be both in the "OFF" position), otherwise the Profibus communication will not work.

If you do not use an original Profibus connector with a termination. You must set the dipswitch next to the Profibus connector both in the "ON" position.



Setup the 1020

Connect the 1020 to a PC using an USB-cable and open Pi Mach II and double click on **1020**, double click on **Enable Full Setup** then double click on **System Setup**, double click on **Communication**, and double click on **Profibus**, set the **Address** and **Format** the same as picture below. Click on **Apply** to save settings.

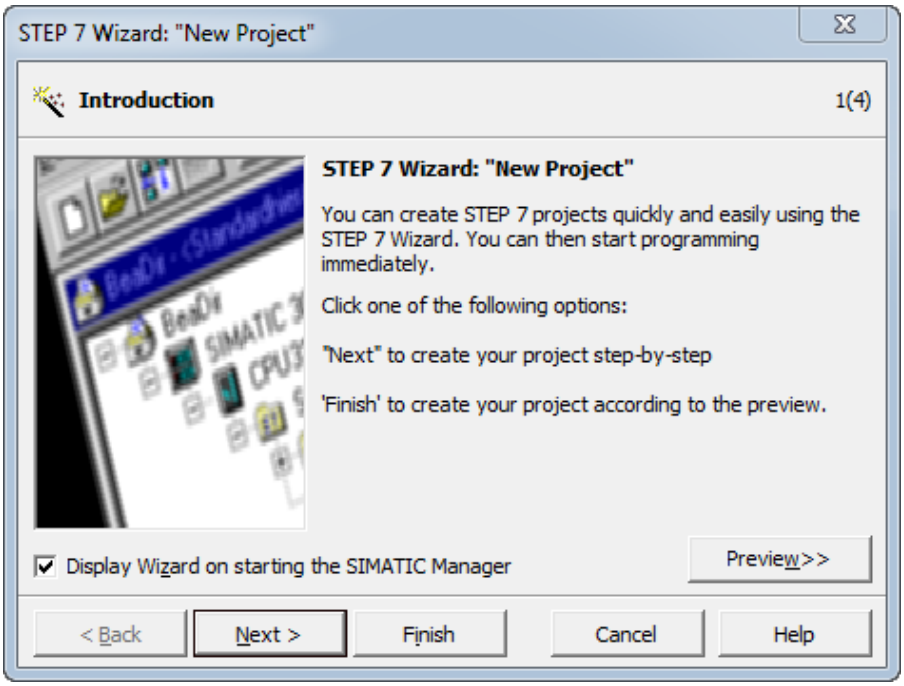


Simatic Manager (1)

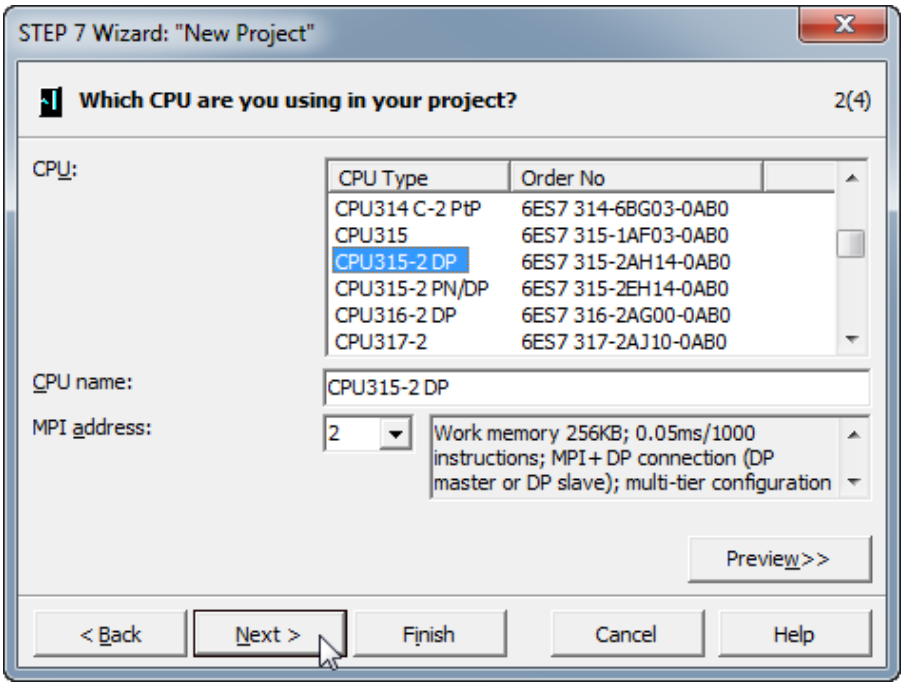
In the example below we use a Siemens Simatic S7-300 CPU315-2-DP PLC.

Create a project

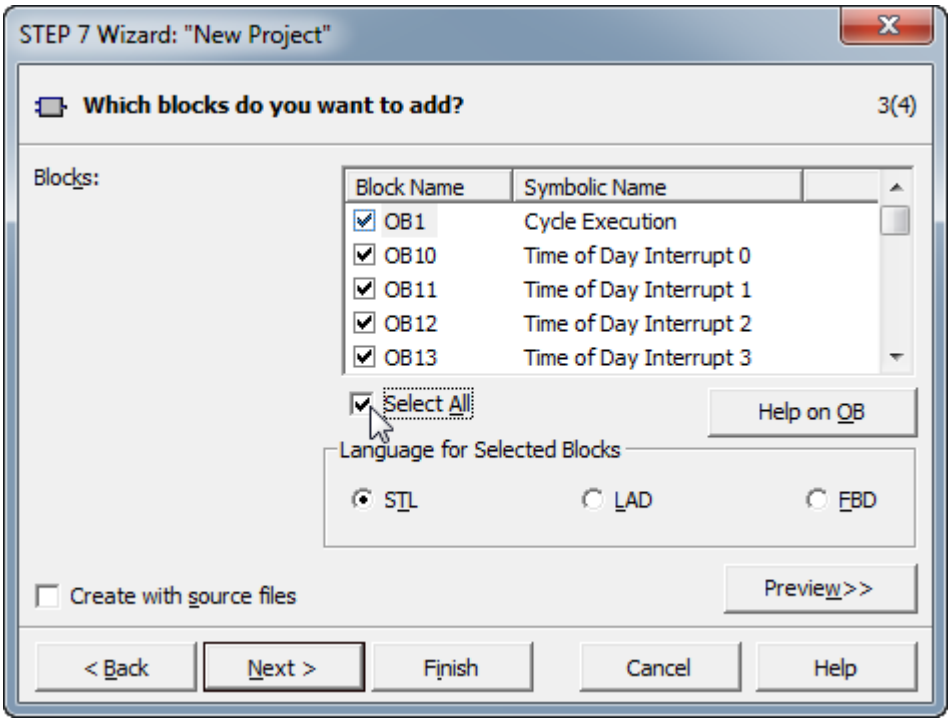
Open Simatic Manager and follow the STEP 7 Wizard. Click on **Next** to begin the Wizard.



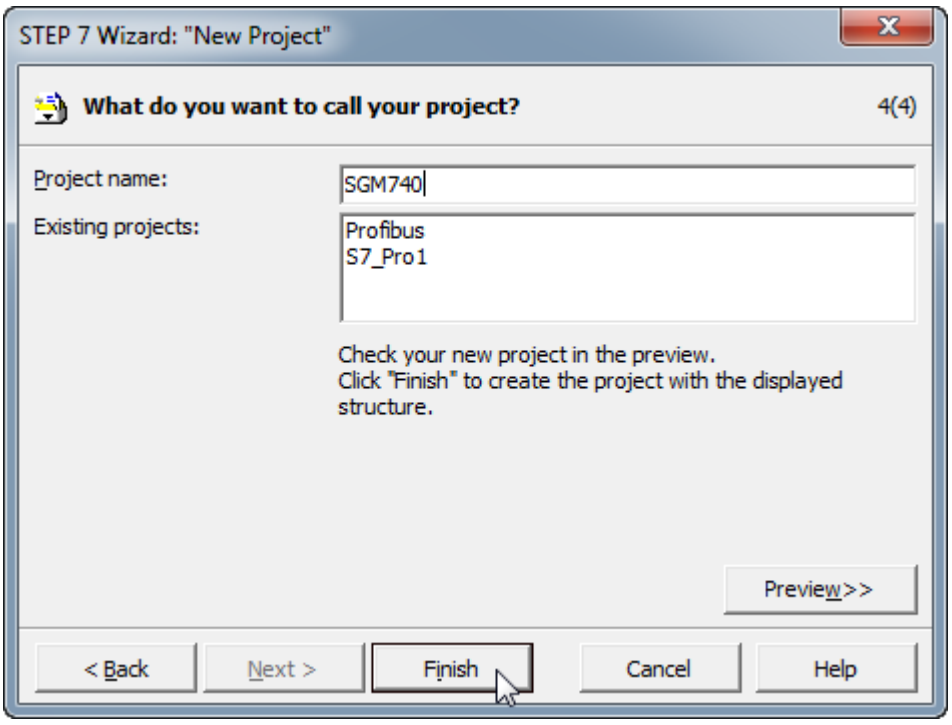
Select your PLC and click on **Next**.



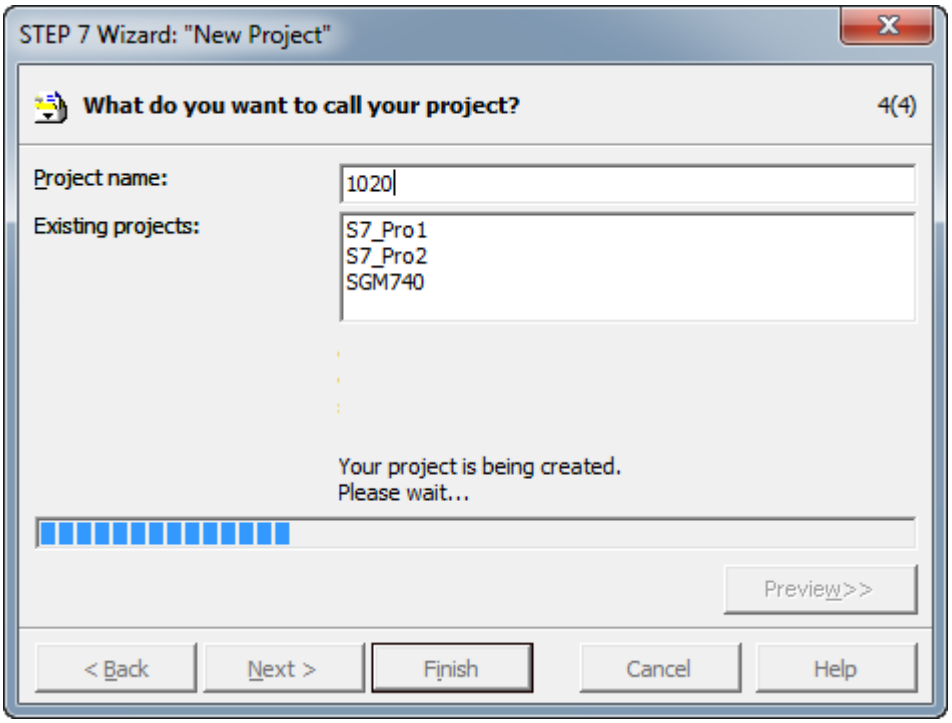
Select the blocks you want to add. In the example below we select all the blocks. When the blocks are selected, click on **Next**.



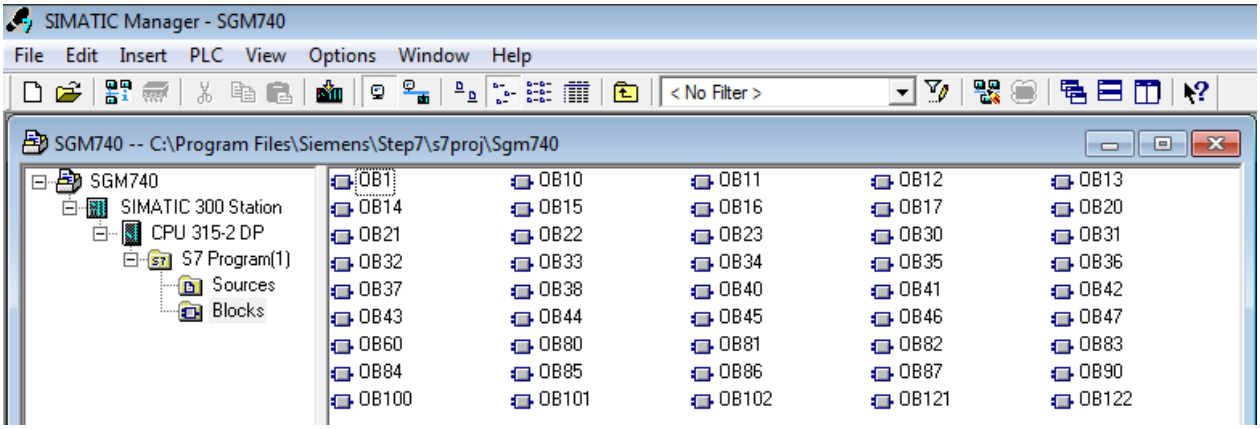
Give the project a name and click on **Finish**.



The project is being created.

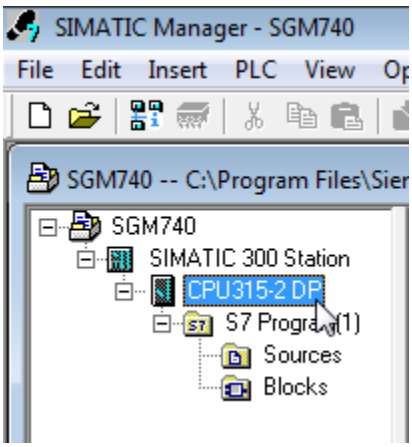


The project is shown below.

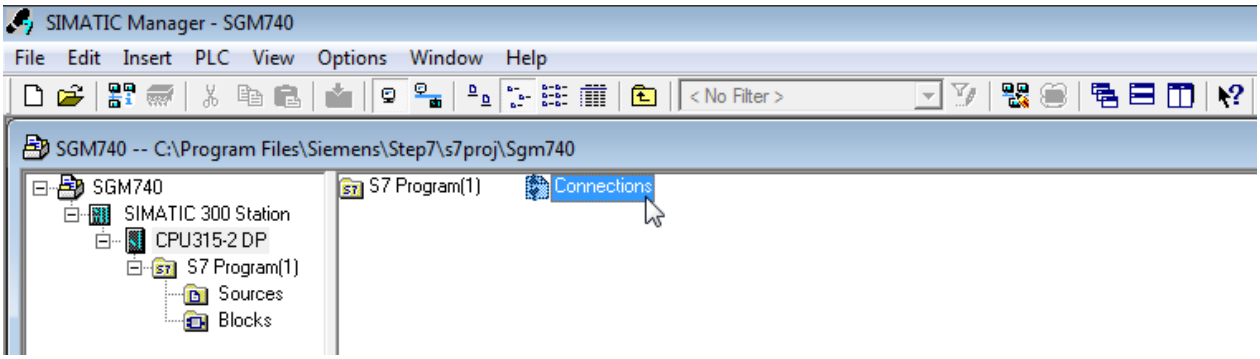


Setting up the Profibus network

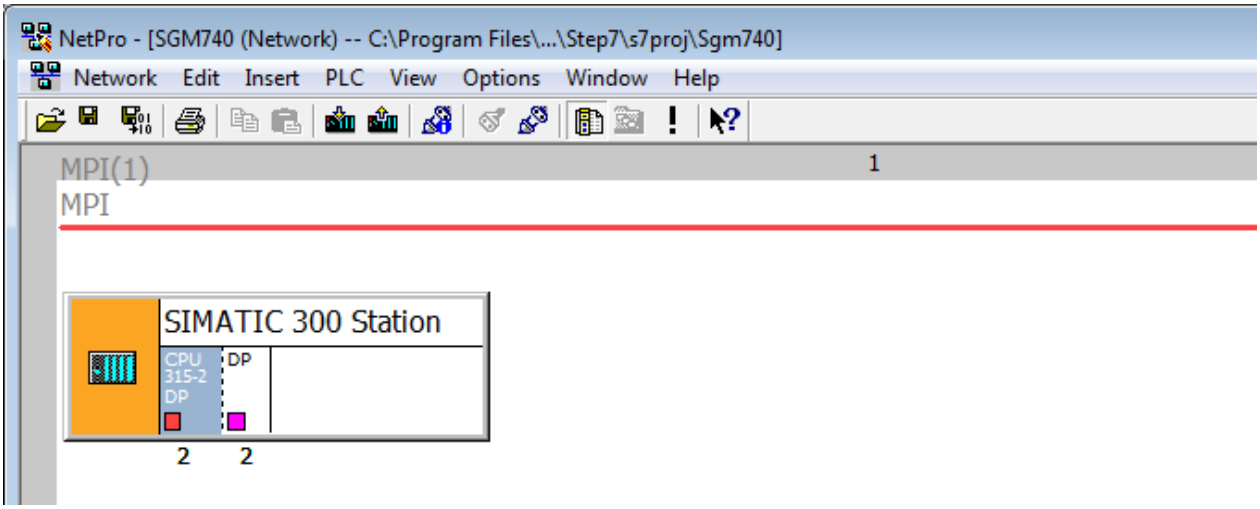
Click on your CPU name.



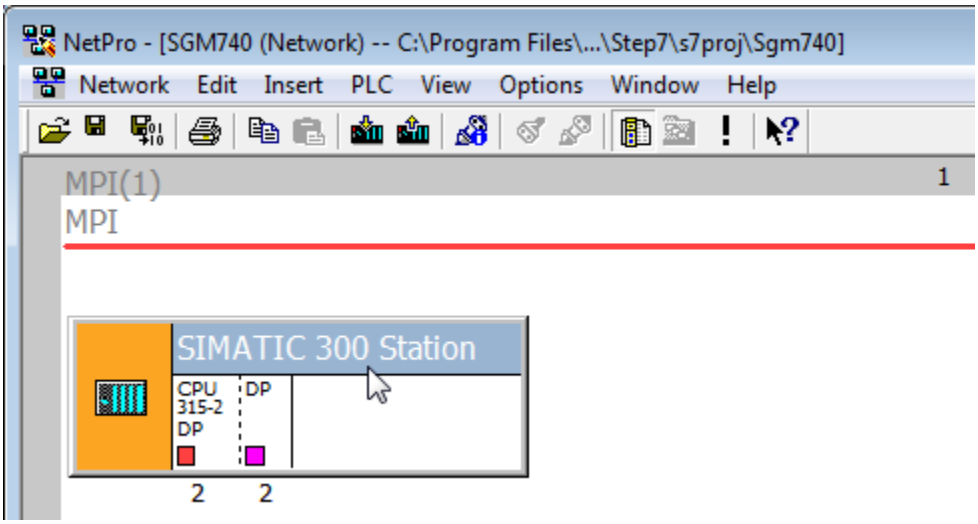
Double click on **Connections**.



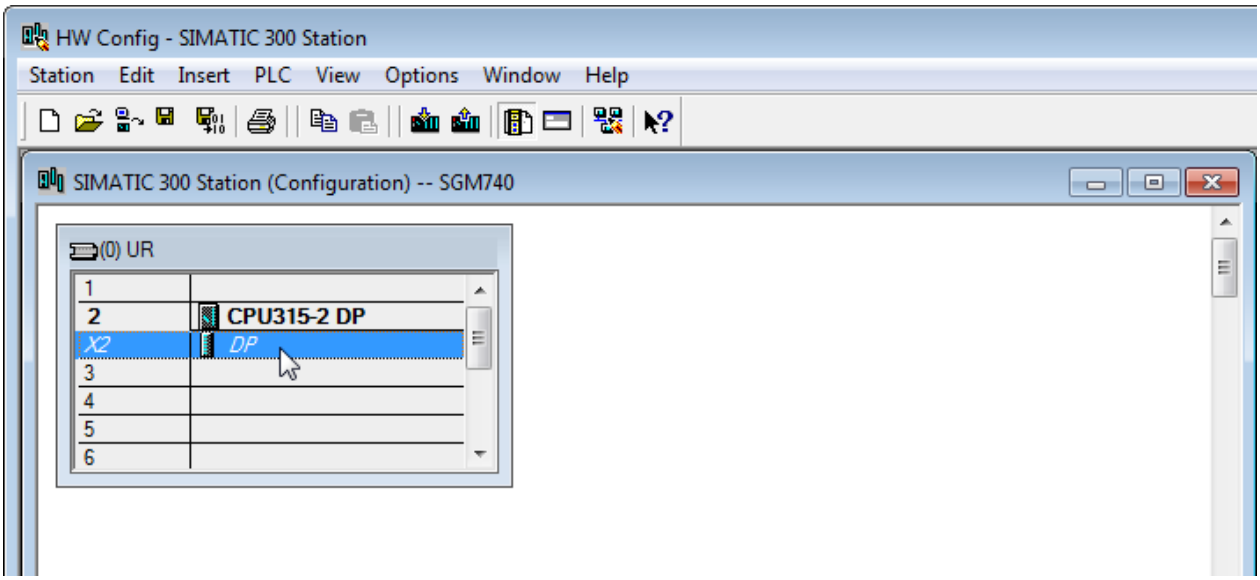
The program **NetPro** will open.



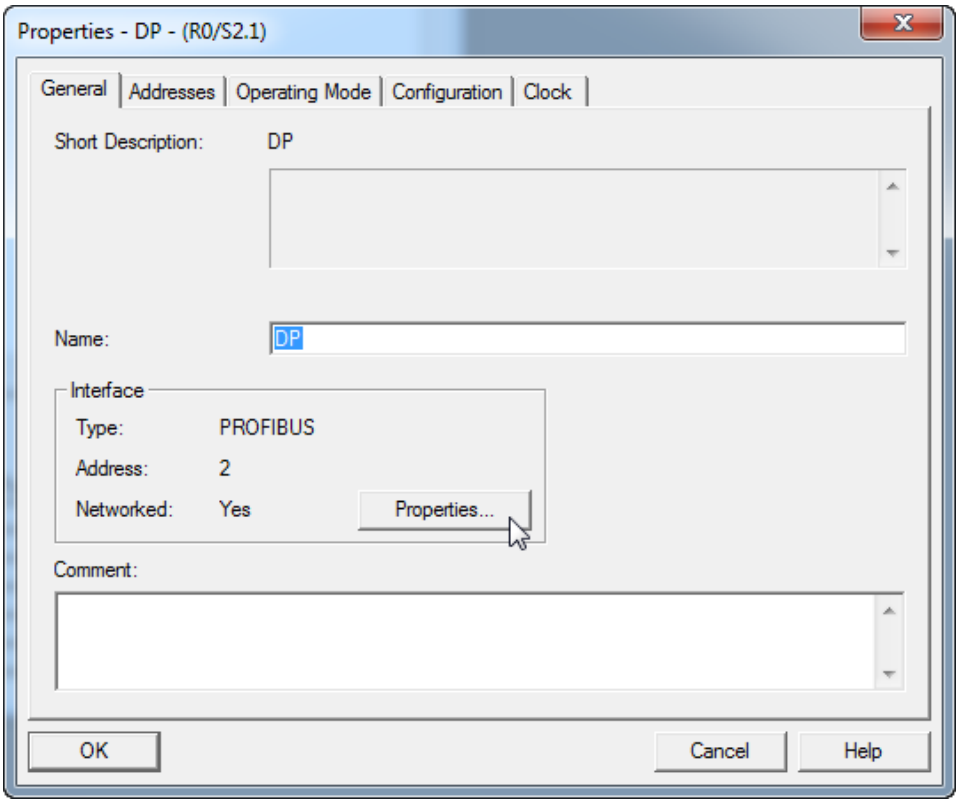
Double click on SIMATIC 300 Station.



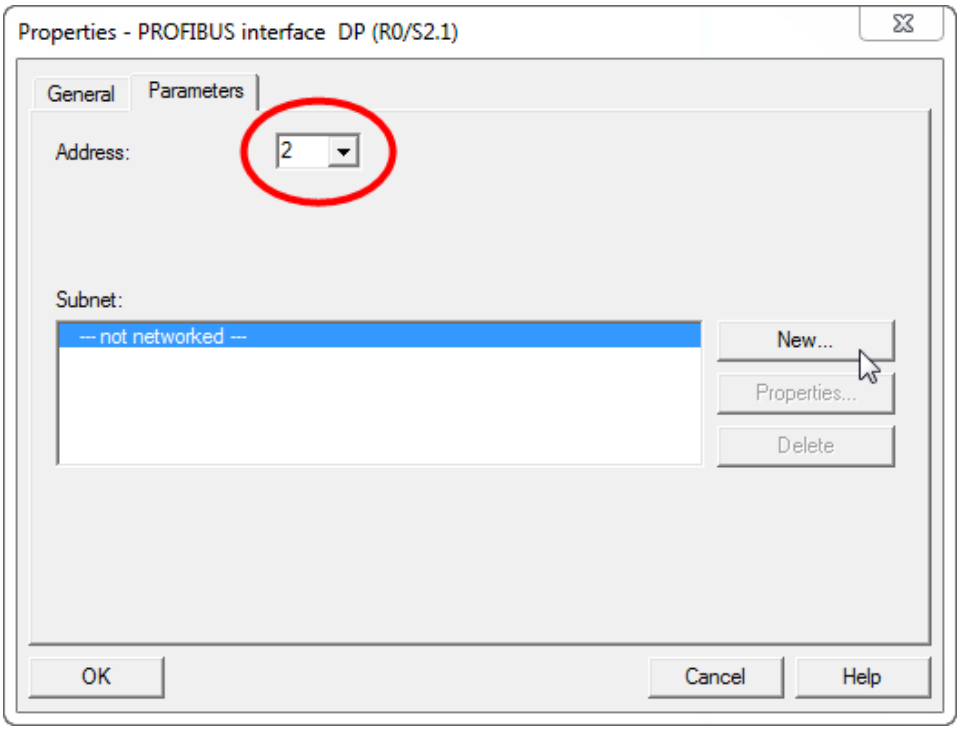
The program **HW Config** will open. Double click on the line **DP**.



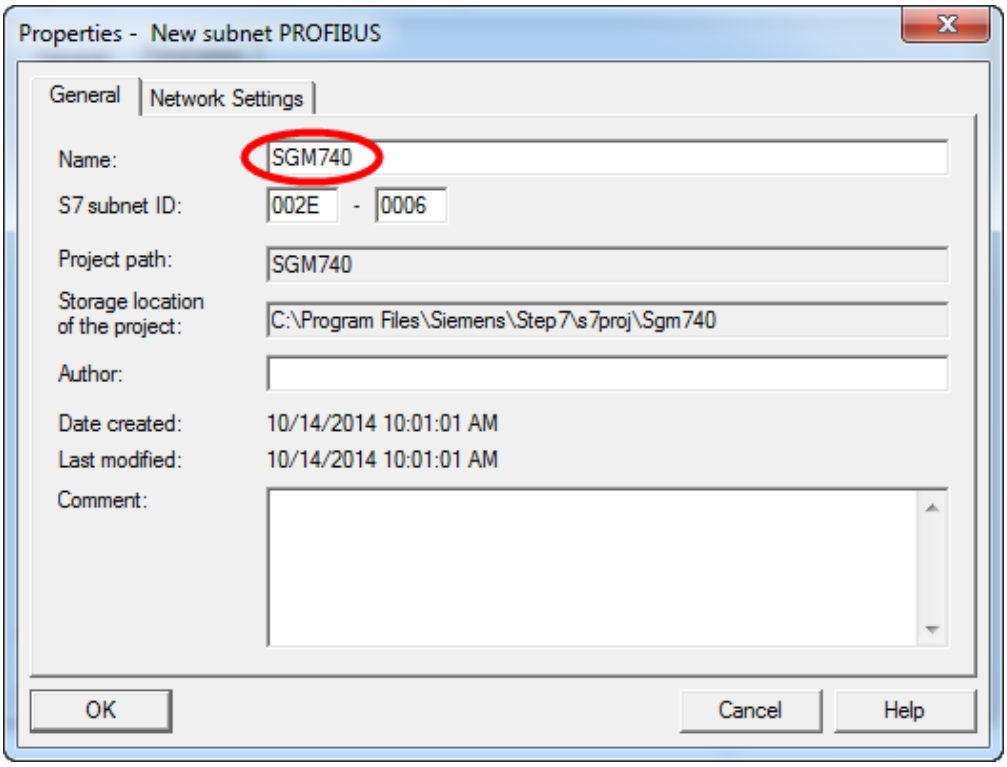
Click on **Properties**.



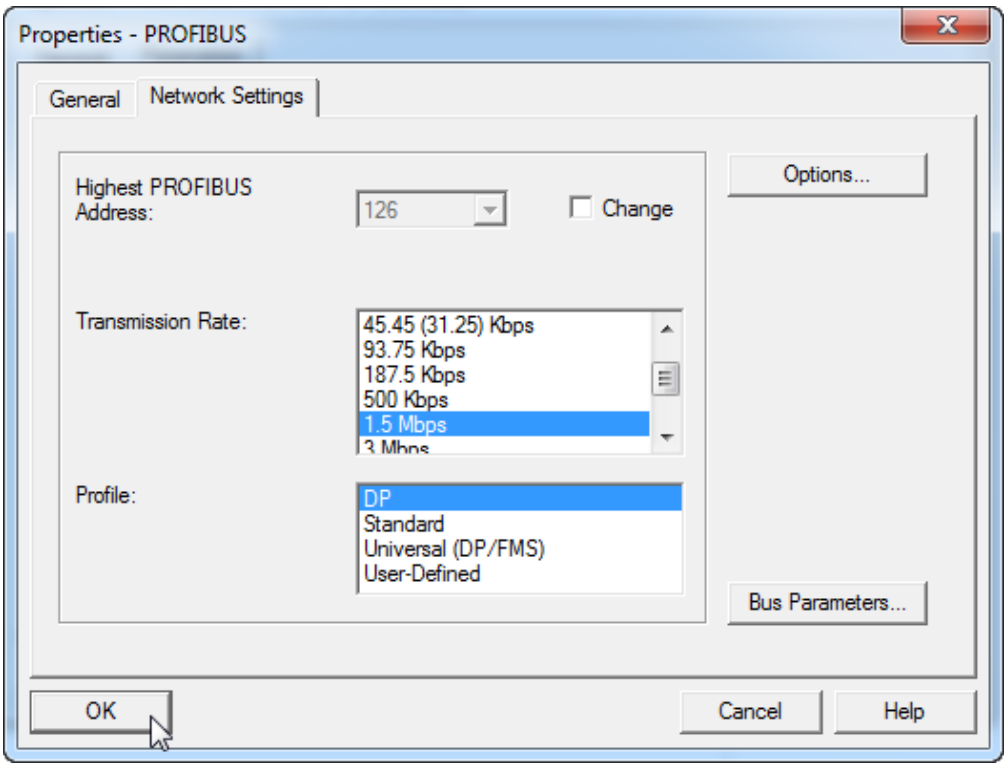
Set the Profibus address for the PLC and click on **New** to set up a Subnet.



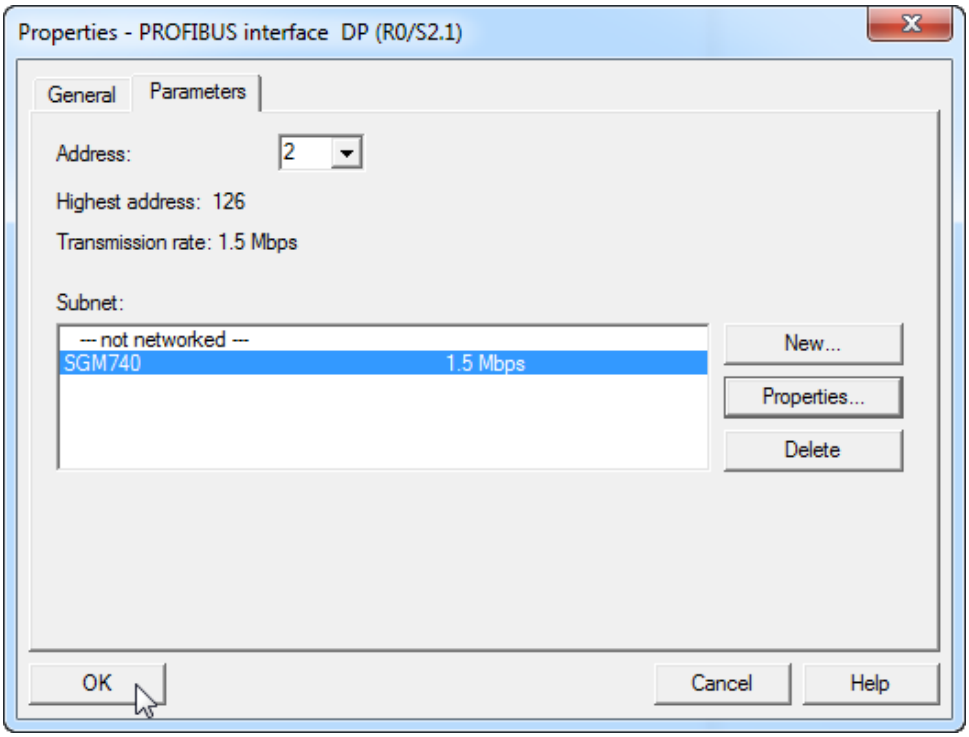
Give the subnet a name and go to the tap **Network Settings**.



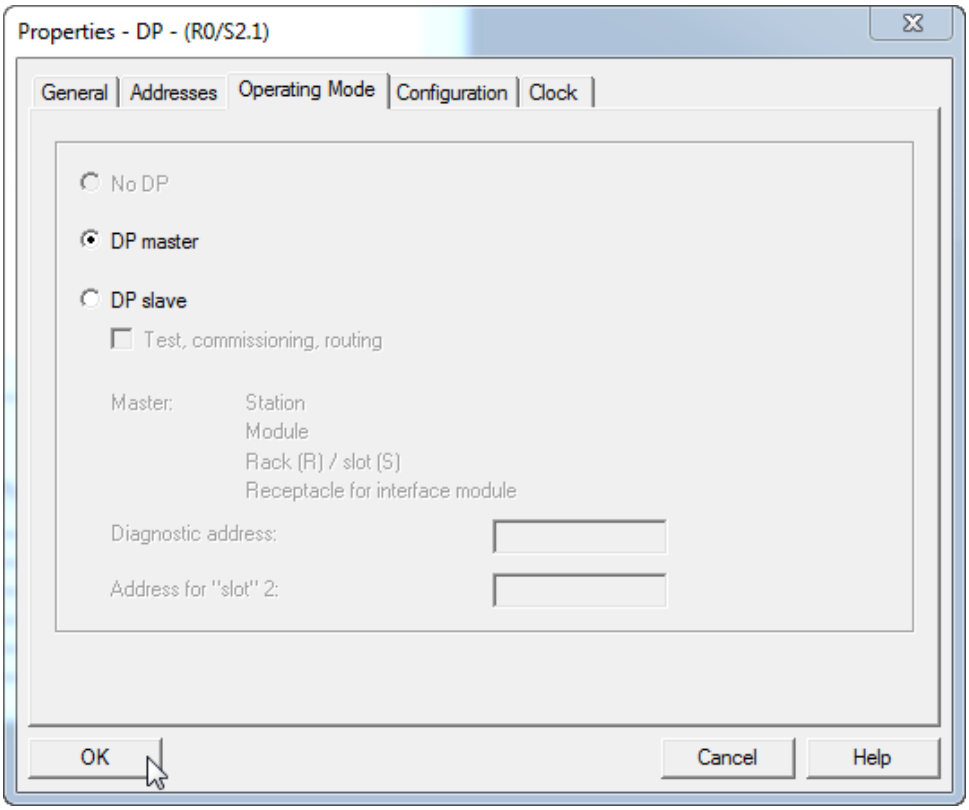
Set the **Transmission Rate** and **Profile** and click on **OK**.



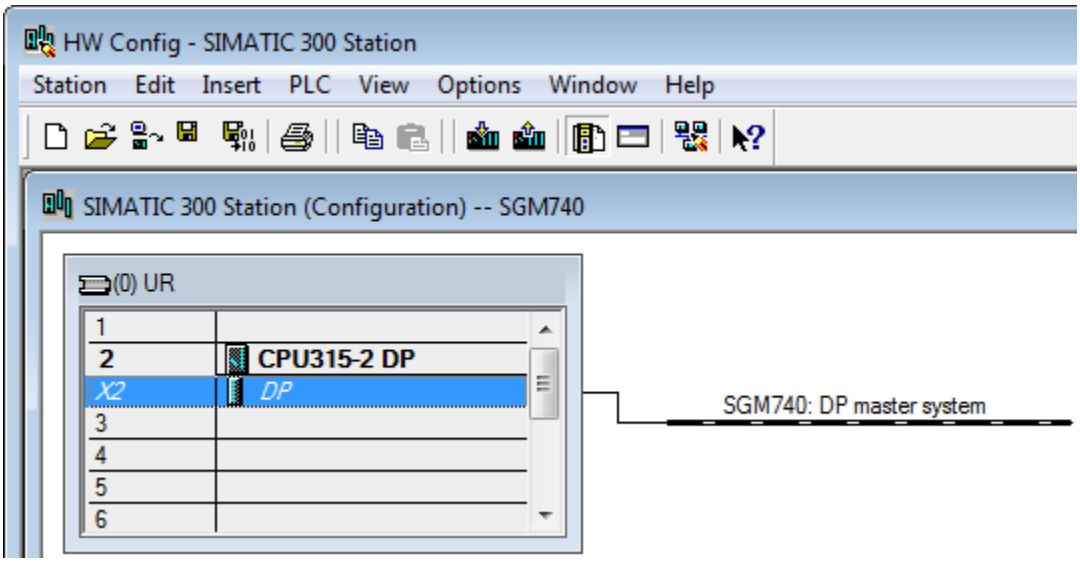
Click on **OK** to complete the Subnet setup.



Go to the tab **Operating Mode** and make sure **DP master** is chosen. Click on **OK**.

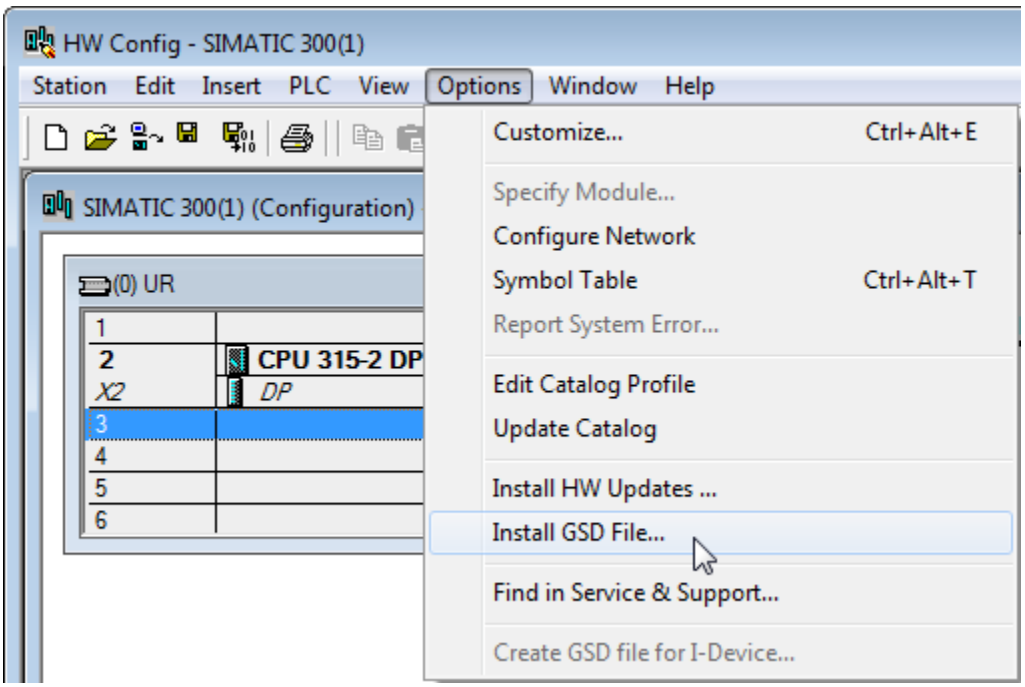


The SGM740: DP master system line will appear.

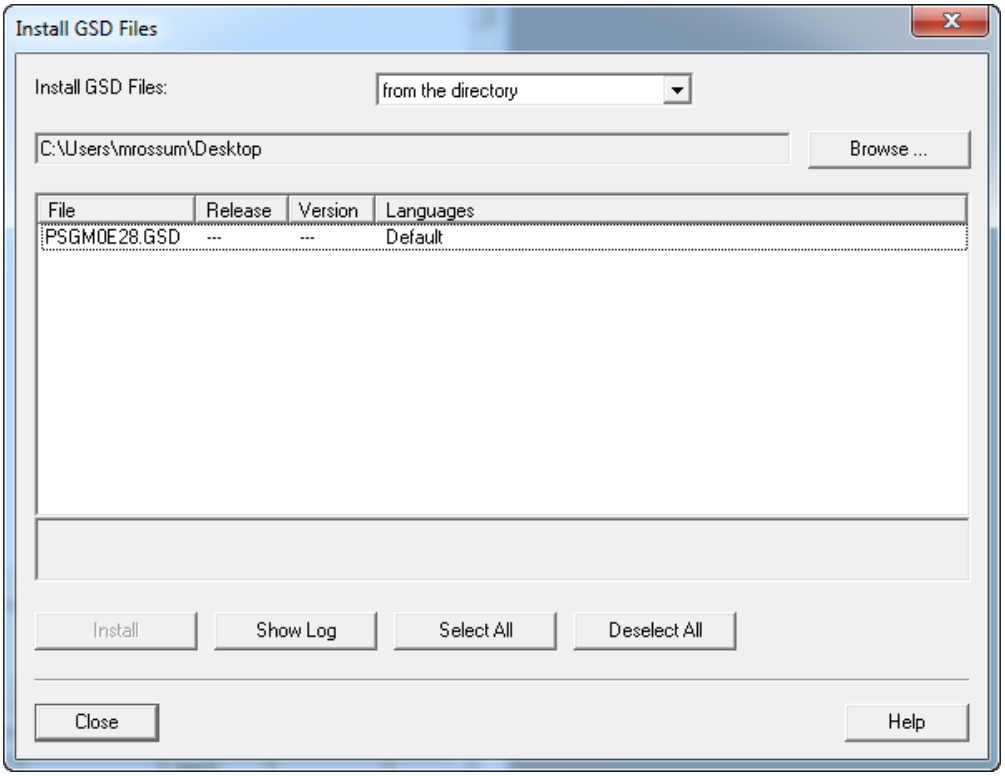


Install the GSD file

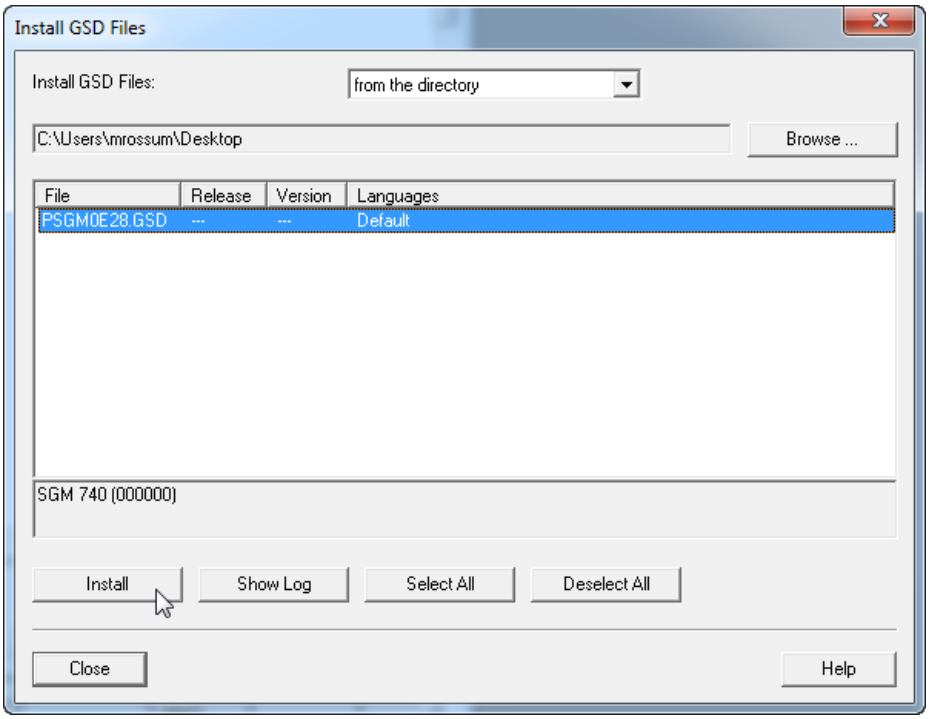
Click on **Options** and **Install GSD File…**.



Click on **Browse** to set the location folder where the GSD file is stored.

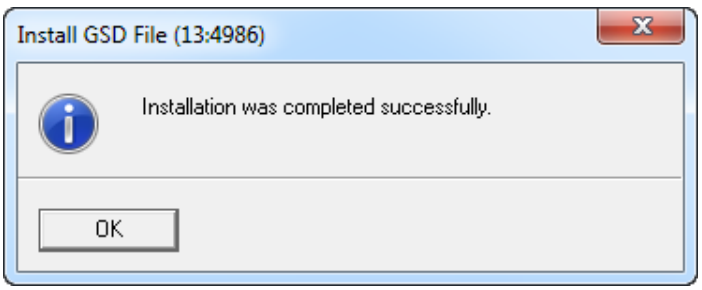


Select the GSD file and click on **Install**.



The following pop-up will appear, click on **Yes**.

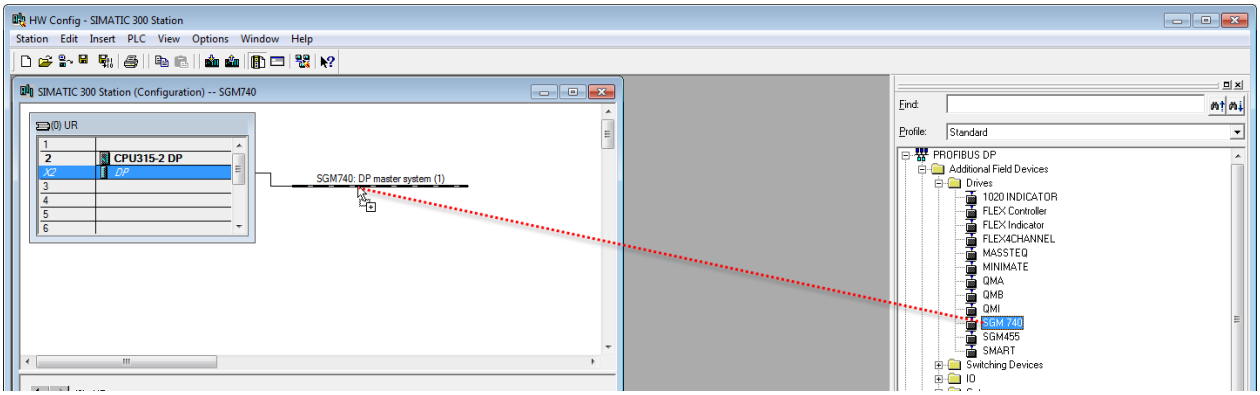
When the installation is completed the following pop-up will appear. Click on **OK**.



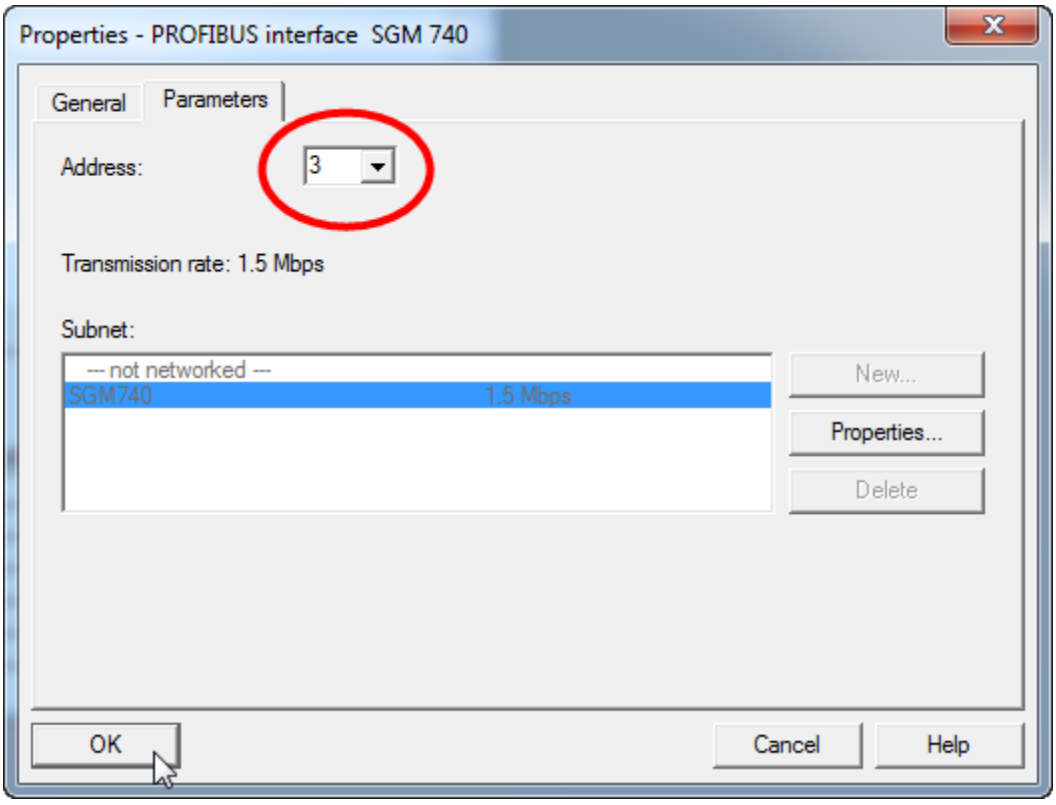
Click on **Close** to close the Install GSD Files window.

Add the 1020 to the Profibus network

The 1020 can now be found under **Profibus DP → Additional Field Devices → Drivers**. Drag the 1020 to the DP master system.

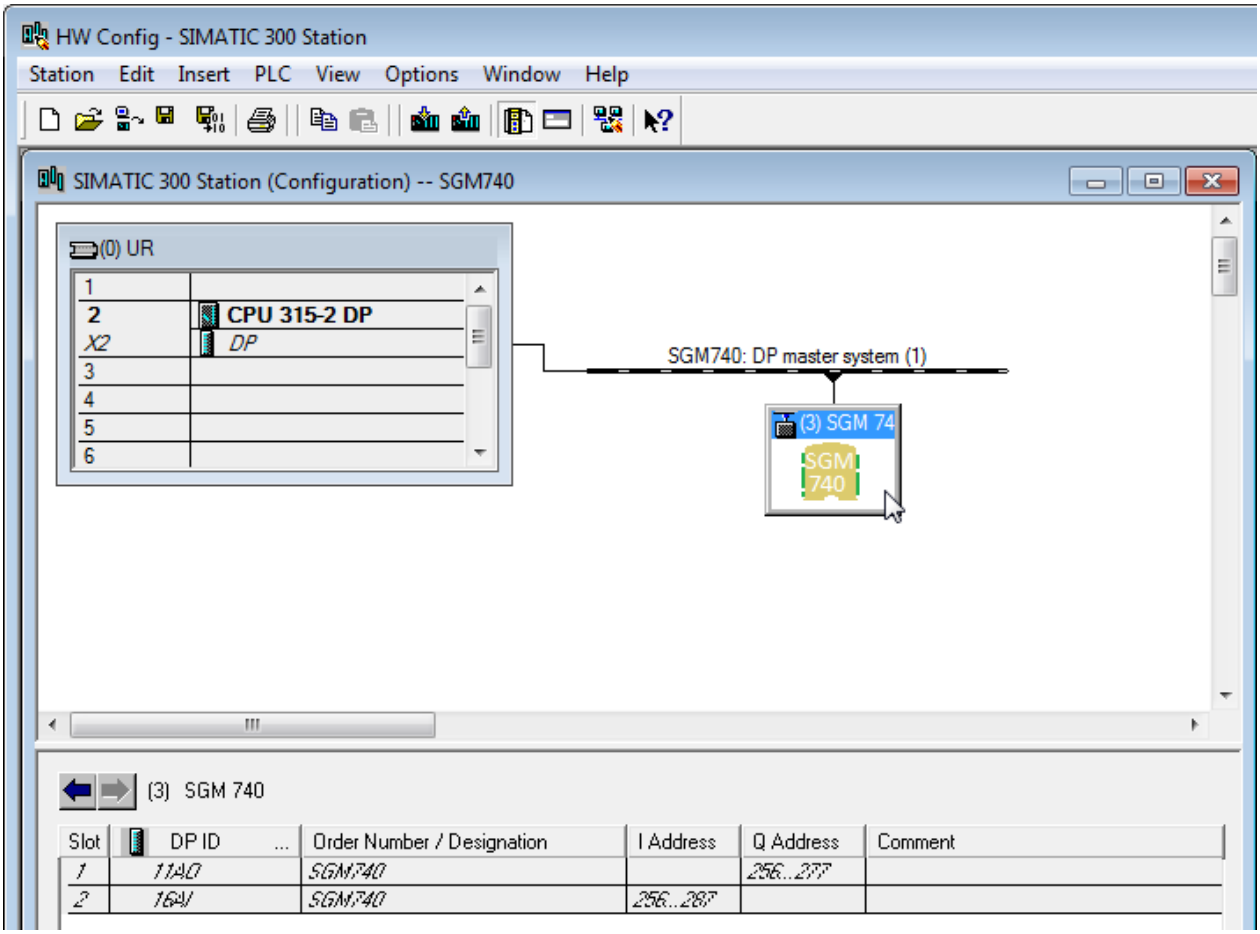


Set the Profibus address of the 1020 (the same address as used in Pi Mach II) and click on **OK**. See Setup the 1020.



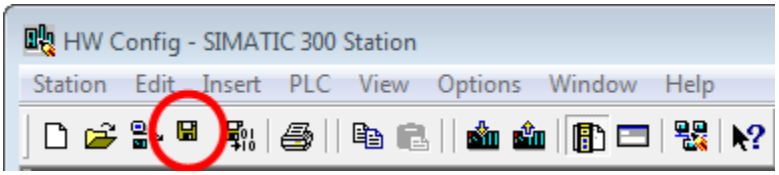
The 1020 is now connected to the SGM740: DP master system (1).

Note: when the 1020 is selected, the Input and Output address of the 1020 is shown. These addresses are important to remember and are needed later to read the data from the SGM704 or SGM840 or set data to the 1020.

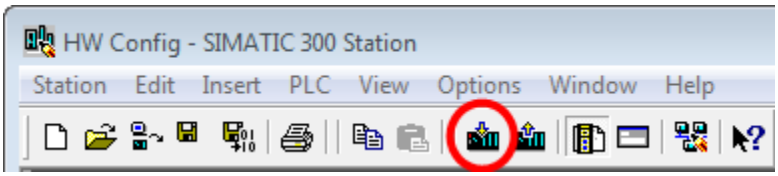


1020	Start address	End address
Input address	256	287
Output address	256	277

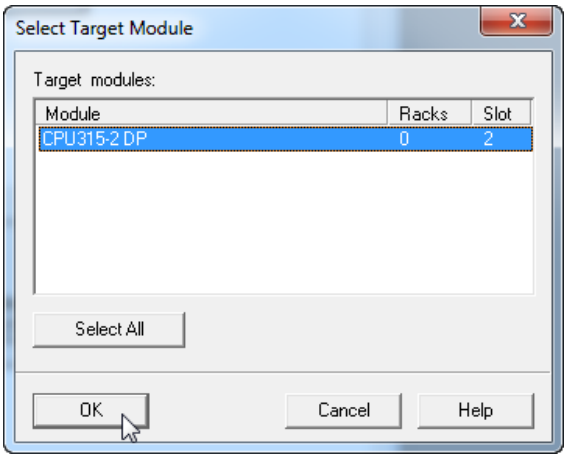
Click on **Save** to save the configuration.



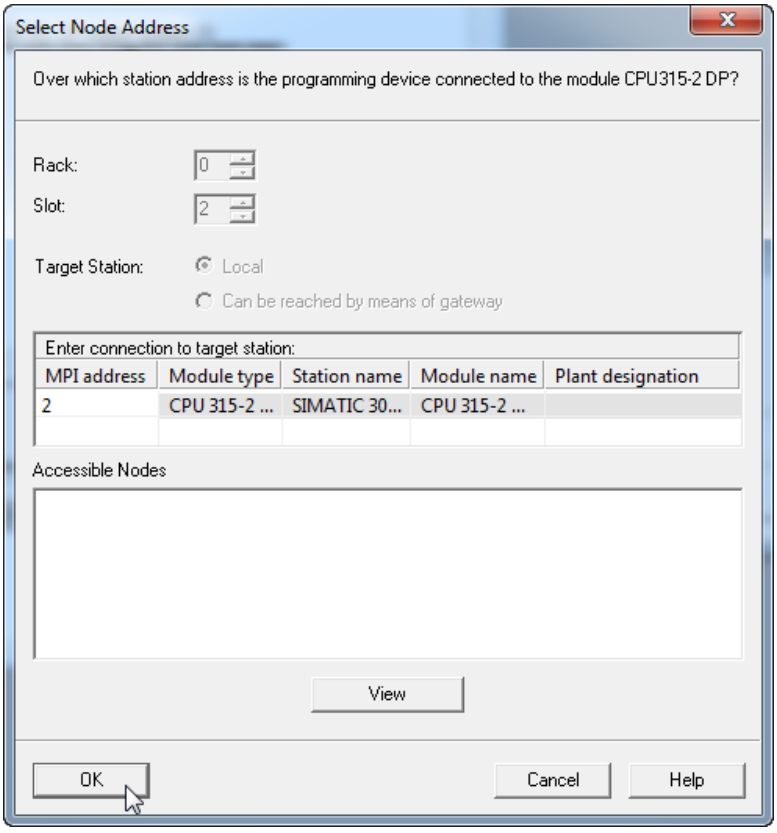
Click on **Download to Module** to load the settings into the PLC.



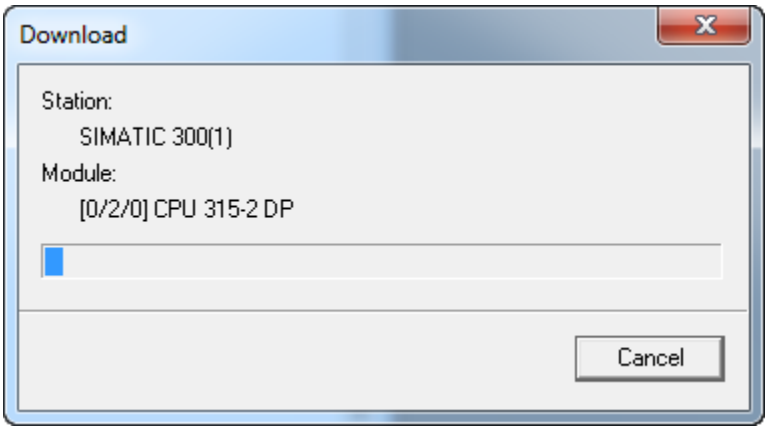
Select the PLC and click on **OK**.



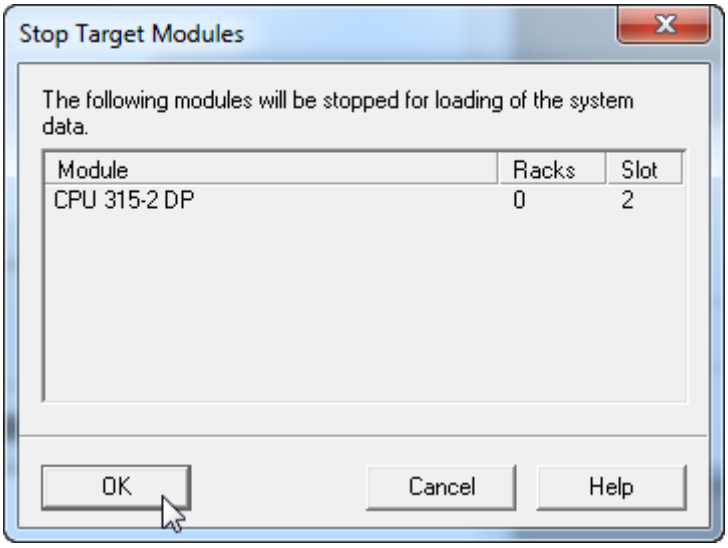
Select the node address and click on **OK**.



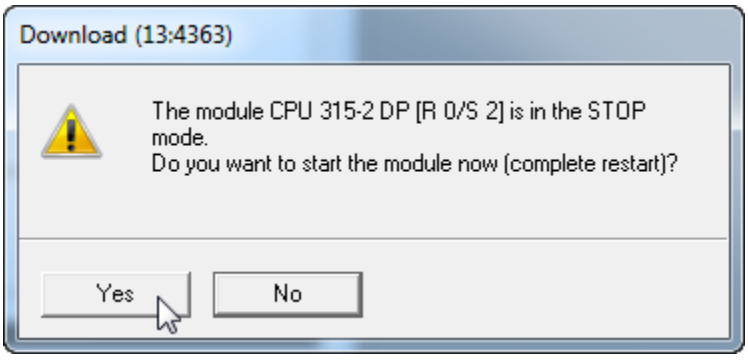
The downloading will start.



A pop-up will appear, click on **OK**.

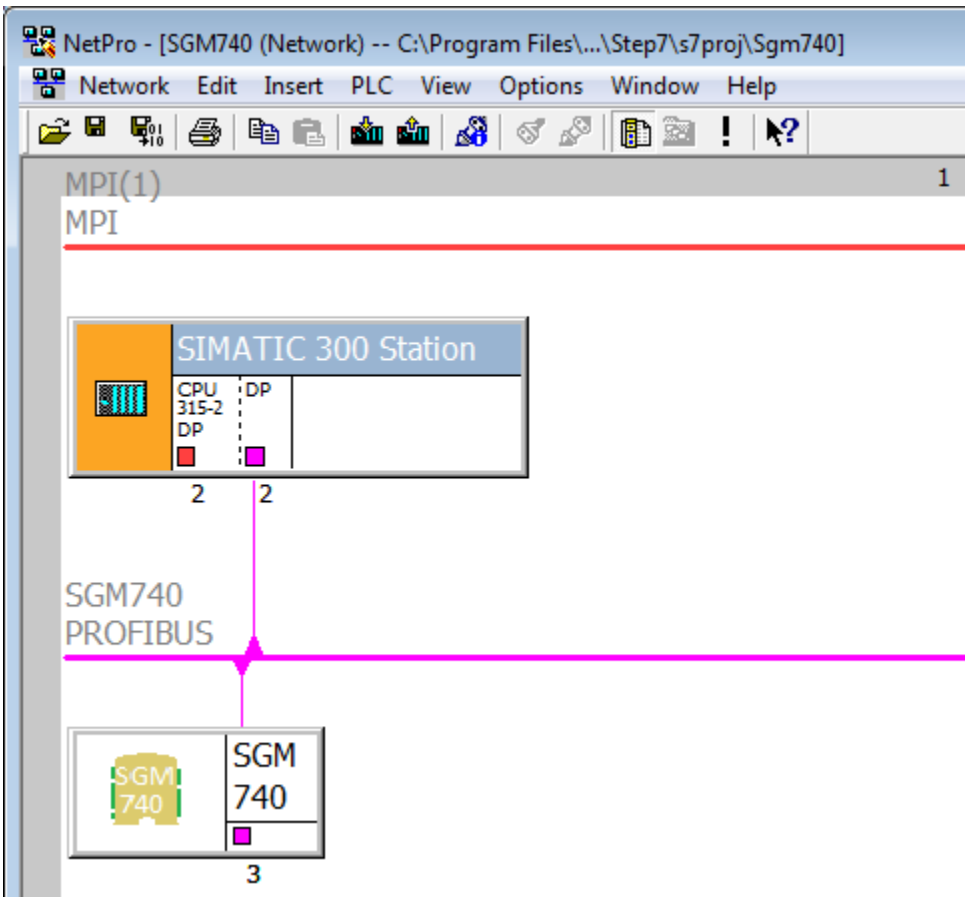


The downloading will resume. When the downloading is completed, a pop-up will appear to restart the module. Click **Yes**.



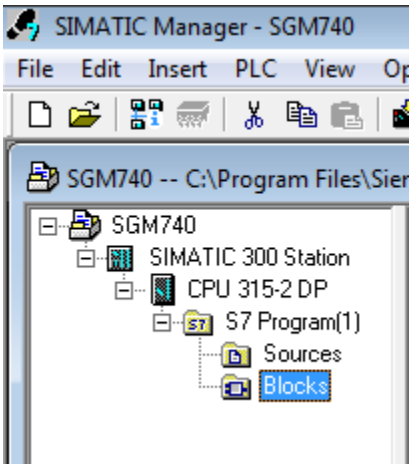
Close the **HW Config** program.

The Profibus configuration is shown in **NetPro**. Click on **Save** and close **NetPro**.

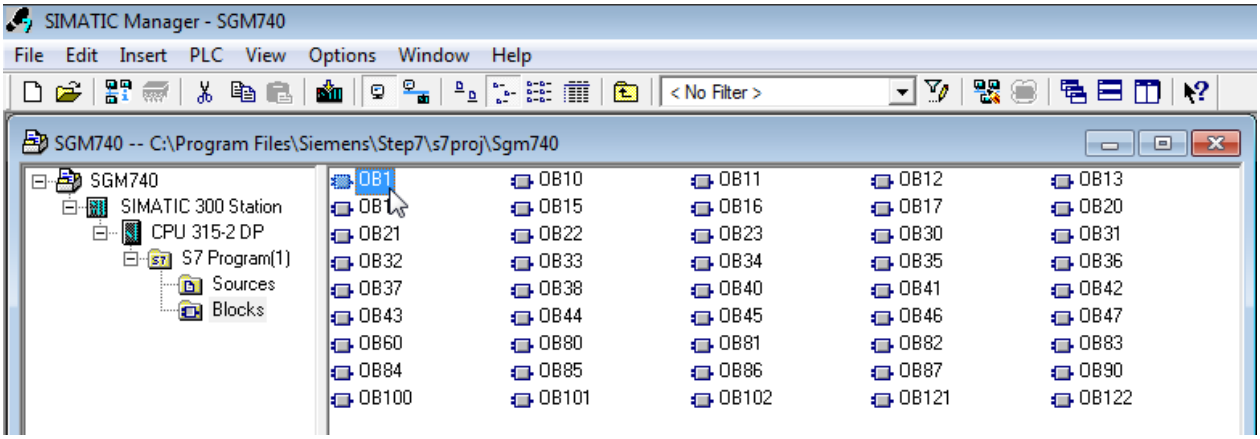


SIMATIC Manager (2)

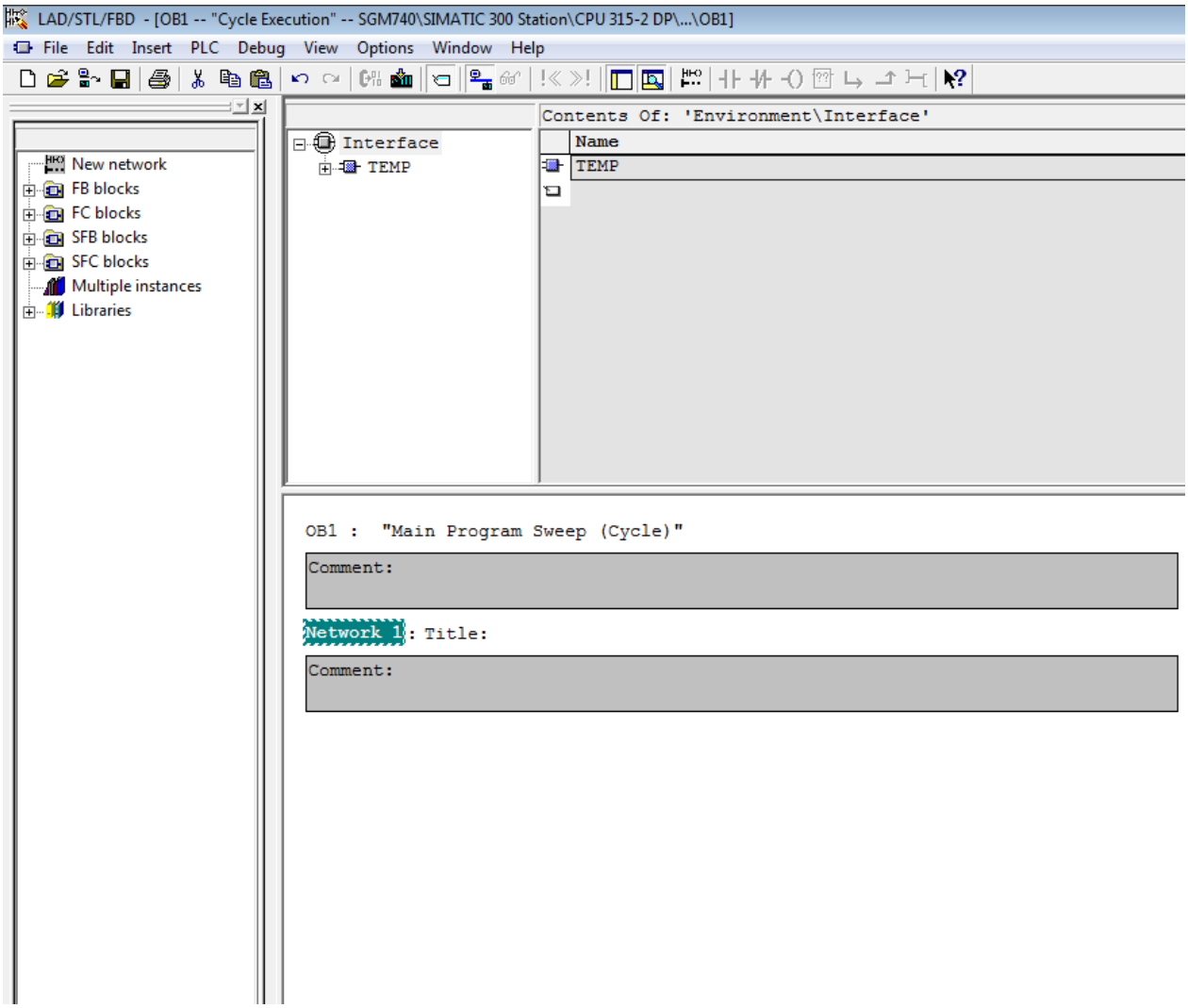
Go back to SIMATIC Manager and click on **Blocks**.



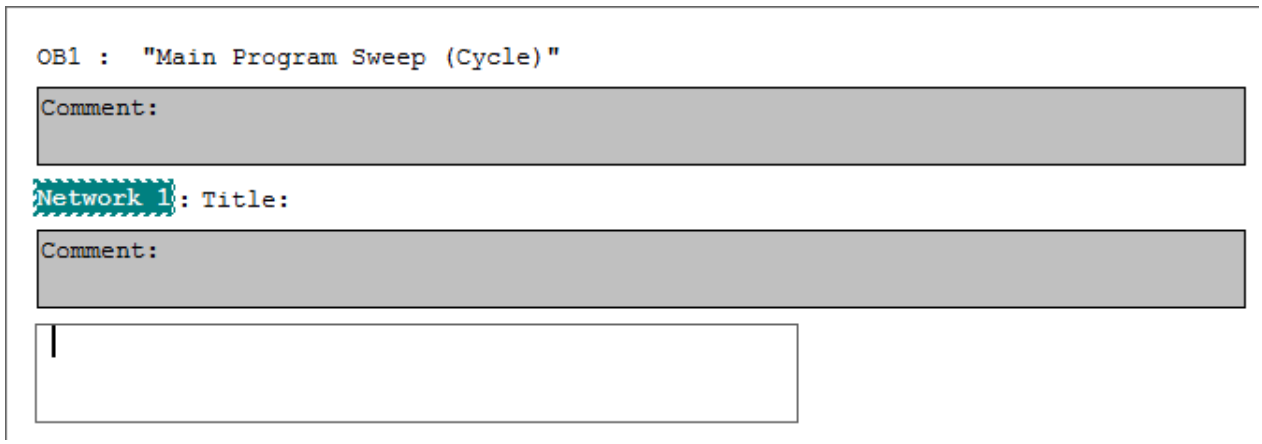
Double click on block **OB1**.



The program **LAD/STL/FBD-Programming S7 Blocks** will open.



Click on the white surface below Comment to write a program.



GSD file explanation

To make sense of the data, open the GSD file in **Notepad**. The start addresses of the 1020 in- and outputs are needed to read or write the correct data from the 1020.

Inputs

Note: the Start addresses are explained on page 19.

Note: In the examples below the start address of the 1020 inputs is PI 256.

```
Module = "SGM740" 0x6A, 0x5F
; Inputs : double word, 32 bit signed integer/float, weight register
;                word, 16 bit status
;                byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
;                byte,  8 bit weight select register
;                word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
;                word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
;
;          double word, 32 bit signed integer, preset tare
;
;          double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
;          double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
;          double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
;          double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
```

Siemens PLC's input addresses have a length of 1 byte, for example the weight register (double word) has a length of 4 bytes, so if the start address is PI 256, so the next data which is the status (word) will start at PI 260 (4 bytes further). The table below will show the addresses of all the inputs of the 1020.

1 word equals 2 bytes.

1 Double word equals 4 bytes.

Address	Description
PID 256	Double word, Weight register
PIW 260	Word, Status
PIB 262	Byte, Command
PIB 263	Byte, Weight select register
PIW 264	Word, Inputs
PIW 266	Word, Outputs
PID 268	Double word, Preset tare
PID 272	Double word, Indicator gross x10
PID 276	Double word, Indicator net x10
PID 280	Double word, Indicator tare x10
PID 284	Double word, Indicator multirange weight

Read weight register

The first 2 words of the inputs are the weight register, the weight register will show at address PID 256

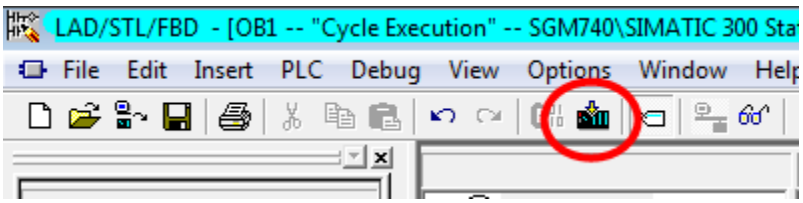
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;        double word, 32 bit signed integer, preset tare
)101 ;
)102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
```

To read out the weight register, write the following lines:

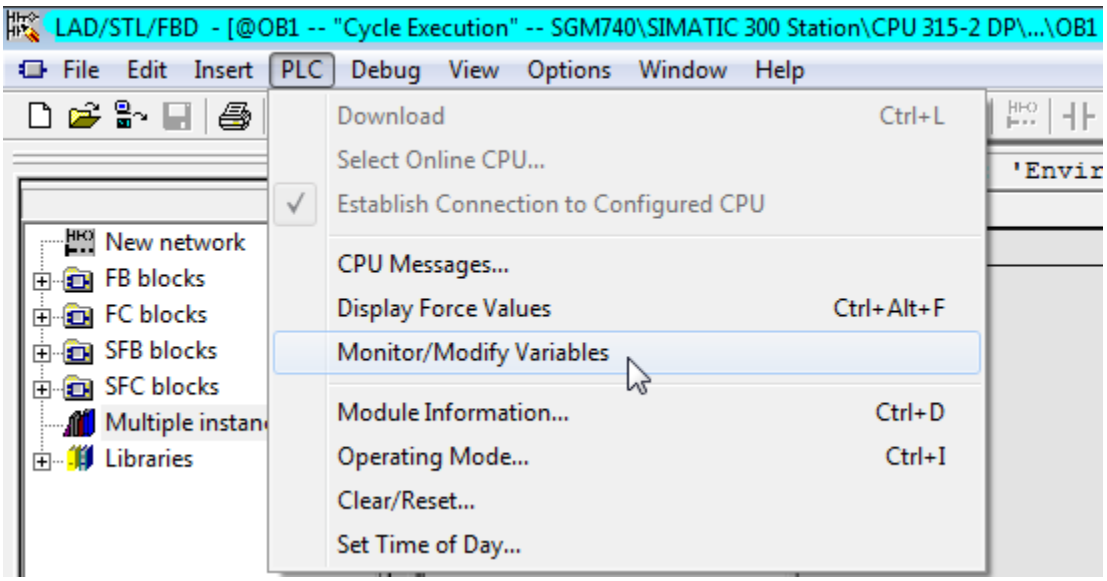
```
L     PID  256
T     "Read Weight register"        MD100
```

The first line will load the weight output (double word) from the 1020. The second line will copy the weight value (double word) in MD 100.

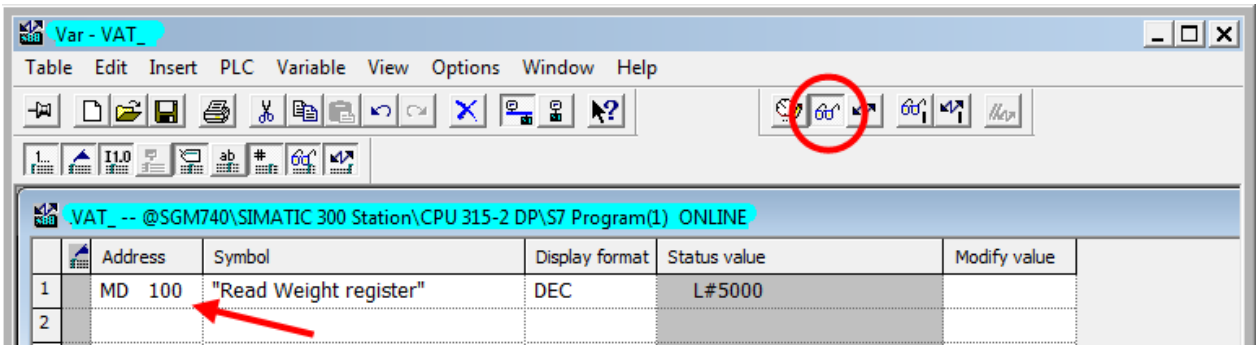
Click on **Download** to load the program into the PLC.



To view the live data, click on **PLC** and **Monitor/Modify Variables**.



Enter the address **MD 100** and click on **Monitor Variable**. The live weight data is now shown.



Note: It's possible to choose any of the weight registers listed below, the chosen weight register will show at address PID 256 (weight register).

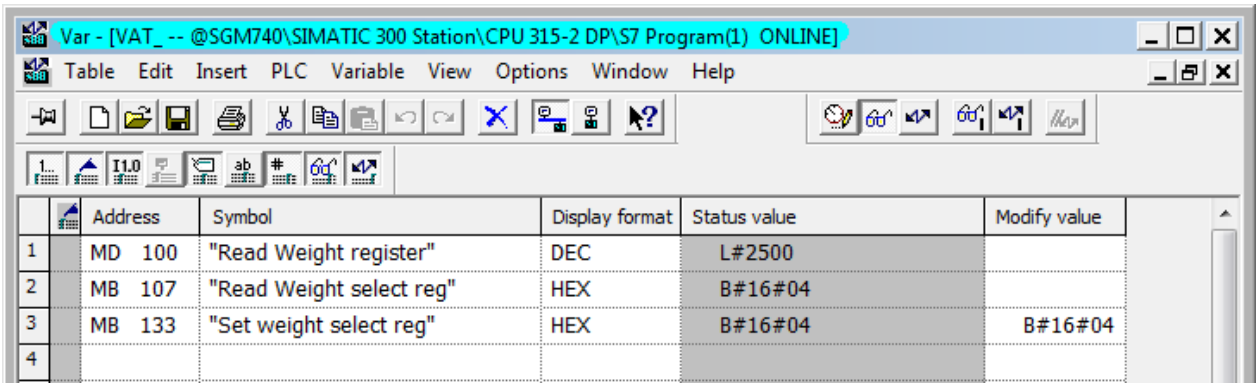
```
)154 ; general:
)155 ; weight selection register definition
)156 ; 0x00 = display weight includes multi range/interval step
)157 ; 0x01 = fast gross
)158 ; 0x02 = fast net
)159 ; 0x03 = display gross
)160 ; 0x04 = display net
)161 ; 0x05 = tare
)162 ; 0x06 = peak
)163 ; 0x07 = Valley
)164 ; 0x08 = display weight x10
)165 ; 0x09 = fast gross x10
)166 ; 0x0A = fast net x10
)167 ; 0x0B = display gross x10
)168 ; 0x0C = display net x10
)169 ; 0x0D = tare x10
)170 ; 0x0E = peak x10
)171 ; 0x0F = Valley x10
)172 ; 0x10 = ADC Sample
)173 ; 0x11 - 0x75 = indicator register 1-100
)174 ; 0x76 - 0xFF = reserved
```

To read the selected weight register, please go to Read weight select register.

To select a weight register, please see Select a weight register.

In the example below "Display net" is chosen.

To choose "Display net", set 04 in MB 133 (weight select register). In MB 107 the chosen weight select register is shown. The Chosen value is shown in MD 100.



Read status

The status will show at address PIW 260, the following statuses can be read from the 1020.

```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;        double word, 32 bit signed integer, preset tare
)101 ;
)102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:       byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;        double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;        double word, 32 bit signed integer, level 1
)113 ;        double word, 32 bit signed integer, level 2
)114 ;        double word, 32 bit signed integer, level 3
)115 ;        double word, 32 bit signed integer, level 4
)116 ;
)117 ; status bit definition
)118 ;  1 = hardware overload detected
)119 ;  2 = overload detected
)120 ;  3 = stable signal
)121 ;  4 = in stable range
)122 ;  5 = zero corrected
)123 ;  6 = center of zero
)124 ;  7 = in zero range
)125 ;  8 = zero tracking possible
)126 ;  9 = tare active
)127 ; 10 = preset tare active
)128 ; 11 = new sample available
)129 ; 12 = calibration invalid
)130 ; 13 = calibration enabled
)131 ; 14 = user certified operation
)132 ; 15 = reserved
)133 ; 16 = reserved
)134 ;
```

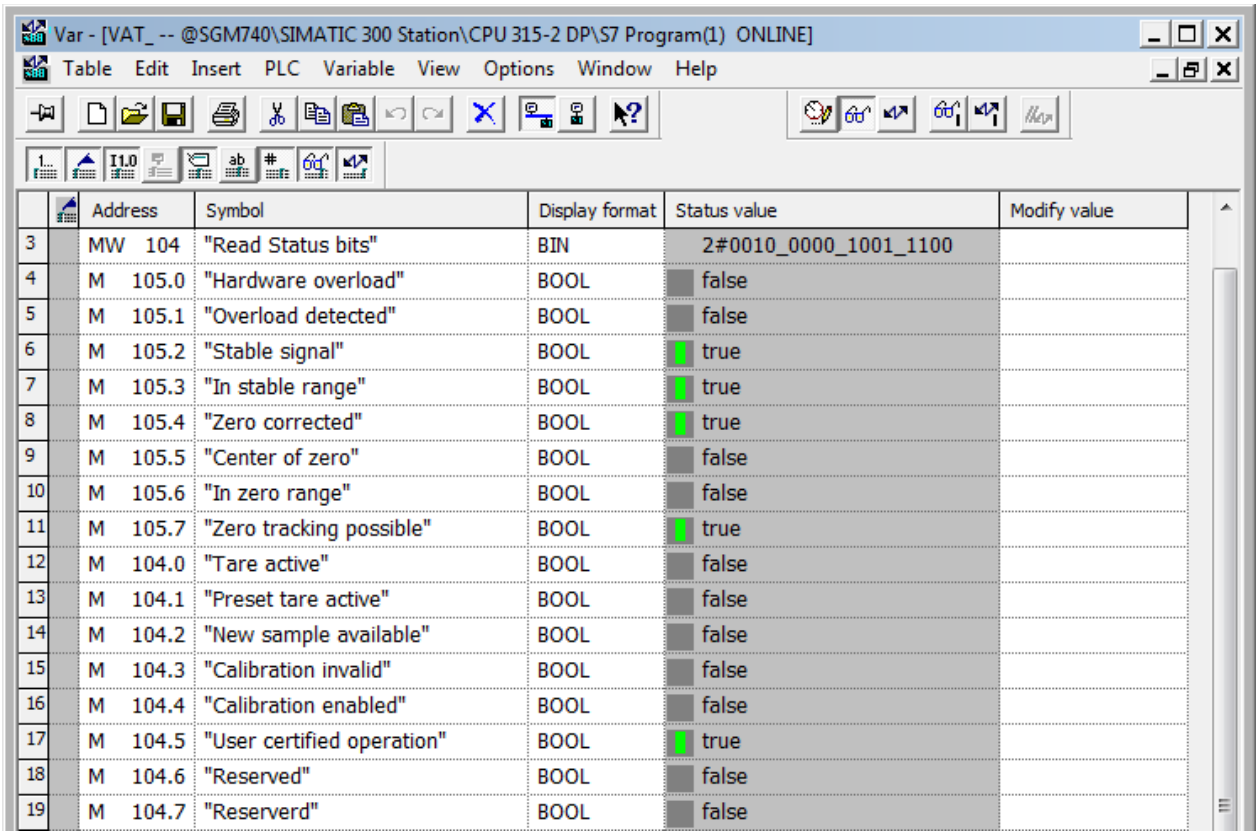
To read out the status, write the following lines:

```
L     PIW  260                  //Load Status
T     "Read Status bits"        //Store Status   MW104
```

The first line will load the status (word) from the 1020. The second line will copy the status (word) in MW 104.

In the example below the “Stable Signal”, In Stable Range”, Zero corrected, Zero Tracking Possible” and “User Certified operation” are on.

Note: The low byte and high byte are switched.



	Address	Symbol	Display format	Status value	Modify value
3	MW 104	"Read Status bits"	BIN	2#0010_0000_1001_1100	
4	M 105.0	"Hardware overload"	BOOL	false	
5	M 105.1	"Overload detected"	BOOL	false	
6	M 105.2	"Stable signal"	BOOL	true	
7	M 105.3	"In stable range"	BOOL	true	
8	M 105.4	"Zero corrected"	BOOL	true	
9	M 105.5	"Center of zero"	BOOL	false	
10	M 105.6	"In zero range"	BOOL	false	
11	M 105.7	"Zero tracking possible"	BOOL	true	
12	M 104.0	"Tare active"	BOOL	false	
13	M 104.1	"Preset tare active"	BOOL	false	
14	M 104.2	"New sample available"	BOOL	false	
15	M 104.3	"Calibration invalid"	BOOL	false	
16	M 104.4	"Calibration enabled"	BOOL	false	
17	M 104.5	"User certified operation"	BOOL	true	
18	M 104.6	"Reserved"	BOOL	false	
19	M 104.7	"Reserverd"	BOOL	false	

Read commands

The commands will show at address PIB 262(high byte).

```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
```

The following commands can be read from the 1020.

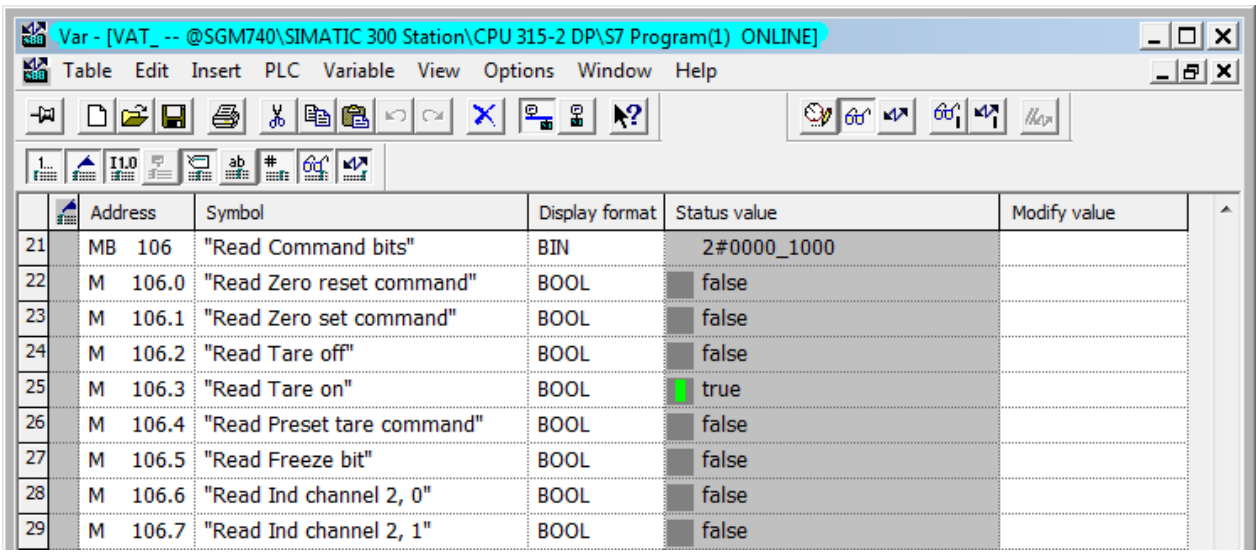
```
)135 ; command bit definition
)136 ;  1 = zero reset command
)137 ;  2 = zero set command
)138 ;  3 = tare off
)139 ;  4 = tare on
)140 ;  5 = preset tare command
)141 ;  6 = freeze bit, freeze weigher registers at rising edge for selected weigher, if bit is 0 registers will be updated
)142 ;     use this bit to read out all necessary weigher registers without any interruption of the weigher, example:
)143 ;        set bit 6
)144 ;     read net
)145 ;     read tare
)146 ;     read net x10
)147 ;     reset bit 6
)148 ;  7 = indicator channel 2^0, channel is a helper register to select a wider range of registers. Reserved for the SGM and should be set to 0
)149 ;  8 = indicator channel 2^1, channel is a helper register to select a wider range of registers. Reserved for the SGM and should be set to 0
```

To read out the commands, write the following lines:

```
      L     PIB  262                  //Load Command bits and weight select register
      T     "Read Command bits"       //Store Command bits and weight select register   MB106
```

The first line will load the commands (high byte) from the 1020. The second line will copy the commands (byte) in MB 106.

In the example below the “Tare on” command is on.



	Address	Symbol	Display format	Status value	Modify value
21	MB 106	"Read Command bits"	BIN	2#0000_1000	
22	M 106.0	"Read Zero reset command"	BOOL	false	
23	M 106.1	"Read Zero set command"	BOOL	false	
24	M 106.2	"Read Tare off"	BOOL	false	
25	M 106.3	"Read Tare on"	BOOL	true	
26	M 106.4	"Read Preset tare command"	BOOL	false	
27	M 106.5	"Read Freeze bit"	BOOL	false	
28	M 106.6	"Read Ind channel 2, 0"	BOOL	false	
29	M 106.7	"Read Ind channel 2, 1"	BOOL	false	

To set the commands, please see Set commands for instructions.

Read weight select register

The weight select register will show at address PIB 263 (low byte).

```
092 Module = "SGM740" 0x6A, 0x5F
093 ; Inputs : double word, 32 bit signed integer/float, weight register
094 ;              word, 16 bit status
095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
096 ;              byte,  8 bit weight select register
097 ;              word, 16 inputs   1..16, iputs 4-16 are virtual inputs generated by software
098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
099 ;
100 ;        double word, 32 bit signed integer, preset tare
101 ;
102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
106 ;
107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
108 ;              byte,  8 bit weight select register
109 ;
110 ;        double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
111 ;
112 ;        double word, 32 bit signed integer, level 1
113 ;        double word, 32 bit signed integer, level 2
114 ;        double word, 32 bit signed integer, level 3
115 ;        double word, 32 bit signed integer, level 4
116 ;
```

The following weight select registers can be read from the 1020.

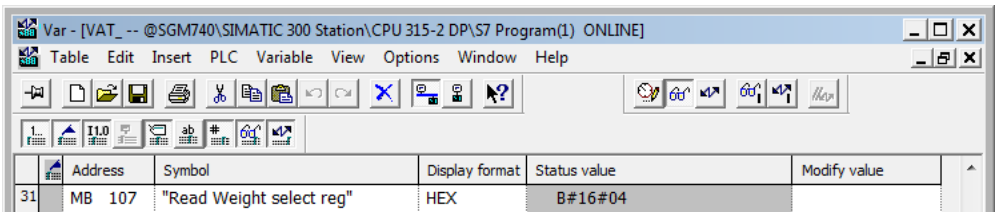
```
154 ; general:
155 ; weight selection register definition
156 ;  0x00 = display weight includes multi range/interval step
157 ;  0x01 = fast gross
158 ;  0x02 = fast net
159 ;  0x03 = display gross
160 ;  0x04 = display net
161 ;  0x05 = tare
162 ;  0x06 = peak
163 ;  0x07 = Valley
164 ;  0x08 = display weight x10
165 ;  0x09 = fast gross x10
166 ;  0x0A = fast net x10
167 ;  0x0B = display gross x10
168 ;  0x0C = display net x10
169 ;  0x0D = tare x10
170 ;  0x0E = peak x10
171 ;  0x0F = Valley x10
172 ;  0x10 = ADC Sample
173 ;  0x11 - 0x75 = indicator register 1-100
174 ;  0x76 - 0xFF = reserved
```

To read out the weight select register, write the following lines:

```
      L     PIB  263                    //Load Weight select register
      T     "Read Weight select reg"    //Store Weight select register | MB107
```

The first line will load the weight select register (Low byte) from the 1020. The second line will copy the weight select register (byte) in MB 107.

In the example below weight register “Display Net” is chosen.



To set the weight select register, please see Set weight select register for instructions.

Read inputs

The 3 inputs of the 1020 will show at address PIW 264.

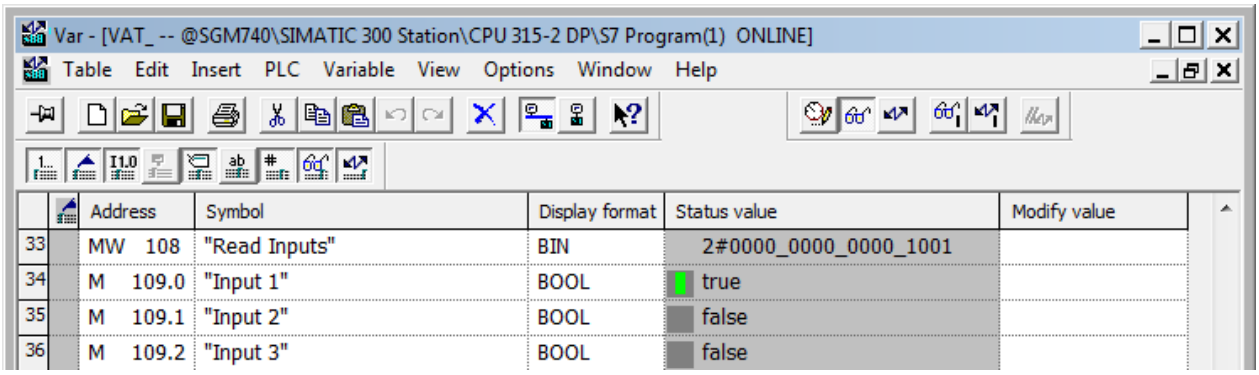
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs   1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;        double word, 32 bit signed integer, preset tare
)101 ;
)102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:       byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;        double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;        double word, 32 bit signed integer, level 1
)113 ;        double word, 32 bit signed integer, level 2
)114 ;        double word, 32 bit signed integer, level 3
)115 ;        double word, 32 bit signed integer, level 4
)116 ;
```

To read out the inputs, write the following lines:

```
      L     PIW  264                  //Load inputs
      T     "Read Inputs"             //Store inputs | MW108
```

The first line will load the inputs (word) from the 1020. The second line will copy the inputs (word) in MW 108.

In the Example below input 1 is on.



Read outputs

The 4 outputs of the 1020 will show at address PIW 266.

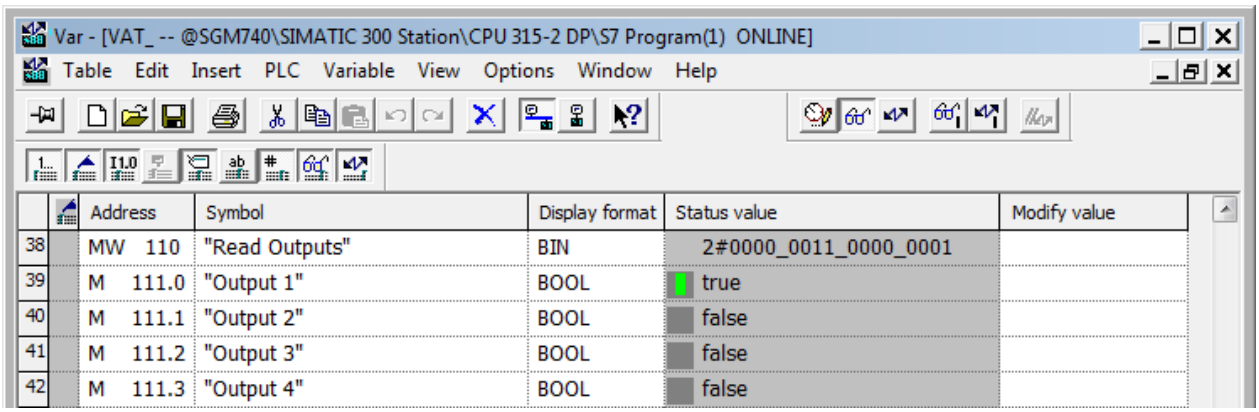
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;        double word, 32 bit signed integer, preset tare
)101 ;
)102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:       byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;        double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;        double word, 32 bit signed integer, level 1
)113 ;        double word, 32 bit signed integer, level 2
)114 ;        double word, 32 bit signed integer, level 3
)115 ;        double word, 32 bit signed integer, level 4
)116 ;
```

To read out the outputs, write the following lines:

```
      L     PIW  266                  //Load outputs
      T     "Read Outputs"            //Store outputs   MW110
```

The first line will load the outputs (word) from the 1020. The second line will copy the outputs (word) in MW 110.

In the example below output 1 is on.



	Address	Symbol	Display format	Status value	Modify value
38	MW 110	"Read Outputs"	BIN	2#0000_0011_0000_0001	
39	M 111.0	"Output 1"	BOOL	true	
40	M 111.1	"Output 2"	BOOL	false	
41	M 111.2	"Output 3"	BOOL	false	
42	M 111.3	"Output 4"	BOOL	false	

Read preset Tare

The Preset Tare value will show at address PID 268.

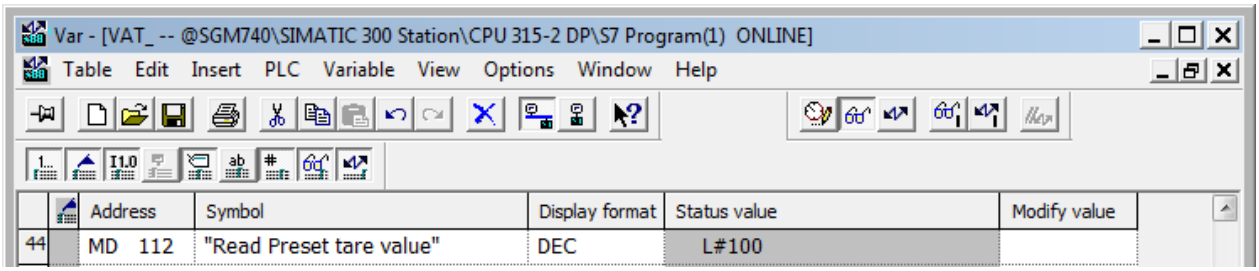
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;        double word, 32 bit signed integer, preset tare
)101 ;
)102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:       byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;        double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;        double word, 32 bit signed integer, level 1
)113 ;        double word, 32 bit signed integer, level 2
)114 ;        double word, 32 bit signed integer, level 3
)115 ;        double word, 32 bit signed integer, level 4
)116 ;
```

To read out the preset tare, write the following lines:

```
      L     PID  268                    //Load preset tare value
      T     "Read Preset tare value"    //Store preset tare value | MD112
```

The first line will load the preset tare (double word) from the 1020. The second line will copy the preset tare (double word) in MD 112.

In the example below the Preset Tare value is 100.



To set the preset tare, please see Set preset tare for instructions.

Read indicator gross x 10

The indicator gross x 10 value will show at address PID 272.

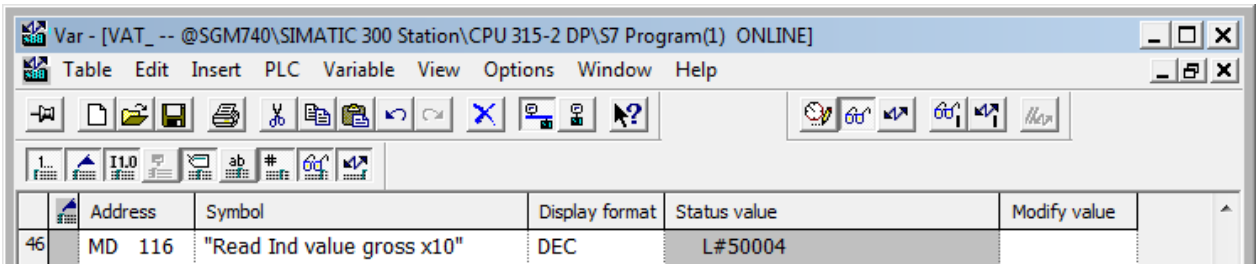
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To read out the indicator gross x10, write the following lines:

```
      L     PID  272                    //Load indicator value gross x10
      T     "Read Ind value gross x10"  //Store indicator value gross x10  MD116
```

The first line will load the indicator gross x10 (double word) from the 1020. The second line will copy the indicator gross x10 (double word) in MD 116.

In the example below the gross x 10 value is 50004.



Read indicator net x 10

The indicator net x 10 value will show at address PID 276.

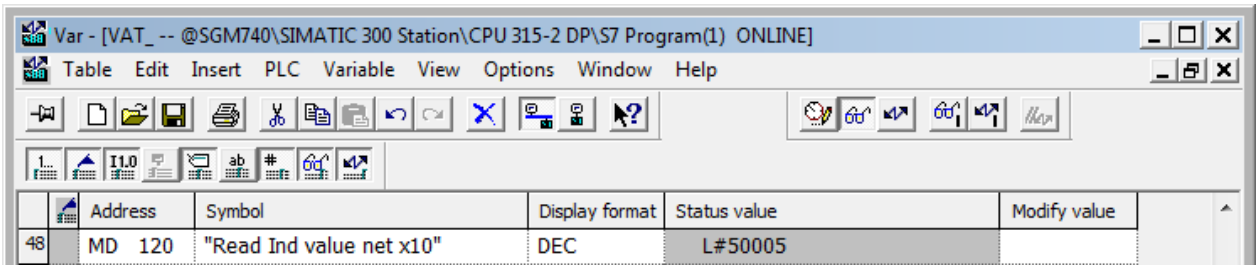
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To read out the indicator net x10, write the following lines:

```
      L     PID  276                    //Load indicator value net x10
      T     "Read Ind value net x10"    //Store indicator value net x10 | MD120
```

The first line will load the indicator net x10 (double word) from the 1020. The second line will copy the indicator net x10 (double word) in MD 120.

In the example below the net x 10 value is 50005.



Read indicator tare x 10

The indicator tare x 10 value will show at address PID 280.

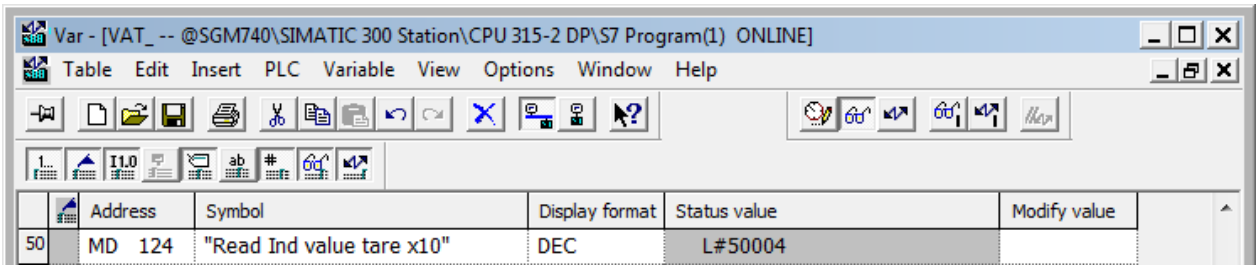
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To read out the indicator tare x10, write the following lines:

```
      L     PID  280                    //Load indicator value tare x10
      T     "Read Ind value tare x10"   //Store indicator value tare x10 | MD124
```

The first line will load the indicator tare x10 (double word) from the 1020. The second line will copy the indicator tare x10 (double word) in MD 124.

In the example below the tare x 10 value is 50004.



Read multirange weight

The indicator multirange weight value will show at address PID 284.

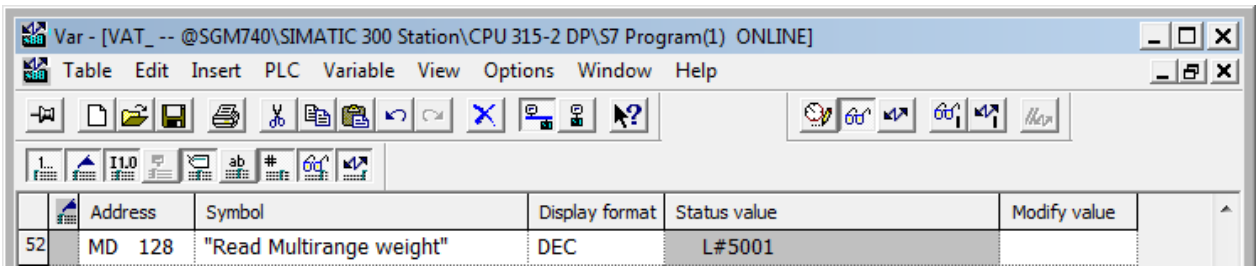
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To read out the multirange weight, write the following lines:

```
      L     PID  284                    //Load indicator value multirange weight
      T     "Read Multirange weight"    //Store indicator value multirange weight | MD128
```

The first line will load the multirange weight (double word) from the 1020. The second line will copy the multirange weight (double word) in MD 128.

In the example below the multirange weight value is 50001.



Outputs

Note: the Start addresses are explained on page 19.

Note: In the examples below the start address of the 1020 inputs is PQ 256.

```
; Outputs:        byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
;                 byte,  8 bit weight select register
;
;          double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
;
;          double word, 32 bit signed integer, level 1
;          double word, 32 bit signed integer, level 2
;          double word, 32 bit signed integer, level 3
;          double word, 32 bit signed integer, level 4
;
```

Siemens PLC's output addresses have a length of 1 byte, for example the command (byte) has a length of 1 byte, so if the start address is PQ 256, so the next data which is the Weight (word) will start at PQ 257 (1 byte further. The table below will show the addresses of all the outputs of the 1020.

1 word equals 2 bytes

1 Double word equals 4 bytes

Address	Description
PQB 256	Byte, Command
PQB 257	Byte, Weight select register
PQD 258	Double word, Preset tare
PQD 262	Double word, Level 1
PQD 266	Double word, Level 2
PQD 270	Double word, Level 3
PQD 274	Double word, Level 4

Set commands

The commands will start at address PQB 256 (high byte).

```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;        double word, 32 bit signed integer, preset tare
)101 ;
)102 ;        double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;        double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;        double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;        double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;        double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;        double word, 32 bit signed integer, level 1
)113 ;        double word, 32 bit signed integer, level 2
)114 ;        double word, 32 bit signed integer, level 3
)115 ;        double word, 32 bit signed integer, level 4
)116 ;
```

The following commands can be used.

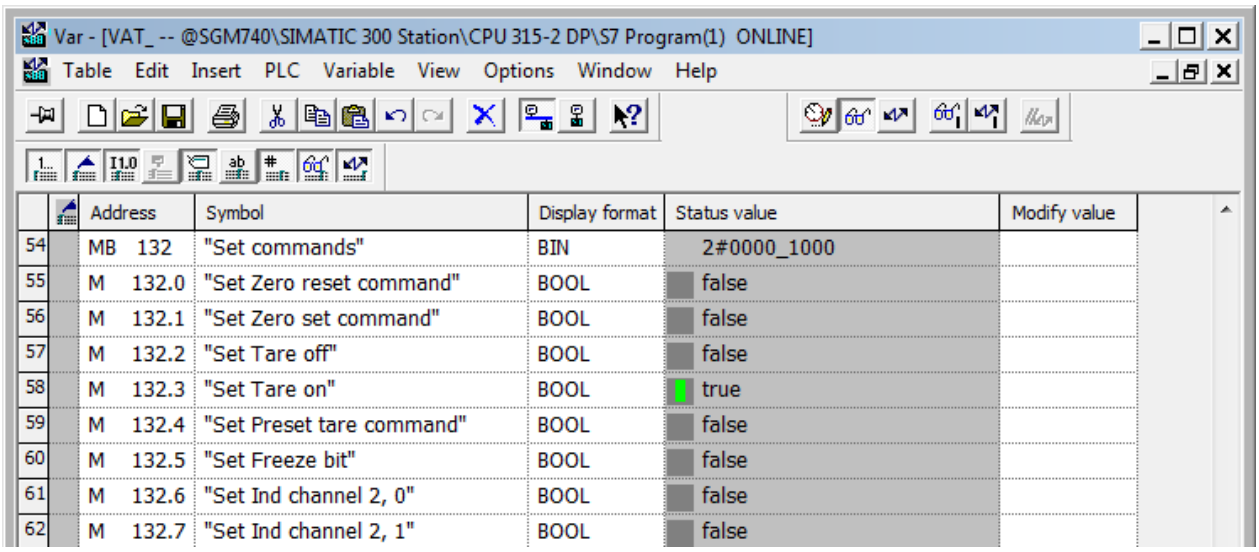
```
)135 ; command bit definition
)136 ;  1 = zero reset command
)137 ;  2 = zero set command
)138 ;  3 = tare off
)139 ;  4 = tare on
)140 ;  5 = preset tare command
)141 ;  6 = freeze bit, freeze weigher registers at rising edge for selected weigher, if bit is 0 registers will be updated
)142 ;     use this bit to read out all necessary weigher registers without any interruption of the weigher, example:
)143 ;        set bit 6
)144 ;     read net
)145 ;     read tare
)146 ;     read net x10
)147 ;     reset bit 6
)148 ;  7 = indicator channel 2^0, channel is a helper register to select a wider range of registers. Reserved for the SGM and should be set to 0
)149 ;  8 = indicator channel 2^1, channel is a helper register to select a wider range of registers. Reserved for the SGM and should be set to 0
```

To set the commands, write the following lines:

```
//Send commands, weight select register, preset tare and levels for the PLC to the SGM 740 or SGM840 Weight

      L     "Set commands"              //Load Command                                                    MB132
      T     PQB  256                    //Store Command
```

The first line will load the commands (byte) from MB 132. The second line will copy the commands (byte) into the 1020.

In the example below the command “Tare On” is given to the 1020.



	Address	Symbol	Display format	Status value	Modify value
54	MB 132	"Set commands"	BIN	2#0000_1000	
55	M 132.0	"Set Zero reset command"	BOOL	false	
56	M 132.1	"Set Zero set command"	BOOL	false	
57	M 132.2	"Set Tare off"	BOOL	false	
58	M 132.3	"Set Tare on"	BOOL	true	
59	M 132.4	"Set Preset tare command"	BOOL	false	
60	M 132.5	"Set Freeze bit"	BOOL	false	
61	M 132.6	"Set Ind channel 2, 0"	BOOL	false	
62	M 132.7	"Set Ind channel 2, 1"	BOOL	false	

To check if the 1020 has executed the command, it’s possible to read out the commands. Please see Read commands for instructions.

Set weight select register

The weight select register will start at address PQB 257(low byte).

```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

The following weight registers can be selected.

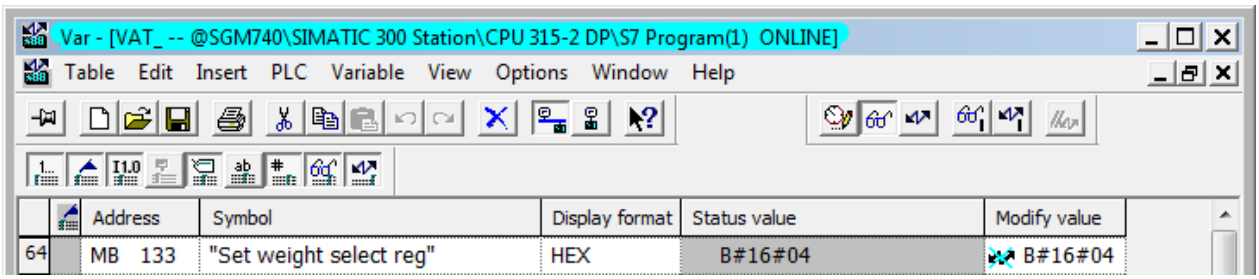
```
)154 ; general:
)155 ; weight selection register definition
)156 ;  0x00 = display weight includes multi range/interval step
)157 ;  0x01 = fast gross
)158 ;  0x02 = fast net
)159 ;  0x03 = display gross
)160 ;  0x04 = display net
)161 ;  0x05 = tare
)162 ;  0x06 = peak
)163 ;  0x07 = Valley
)164 ;  0x08 = display weight x10
)165 ;  0x09 = fast gross x10
)166 ;  0x0A = fast net x10
)167 ;  0x0B = display gross x10
)168 ;  0x0C = display net x10
)169 ;  0x0D = tare x10
)170 ;  0x0E = peak x10
)171 ;  0x0F = Valley x10
)172 ;  0x10 = ADC Sample
)173 ;  0x11 - 0x75 = indicator register 1-100
)174 ;  0x76 - 0xFF = reserved
```

To set the weight select register, write the following lines:

```
      L     "Set weight select reg"     //Load weight select register   MB133
      T     PQB  257                    //Store weight select register
```

The first line will load the weight select register (byte) from MB133. The second line will copy the weight select register (byte) into the 1020.

In the example below weight register “Display Net” is chosen. The Display Net weight will now be shown in MD 100.



To check if the 1020 has executed the weight select register, it’s possible to read out the weight select register. Please see Read weight select register for instructions.

Set preset tare

The preset tare can be set at address PQD 258.

Note: to change the value of the preset tare, command bit 5 (preset tare command) must be set. The address will be M 132.4.

```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To set the preset tare, write the following lines:

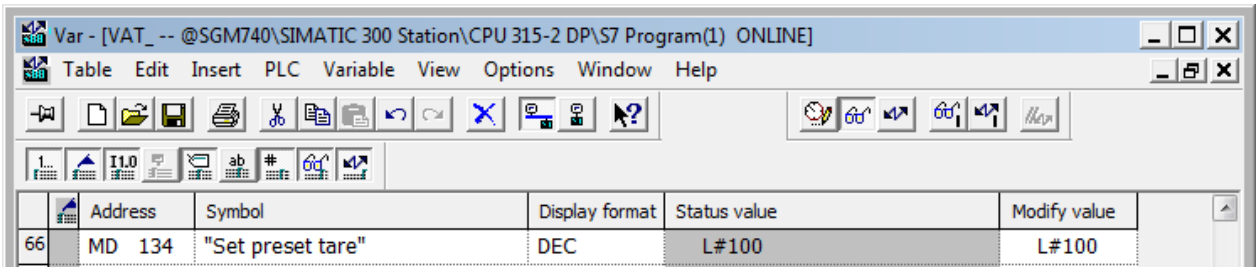
```
L     "Set preset tare"          //Load Preset tare value     To set a new preset tare value, command "Preset tare" must be set high (M132.4)  MD134
T     PQD  258                   //Store Preset tare value
```

The first line will load the preset tare (double word) from MD 134. The second line will copy the preset tare (double word) into the 1020. Even if the new preset tare is stored in the 1020, the old preset tare is used until command bit 5 is set high.

Use the following program to automatically change the preset tare if a new value is set in MD 134.

```
L     "Set preset tare"          //Load set preset tare value     To set a new preset tare value, command "Preset tare" must be set high (M132.4)  MD134
T     PQD  258                   //Store set preset tare value
L     "Read Preset tare value"   //Load current preset tare value                                                                                    MD112
L     "Set preset tare"          //Load set preset tare                                                                                              MD134
<>D                              //If set preset tare not equel with read preset tare
=     "Set Preset tare command"  //Command bit "preset tare" is on, storing the new preset tare into the SGM740 or SGM840                             M132.4
```

In the example below the preset tare value is set, the value (100) will be shown in MD 134.



To check if the 1020 has executed the preset tare value, it's possible to read out the preset tare. Please see Read preset tare for instructions.

Set level 1

The Setpoint for level 1 can be set at address PQD 262.

Note: to change the value of level 1, command bit 7 and 8 (indicator channel 2,0 and 2,1) must be set. The addresses will be M 132.6 and M 132.7.

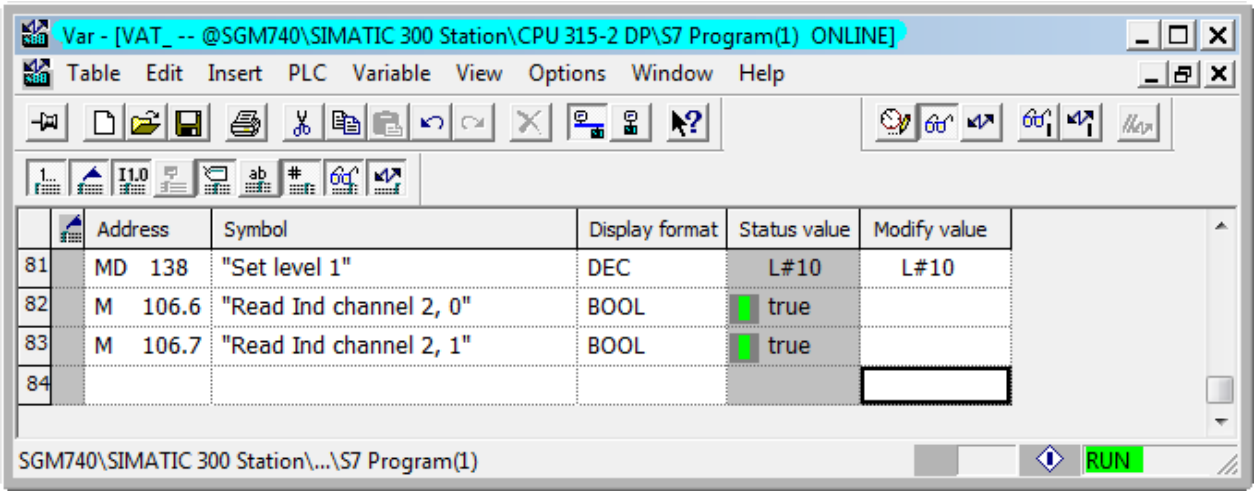
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To set level 1, write the following lines:

```
    L     "Set level 1"              //Load Value level 1 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7) MD138
    T     PQD  262                   //Store value level 1
```

The first line will load level 1 (double word) from MD 138. The second line will copy level 1 (double word) into the 1020.

In the example below level 1 is set, the value (10) will be shown in MD 138.



Set level 2

The Setpoint for level 2 can be set at address PQD 266.

Note: to change the value of level 2, command bit 7 and 8 (indicator channel 2,0 and 2,1) must be set. The addresses will be M 132.6 and M 132.7.

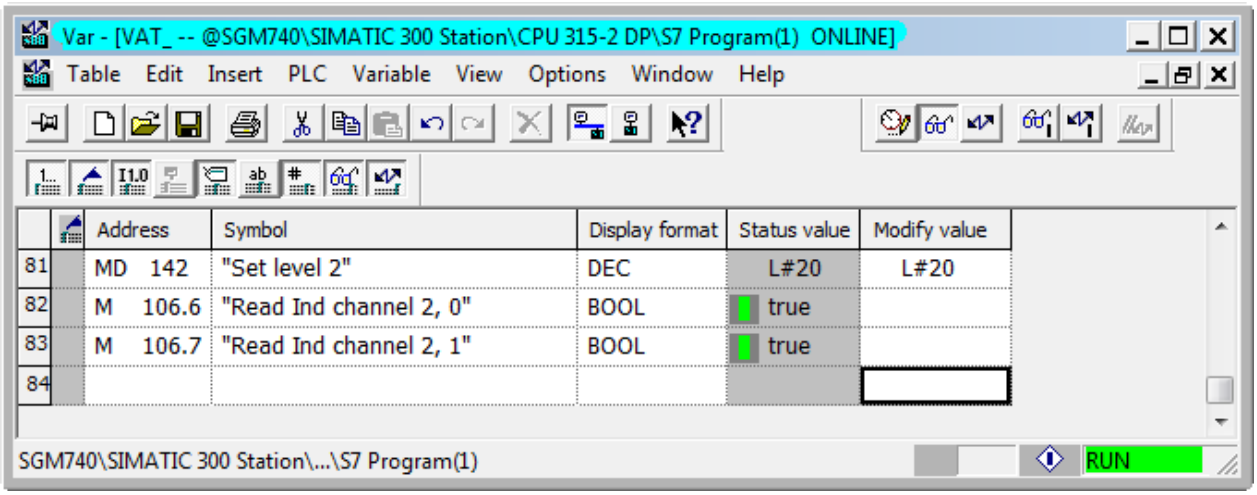
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To set level 2, write the following lines:

```
    L     "Set level 2"             //Load Value level 2 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)  MD142
    T     PQD  266                  //Store value level 2
```

The first line will load level 2 (double word) from MD 142. The second line will copy level 2 (double word) into the 1020.

In the example below level 2 is set, the value (20) will be shown in MD 142.



Set level 3

The Setpoint for level 3 can be set at address PQD 270

Note: to change the value of level 3, command bit 7 and 8 (indicator channel 2,0 and 2,1) must be set. The addresses will be M 132.6 and M 132.7.

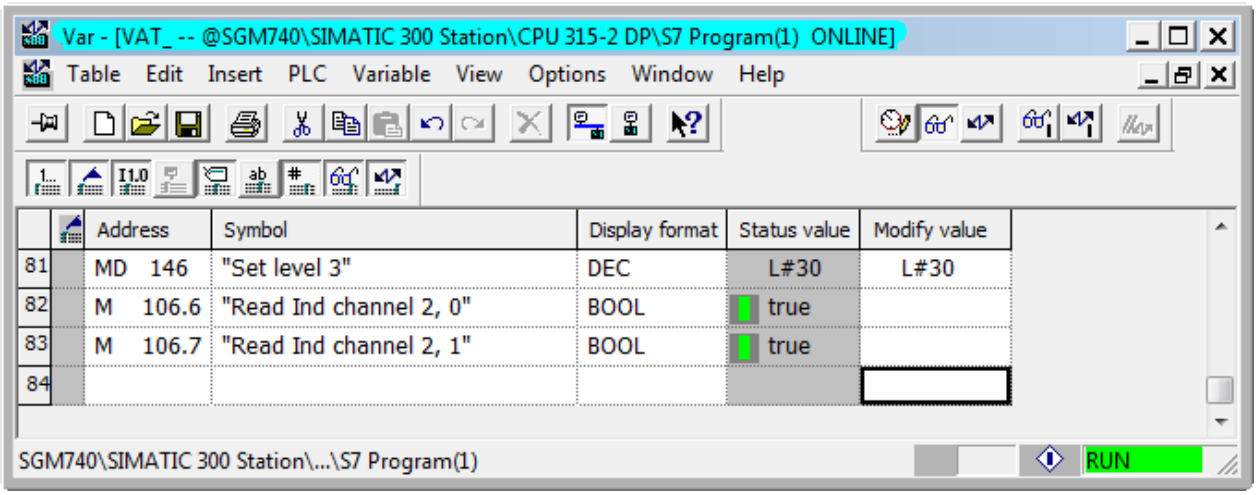
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To set level 3, write the following lines:

```
    L     "Set level 3"            //Load Value level 3 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)   MD146
    T     PQD  270                 //Store value level 3
```

The first line will load level 3 (double word) from MD 146. The second line will copy level 3 (double word) into the 1020.

In the example below level 3 is set, the value (30) will be shown in MD 146.



Set level 4

The Setpoint for level 4 can be set at address PQD 274.

Note: to change the value of level 4, command bit 7 and 8 (indicator channel 2,0 and 2,1) must be set. The addresses will be M 132.6 and M 132.7.

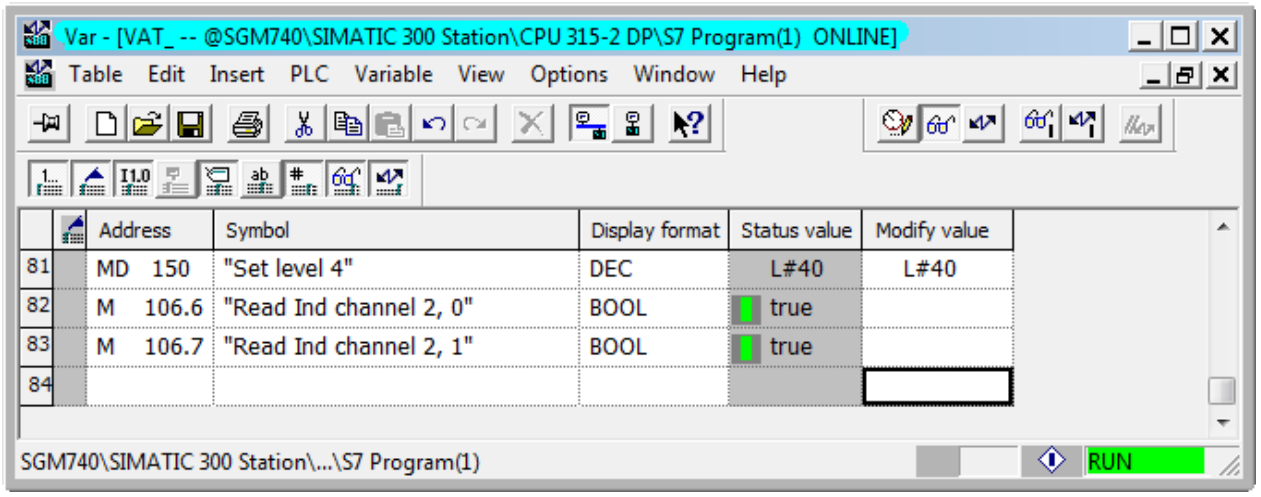
```
)092 Module = "SGM740" 0x6A, 0x5F
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094 ;              word, 16 bit status
)095 ;              byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)096 ;              byte,  8 bit weight select register
)097 ;              word, 16 inputs    1..16, iputs 4-16 are virtual inputs generated by software
)098 ;              word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
)099 ;
)100 ;       double word, 32 bit signed integer, preset tare
)101 ;
)102 ;       double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
)103 ;       double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
)104 ;       double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
)105 ;       double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
)106 ;
)107 ; Outputs:      byte,  8 bit command (if addressed as word high byte is command, low byte is select register)
)108 ;              byte,  8 bit weight select register
)109 ;
)110 ;       double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
)111 ;
)112 ;       double word, 32 bit signed integer, level 1
)113 ;       double word, 32 bit signed integer, level 2
)114 ;       double word, 32 bit signed integer, level 3
)115 ;       double word, 32 bit signed integer, level 4
)116 ;
```

To set level 4, write the following lines:

```
    L     "Set level 4"              //Load Value level 4 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)  MD150
    T     PQD  274                   //Store value level 4
```

The first line will load level 4 (double word) from MD 150. The second line will copy level 4 (double word) into the 1020.

In the example below level 4 is set, the value (40) will be shown in MD 150.



Complete program to read and write values

Read:

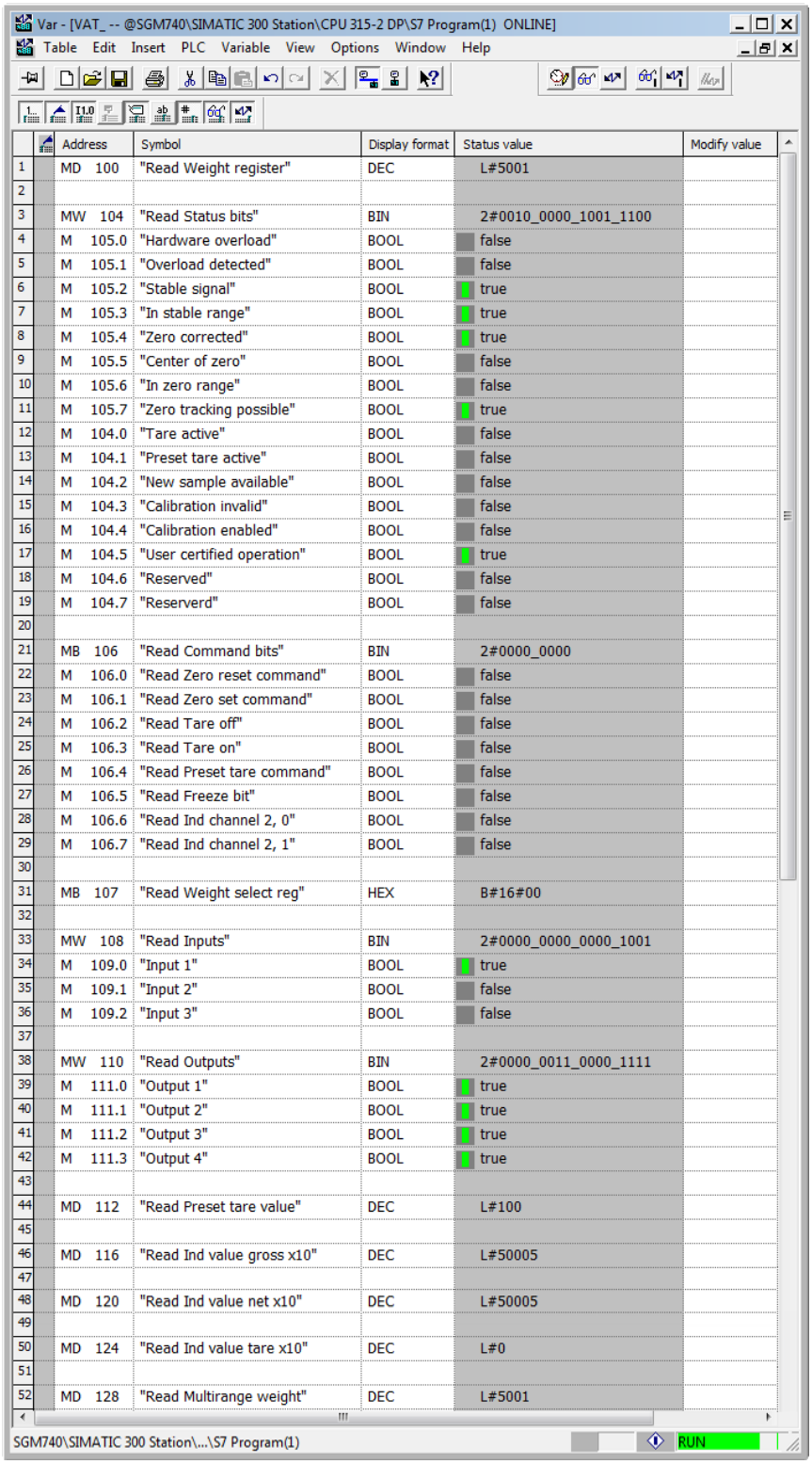
```
//SGM 740 or SGM840 Weight, status, weight select register, inputs, outputs information to the PLC

      L     PID  256                  //Load Weight register
      T     "Read Weight register"    //Store Weight register                        MD100

      L     PIW  260                  //Load Status
      T     "Read Status bits"        //Store Status                                 MW104

      L     PIB  262                  //Load Command bits and weight select register
      T     "Read Command bits"       //Store Command bits and weight select register MB106

      L     PIB  263                  //Load Weight select register
      T     "Read Weight select reg"  //Store Weight select register                 MB107

      L     PIW  264                  //Load inputs
      T     "Read Inputs"             //Store inputs                                 MW108

      L     PIW  266                  //Load outputs
      T     "Read Outputs"            //Store outputs                                MW110

      L     PID  268                  //Load preset tare value
      T     "Read Preset tare value"  //Store preset tare value                      MD112

      L     PID  272                  //Load indicator value gross x10
      T     "Read Ind value gross x10" //Store indicator value gross x10             MD116

      L     PID  276                  //Load indicator value net x10
      T     "Read Ind value net x10"  //Store indicator value net x10                MD120

      L     PID  280                  //Load indicator value tare x10
      T     "Read Ind value tare x10" //Store indicator value tare x10               MD124

      L     PID  284                  //Load indicator value multirange weight
      T     "Read Multirange weight"  //Store indicator value multirange weight      MD128
```

Write:

```
//Send commands, weight select register, preset tare and levels for the PLC to the SGM 740 or SGM840 Weight

      L     "Set commands"            //Load Command                                 MB132
      T     PQB  256                  //Store Command

      L     "Set weight select reg"   //Load weight select register                  MB133
      T     PQB  257                  //Store weight select register

      L     "Set preset tare"         //Load set preset tare value     To set a new preset tare value, command "Preset tare" must be set high (M132.4)   MD134
      T     PQD  258                  //Store set preset tare value
      L     "Read Preset tare value"  //Load current preset tare value               MD112
      L     "Set preset tare"         //Load set preset tare                         MD134
      <>D                             //If set preset tare not equel with read preset tare
      =     "Set Preset tare command" //Command bit "preset tare" is on, storing the new preset tare into the SGM740 or SGM840   M132.4

      L     "Set level 1"             //Load Value level 1 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)   MD138
      T     PQD  262                  //Store value level 1

      L     "Set level 2"             //Load Value level 2 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)   MD142
      T     PQD  266                  //Store value level 2

      L     "Set level 3"             //Load Value level 3 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)   MD146
      T     PQD  270                  //Store value level 3

      L     "Set level 4"             //Load Value level 4 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7)   MD150
      T     PQD  274                  //Store value level 4
```

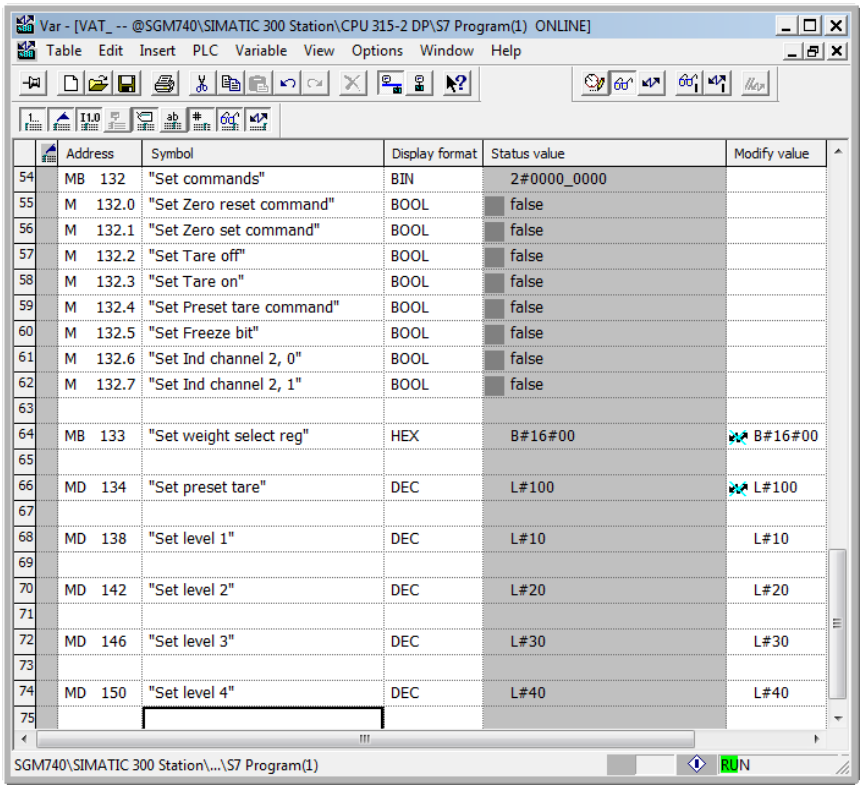
Variable table

Read:



	Address	Symbol	Display format	Status value	Modify value
1	MD 100	"Read Weight register"	DEC	L#5001	
2					
3	MW 104	"Read Status bits"	BIN	2#0010_0000_1001_1100	
4	M 105.0	"Hardware overload"	BOOL	false	
5	M 105.1	"Overload detected"	BOOL	false	
6	M 105.2	"Stable signal"	BOOL	true	
7	M 105.3	"In stable range"	BOOL	true	
8	M 105.4	"Zero corrected"	BOOL	true	
9	M 105.5	"Center of zero"	BOOL	false	
10	M 105.6	"In zero range"	BOOL	false	
11	M 105.7	"Zero tracking possible"	BOOL	true	
12	M 104.0	"Tare active"	BOOL	false	
13	M 104.1	"Preset tare active"	BOOL	false	
14	M 104.2	"New sample available"	BOOL	false	
15	M 104.3	"Calibration invalid"	BOOL	false	
16	M 104.4	"Calibration enabled"	BOOL	false	
17	M 104.5	"User certified operation"	BOOL	true	
18	M 104.6	"Reserved"	BOOL	false	
19	M 104.7	"Reserverd"	BOOL	false	
20					
21	MB 106	"Read Command bits"	BIN	2#0000_0000	
22	M 106.0	"Read Zero reset command"	BOOL	false	
23	M 106.1	"Read Zero set command"	BOOL	false	
24	M 106.2	"Read Tare off"	BOOL	false	
25	M 106.3	"Read Tare on"	BOOL	false	
26	M 106.4	"Read Preset tare command"	BOOL	false	
27	M 106.5	"Read Freeze bit"	BOOL	false	
28	M 106.6	"Read Ind channel 2, 0"	BOOL	false	
29	M 106.7	"Read Ind channel 2, 1"	BOOL	false	
30					
31	MB 107	"Read Weight select reg"	HEX	B#16#00	
32					
33	MW 108	"Read Inputs"	BIN	2#0000_0000_0000_1001	
34	M 109.0	"Input 1"	BOOL	true	
35	M 109.1	"Input 2"	BOOL	false	
36	M 109.2	"Input 3"	BOOL	false	
37					
38	MW 110	"Read Outputs"	BIN	2#0000_0011_0000_1111	
39	M 111.0	"Output 1"	BOOL	true	
40	M 111.1	"Output 2"	BOOL	true	
41	M 111.2	"Output 3"	BOOL	true	
42	M 111.3	"Output 4"	BOOL	true	
43					
44	MD 112	"Read Preset tare value"	DEC	L#100	
45					
46	MD 116	"Read Ind value gross x10"	DEC	L#50005	
47					
48	MD 120	"Read Ind value net x10"	DEC	L#50005	
49					
50	MD 124	"Read Ind value tare x10"	DEC	L#0	
51					
52	MD 128	"Read Multirange weight"	DEC	L#5001	

Write:



	Address	Symbol	Display format	Status value	Modify value
54	MB 132	"Set commands"	BIN	2#0000_0000	
55	M 132.0	"Set Zero reset command"	BOOL	false	
56	M 132.1	"Set Zero set command"	BOOL	false	
57	M 132.2	"Set Tare off"	BOOL	false	
58	M 132.3	"Set Tare on"	BOOL	false	
59	M 132.4	"Set Preset tare command"	BOOL	false	
60	M 132.5	"Set Freeze bit"	BOOL	false	
61	M 132.6	"Set Ind channel 2, 0"	BOOL	false	
62	M 132.7	"Set Ind channel 2, 1"	BOOL	false	
63					
64	MB 133	"Set weight select reg"	HEX	B#16#00	B#16#00
65					
66	MD 134	"Set preset tare"	DEC	L#100	L#100
67					
68	MD 138	"Set level 1"	DEC	L#10	L#10
69					
70	MD 142	"Set level 2"	DEC	L#20	L#20
71					
72	MD 146	"Set level 3"	DEC	L#30	L#30
73					
74	MD 150	"Set level 4"	DEC	L#40	L#40
75					

About PENKO

Our design expertise include systems for manufacturing plants, bulk weighing, check weighing, force measuring and process control. For over 35 years, PENKO Engineering B.V. has been at the forefront of development and production of high-accuracy, high-speed weighing systems and our solutions continue to help cut costs, increase ROI and drive profits for some of the largest global brands, such as Cargill, Sara Lee, Heinz, Kraft Foods and Unilever to name but a few.

Whether you are looking for a simple stand-alone weighing system or a high-speed weighing and dosing controller for a complex automated production line, PENKO has a comprehensive range of standard solutions you can rely on.

Certifications

PENKO sets high standards for its products and product performance which are tested, certified and approved by independent expert and government organizations to ensure they meet – and even – exceed metrology industry guidelines. A library of testing certificates is available for reference on:
http://penko.com/nl/publications_certificates.html

PENKO Professional Services

PENKO is committed to ensuring every system is installed, tested, programmed, commissioned and operational to client specifications. Our engineers, at our weighing center in Ede, Netherlands, as well as our distributors around the world, strive to solve most weighing-system issues within the same day. On a monthly basis PENKO offers free training classes to anyone interested in exploring modern, high-speed weighing instruments and solutions. A schedule of training sessions is found on: **www.penko.com/training**

PENKO Alliances

PENKO's worldwide network: Australia, Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Slovakia Sweden, Switzerland and Singapore.
A complete overview you will find on: **www.penko.com/dealers**

PENKO Engineering B.V. ▪ Schutterweg 35, NL 6718XC Ede ▪ Tel +31 (0) 318525630 ▪ Fax +31 (0) 31852971 ▪ info@penko.com
Web ▪ www.penko.com ▪