# PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



# How to... Connect a 1020 to a Siemens PLC



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Set level 1	
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# **GSD File**

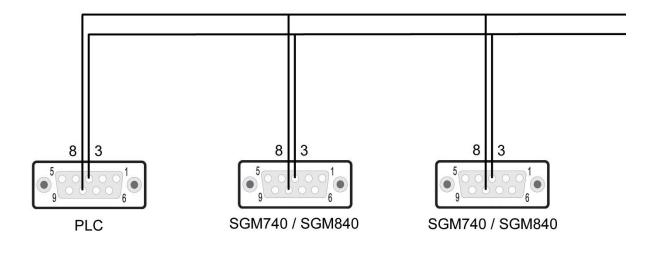
The GSD File can be found at our website <u>www.penko.com</u>. There are 2 GSD files, the indicator is only used for the 1020 indicator and the controller is used for the 1020 Mono Filler, Check Weigher or Belt Weigher.

# 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.

📍 Indicator 1020, Device Version: 01.03, Build: 04, Serial: 14010001, Module Version: 00.00, Build: 00, Project: C:\Pi test						
File Project Environment View Tools Help						
💕 On-Line 🛛 🗐 Eimware Update Manager 🔁 Program Builder 🧠 Flex Builder 🔲 Watches 🚽 Exit						
🗍 💻 Display 🗼 Control 🌒 Tasks 🛛 🏪 1/0 🚎 Indigator & Registers 👄 Labels 블	R <u>e</u> sults 🛛 🏭 Pri <u>n</u> ter Layout 进 Printer Ticke	et 🕓 <u>C</u> lock 🗠 <u>S</u> cope 🕃 Manage				
PENKO ^	Class: PENKO.PENKO 1020.Svst	em Setup.Communication.Profibus				
	Path: 1.1.3.3.7	·				
- 1.1.1 Name = - 1.1.2 Start Quick setup						
1.1.3 Enable Full setup	Address	3				
⊕ Live	1001055					
⊡- System	Format	Integer 💌				
Service						
⊡- Indicator						
E Communication ⊡ - Ethernet						
Enernet						
⊞-RS232						
⊞ RS422						
⊕-CAN ⊟-Profibus						
- 1.1.3.3.7.1 Address = 3						
- 1.1.3.3.7.2 Format = Integer						
Digital inputs						
⊕- Digital outputs ⊕- Analog output						
Passwords		1				
Screen 🔫	Discover Import Properties	s (CSV)	Apply			
ACTIVE Ethernet Address: 192.168.151.111 UDP open	Alive: Min: 9 - Time-up: Mi	in: 9 - Resets: 0				



# 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.

STEP 7 Wizard: "New Project"		<u> </u>
🌂 Introduction		1(4)
Dentre Conductor BenDit BenDit Simartic 3 CPU3	STEP 7 Wizard: "New Project" You can create STEP 7 projects quickly and easily us STEP 7 Wizard. You can then start programming immediately. Click one of the following options: "Next" to create your project step-by-step 'Finish' to create your project according to the previo	
Display Wizard on starting t	ne SIMATIC Manager Preview	>>
< <u>B</u> ack <u>N</u> ext >	Finish Cancel He	lp

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

STEP 7 Wizard: "New Project"			×
Which CPU are you usi	ng in your project	?	2(4)
CPU:	CPU Type	Order No	<b>^</b>
	CPU314 C-2 PtP CPU315 CPU315-2 DP CPU315-2 PN/DP	6ES7 314-6BG03-0AB0 6ES7 315-1AF03-0AB0 6ES7 315-2AH14-0AB0 6ES7 315-2EH14-0AB0	
	CPU316-2 DP CPU317-2	6ES7 316-2AG00-0AB0 6ES7 317-2AJ10-0AB0	-
CPU name:	CPU315-2 DP		
MPI <u>a</u> ddress:	instructi	emory 256KB; 0.05ms/1000 ons; MPI+ DP connection (DP or DP slave); multi-tier configura	ation +
		Previe	<u>v</u> >>
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel H	elp



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

STEP 7 Wizard: "New Project'			×
🕀 Which blocks do you v	vant to add?		3(4)
Bloc <u>k</u> s:	Block Name OB1 OB10 OB11 OB12 OB12 OB13 Select All Language for Se STL	Symbolic Name Cycle Execution Time of Day Interru Time of Day Interru Time of Day Interru Time of Day Interru lected Blocks	pt 1 pt 2
Create with source files			Previe <u>w</u> >>
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel	Help

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

STEP 7 Wizard: "New Pro	oject"
<table-of-contents> What do you wan</table-of-contents>	t to call your project? 4(4)
Project name:	SGM740
Existing projects:	Profibus S7_Pro1
	Check your new project in the preview. Click "Finish" to create the project with the displayed structure.
	Previe <u>w</u> >>
< <u>B</u> ack <u>N</u> e	xt > Finish Cancel Help



The project is being created.

STEP 7 Wizard: "New Project"	
🟐 What do you want to c	call your project? 4(4)
Project name:	1020
Existing projects:	S7_Pro1 S7_Pro2 SGM740
	Your project is being created. Please wait
	Previe <u>w</u> >>
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

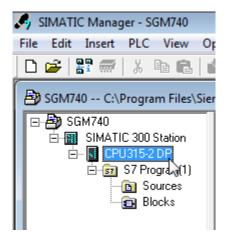
The project is shown below.

🦂 SIMATIC Manager - SGM740					
File Edit Insert PLC View	Options Windo	w Help			
D 🚅   🎛 🛲   X 🖻 💼	🔬 🔍 🗣	<u>a</u> <u>a</u> <u>a</u> <u>a</u>	No Filter >	🔽 🏹 📲	🏽 🖷 🗖 😽
🞒 SGM740 C:\Program Files\S	iemens\Step7\s7	oroj\Sgm740			- • •
	🕞 (OB1)	🕞 OB10	🕞 OB11	🕞 OB12	🕞 OB13
🗄 🔠 SIMATIC 300 Station	🕞 0B14	🖽 OB15	🕞 OB16	🖽 OB17	🕞 OB20
📥 🖷 🚺 CPU 315-2 DP	🕞 OB21	💶 OB22	🕞 OB23	🚛 OB30	🕞 OB31
⊡ 🗊 S7 Program(1)	🕞 OB32	🖽 OB33	🕞 OB34	🖽 OB35	🕞 OB36
👘 Sources	🕞 OB37	🖽 OB38	🖽 OB40	🖽 OB41	🕞 OB42
Blocks	🕞 OB43	🕞 OB44	🕞 OB45	🖽 OB46	🕞 OB47
	🕞 OB60	🖽 OB80	🕞 OB81	🖽 OB82	🕞 OB83
	🕞 OB84	🖽 OB85	🕞 OB86	🕞 OB87	🕞 OB90
	🗗 OB100	🕞 OB101	🕞 OB102	🖽 OB121	🕞 0B122

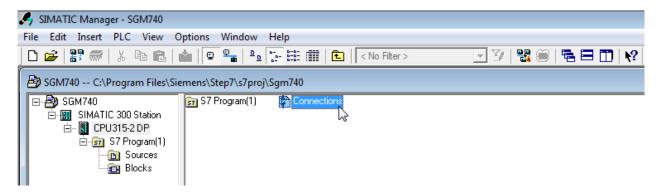


#### Setting up the Profibus network

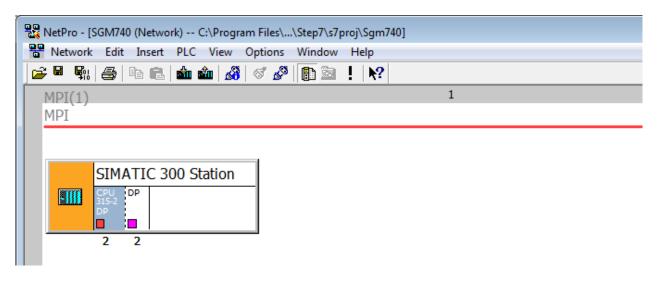
Click on your CPU name.



Double click on **Connections**.



The program **NetPro** will open.





Double click on SIMATIC 300 Station.

📲 NetPro -	· [SGM740 (Network) C:\Program Files\\Step7\s7proj\Sgm740]	
Netwo	rk Edit Insert PLC View Options Window Help	
🚅 🖬 🗣	i 😂 🖻 🖻 🏜 🏜 🔏 🖉 🕼 🖻 🔤 ! 💦	
MPI(1	)	1
MPI	,	
	SIMATIC 300 Station	
	CPU DP	
1982223	DP	
	2 2	

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

🖳 HW Config - SIMATIC 300 Station	
Station Edit Insert PLC View Options Window Help	
D 😅 🖫 🖳 🥞    🖻 💼    🏜 🏜   🖺 📼   🎇 🔛	
SIMATIC 300 Station (Configuration) SGM740	
(0) UR	* 
1 2 CPU315-2 DP	
$\begin{array}{c c} & & & \\ \hline \\ \hline$	



Click on **Properties**.

Properties - DP - (R	)/S2.1)				<b></b>
General Addresse	s Operating Mo	de Configuration	Clock		
Short Description:	DP				
					*
					-
	1				
Name:	DP				
Interface			_		
Туре:	PROFIBUS				
Address:	2				
Networked:	Yes	Properties	2		
Comment:			~~~		
					^
					-
ОК				Cancel	Help

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

Properties - PROFIBUS interface DP (R0/S2.1)		23
General Parameters Address:		
Subnet: not networked	New Properties Delete	2
ОК	ncel H	elp



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

Properties - New subn	et PROFIBUS	×
General Network Se	ettings	
Name: S7 subnet ID:	SGM740 002E - 0006	
Project path: Storage location	SGM740	
of the project:	C:\Program Files\Siemens\Step7\s7proj\Sgm740	
Author:		- 1
Date created: Last modified:	10/14/2014 10:01:01 AM 10/14/2014 10:01:01 AM	
Comment:		<u>^</u>
		-
	,	
ОК	Cancel	Help

Set the Transmission Rate and Profile and click on OK.

Properties - PROFIBUS			X
General Network Settings			
Highest PROFIBUS Address:	126 💌	Change	Options
Transmission Rate:	45.45 (31.25) Kbps 93.75 Kbps 187.5 Kbps 500 Kbps <u>1.5 Mbps</u> 3 Mbps	* 	
Profile:	DP Standard Universal (DP/FMS) User-Defined		Bus Parameters
ОК			Cancel Help



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

Properties - PROFIBUS interface DP (R0/S2.1)		×
General Parameters		
Address: 2		
Highest address: 126		
Transmission rate: 1.5 Mbps		
Subnet:		
not networked SGM740 1.5 Mbps	New	
	Properties	
	Delete	
Са	ancel H	elp

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

ieneral Addresse	S Operating Mode Configuration Clock		
C No DP			
OP master			
C DP slave			
🗖 Test, co	ommissioning, routing		
Master:	Station Module		
	Rack (R) / slot (S) Receptacle for interface module		
Diagnostic a	address:		
Address for	"slot" 2:		
Address for	"slot" 2:		
ок 📈		Cancel	Hel

The SGM740: DP master system line will appear.

🖳 HW Config - SIMATIC 300 Station
Station Edit Insert PLC View Options Window Help
] D 😅 💱 🖳 🖏   🚳 💼   🏜 🏜   📳 📼   🎇 💦
SIMATIC 300 Station (Configuration) SGM740
(0) UR
1 2 CPU315-2 DP
X2     DP       3     SGM740: DP master system
4 5
6



# Install the GSD file

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

🖳 HW Config - SIMATIC 300(1)				
Station Edit Insert PLC View	Options Window Help			
D 🚅 🔓 📱 🗣   🖨 🖡	Customize Ctrl+Alt+E			
SIMATIC 300(1) (Configuration)	Specify Module Configure Network			
🚍 (0) UR	Symbol Table Ctrl+Alt+T			
1	Report System Error			
2 CPU 315-2 DP X2 DP 3	Edit Catalog Profile Update Catalog			
4 5 6	Install HW Updates			
	Install GSD File			
	ليخ Find in Service & Support			
Create GSD file for I-Device				

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

Install GSD Files					×
Install GSD Files:		from the director		]	
C:\Users\mrossum\De	esktop				Browse
File File File File File File File File		Languages Default			
Install	Show Log	Select Al	Deselect /	Δ.	
Close					Help



Select the GSD file and click on Install.

Install GSD Files	×
Install GSD Files: from the directory	
C:\Users\mrossum\Desktop	Browse
File         Release         Version         Languages           PSGM0E28.GSD           Default	
SGM 740 (000000)	
Install Now Log Select All Deselect All	
Close	Help

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

Confirm installation of GSD files	x
CAUTION: Installation OF GSD files can continue the action?	not be undone. Do you still want to
Yes J	No

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

ſ	Install GSD File (13:4986)	J
	Installation was completed successfully.	
	ОК	

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**  $\rightarrow$  **Additional Field Devices**  $\rightarrow$  **Drivers**. Drag the 1020 to the DP master system.

🙀 HW Config - SIMATIC 300 Station			- • •	
ang me comp anewrite soo sature (in the second				
SIMATIC 300 Station (Configuration) SGM740			- <b>D</b> X	
		Eindt	nt ni	
== () UR		Profile:	Standard	
SGM740.DP mater system (1)		l ă-	ROFIBUS DP ▲ ▲ dditional Field Devices → Drives → 1020 INDICATOR → FLEX Controler → FLEX Controler → FLEX Midicator	
* *		6	Comparison of the second	

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

Properties - PROFIBUS interface SGM 740		×
General Parameters Address:		
Transmission rate: 1.5 Mbps		
Subnet:		
not networked SGM740 1.5 Mbps	New	
	Properties	
	Delete	
ОК	ncel H	lelp



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.

🖳 HW Config - S	IMATIC 300	Station					
Station Edit I	nsert PLC	View Options V	Vindow Help	)			
🗋 🗅 🚅 🔓	<b>F</b> 11   🚑	te 🖪 🛛 🏜 🛍 🕯	🚯 🗖 🔡	<b>\</b> ?			
INATIC 300	) Station (Co	nfiguration) SGM7	40				- • •
(0) UR 1 2 2 3 4 5 6	CPU 31	5-2 DP		SGM740	D: DP master sy (3) SGN SGM 740		E
•							
(3)	SGM 740						
Slot 🚺 D	PID	Order Number / Desig	nation	I Address	Q Address	Comment	1
1 114		SGN740			256277		
2 164	/	SGN740		256287			

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

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

Í	🖳 нw с	Config - S	SIMATI	IC 300 S	Station			
							Window	
	] 🗅 🚔	<b>.</b>	<b>F</b> 11	6	Þ C	📩 🖄	1	<b>\?</b>



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



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

Select Target Module			x
Target modules:			
Module		Racks	Slot
CPU315-2 DP		0	2
Select All			
OK .	Cancel	Н	lelp
			<u> </u>

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

Rack:				
Slot:	2 -			
Target Station:	💿 Local			
	C Can be i	reached by mean	s of gateway	
	on to target statio			
MPI address				Plant designation
2	CPU 315-2	SIMATIC 30	CPU 315-2	
		View		
OK S		View	Ca	ancel Help

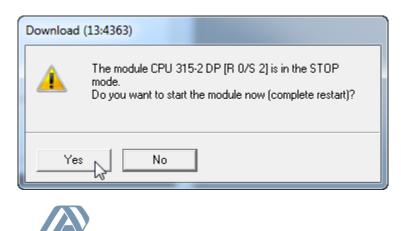
The downloading will start.

Download		×
Station: SIMATIC 300(1) Module: [0/2/0] CPU 315-2 D	2	
		Cancel

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

St	op Target Modules		x
	The following modules will be stopped for loadir data.	ng of the sys	tem
	Module	Racks	Slot
	CPU 315-2 DP	0	2
	OK Cancel	F	felp

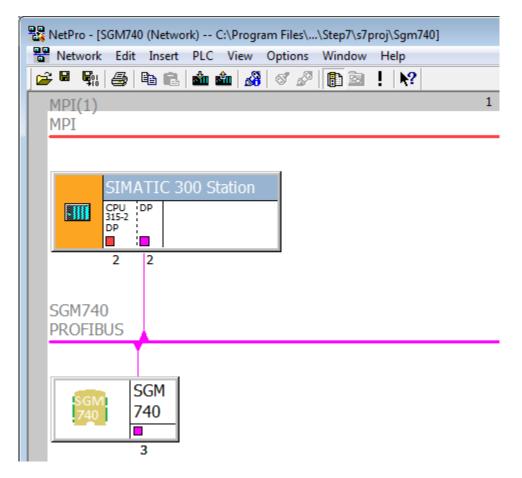
The downloading will resume. When the downloading is completed, a pop-up will appear to restart the module. Click **Yes**.



an ETC Company

Close the HW Config program.

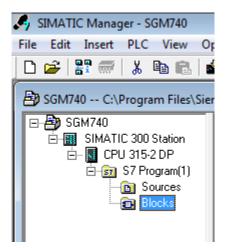
The Profibus configuration is shown in **NetPro**. Click on **Save** and close **NetPro**.





# SIMATIC Manager (2)

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



Double click on block **OB1**.

🎝 SIMATIC Manager - SGM740								
File Edit Insert PLC View	Options Window	v Help						
D 🛩   🖁 🐖   X 🖻 💼	🔬   🧟 🖕 🕯	1 <u>0</u>	< No Filter >	- 🏹 🔡	) 🖷 🗖 🕅 😽			
SGM740 C:\Program Files\S	iemens\Step7\s7p	roj\Sgm740						
🕞 🚑 SGM740	OB1	🕞 OB10	🕞 OB11	🕞 OB12	🕞 OB13			
📄 💼 🔝 SIMATIC 300 Station	DB13	🖽 OB15	🕞 OB16	🖽 OB17	🖽 OB20			
🚊 – 🚺 CPU 315-2 DP	🗗 OB21	🖽 OB22	🖽 OB23	🚛 OB30	🖽 OB31			
⊡ 🐨 🛐 S7 Program(1)	🗗 OB32	🖽 OB33	🕞 OB34	🚛 OB35	🖽 OB36			
B Sources	🗗 OB37	🕞 OB38	🕞 OB40	🖽 OB41	🖽 OB42			
Blocks	🕞 OB43	🖽 OB44	🖽 OB45	🖽 OB46	🖽 OB47			
	🗗 OB60	🖽 OB80	🖽 OB81	🖽 OB82	🖽 OB83			
	🗗 OB84	🖽 OB85	🖽 OB86	🖽 OB87	🖽 OB90			
	🕞 OB100	🖽 OB101	🖽 OB102	😑 OB121	🔁 OB122			



🗱 LAD/STL/FBD - [OB1 -- "Cycle Execution" -- SGM740\SIMATIC 300 Station\CPU 315-2 DP\...\OB1] File Edit Insert PLC Debug View Options Window Help □ 🖆 🔐 🔲 🎒 👗 🛍 🛍 🗠 ♀ (대 🎪 🔽 🗣 🔐 !< >! 🔲 🛄 📖 🗰 + ++ +() @ ∟ 그 ⊢ №? - **x** Contents Of: 'Environment\Interface' 🖃 🕀 Interface Name New network = TEMP 🕀 💼 FB blocks ы 🗄 💼 FC blocks E SFB blocks 🕀 💼 SFC blocks --- 📶 Multiple instances 🕀 👭 Libraries OB1 : "Main Program Sweep (Cycle)" Comment: Network 1: Title: Comment:

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

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

OB1	: "Main Program Swe	eep (Cycle)"	
Comm	ent:		
Netwo	ork 1: Title:		
Comm	ent:		
Ι			



# **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.

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.

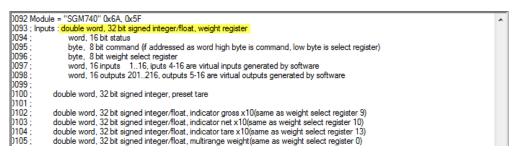
1 Double word equals 4 bytes.

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

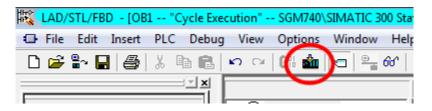


To read out the weight register, write the following lines:

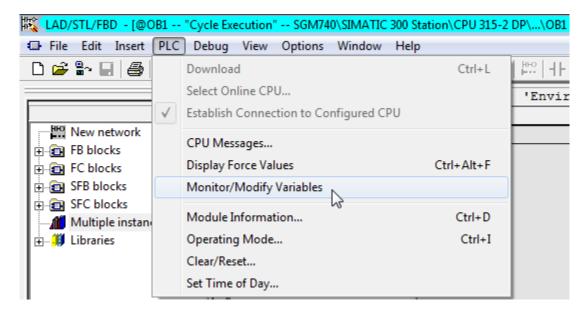
L PID 256 T "Read Weight register" MD100

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.

1	📸 Var-VAT_							
Tab	Table Edit Insert PLC Variable View Options Window Help							
-124								
<b>1</b>	4		ab # 64 42		$\mathbf{\overline{\mathbf{V}}}$			
1	<mark>.v</mark>	AT @SGM	740\SIMATIC 300 Station\CPU 315-2 E	)P\S7 Program(1	I) ONLINE			
		Address	Symbol	Display format	Status value	Modify value		
1		MD 100	"Read Weight register"	DEC	L#5000			
2								

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:	
0155 ; weight selection register definition	
0156 ; 0x00 = display weight includes multi range/interval ste	D
)157 ; 0x01 = fast gross	
)158 : 0x02 = fast net	
)159 ; 0x03 = display gross	
160 : 0x04 = display globs	
)161 : 0x05 = tare	
)162 ; 0x06 = peak	
)163; 0x07 = Valley	
0164 ; 0x08 = display weight x10	
)165 ; 0x09 = fast gross x10	
)166 ; 0x0A = fast net x10	
)167 ; 0x0B = display gross x10	
0168 ; 0x0C = display net x10	
0169 ; 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 <u>Select a weight register</u>.

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.

Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]									
Table Edit Insert PLC Variable View Options Window Help									
		<b>^</b> [1	.0	₽ <u>₽₽</u> <b>#</b> . 64 ₩.					
	Address Symbol		Display format	Status value	Modify value	<u> </u>			
1		MD	100	"Read Weight register"	DEC	L#2500			
2		MB	107	"Read Weight select reg"	HEX	B#16#04			
3		MB		"Set weight select reg"	HEX	B#16#04	B#16#04		
4									



#### **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 signe	ed integer/float, weight register
)094 ; word, 16 bit status	
)095; byte, 8 bit command (	f addressed as word high byte is command, low byte is select register)
)096 ; byte, 8 bit weight sele	ct register
	6, iputs 4-16 are virtual inputs generated by software
	216. outputs 5-16 are virtual outputs generated by software
0099 :	
)100 : double word, 32 bit signed	integer presettare
0101 :	integer, protortare
	integer/float, indicator gross x10(same as weight select register 9)
	integer/float, indicator gross x ro(same as weight select register 3)
	integer/float, indicator tare x10(same as weight select register 10)
	integer/float, multirange weight(same as weight select register 15)
)106 :	integer/noat, muturange weight(same as weight select register o)
	d (if addressed as word high byte is command, low byte is select register)
)108 ; byte, 8 bit weight sele	ct register
)109 ;	the second second states and states
	integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
01111;	
)112 ; double word, 32 bit signed	
)113; double word, 32 bit signed	
)114 ; double word, 32 bit signed	
)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	
0126 ; 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 :	
Prove .	1

To read out the status, write the following lines:

L	PIW 260	//Load Status	
т	"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.

I



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

s	🕍 Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]									
	Ta	able Edit	Insert PLC Variable View Opti	ons Window	Help		_ 8 ×			
÷										
1. r::										
	1	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	<b>f</b> alse					
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	<b>f</b> alse					
15		M 104.3	"Calibration invalid"	BOOL	<b>f</b> alse					
16		M 104.4	"Calibration enabled"	BOOL	<b>f</b> alse					
17		M 104.5	"User certified operation"	BOOL	🚺 true					
18		M 104.6	"Reserved"	BOOL	<b>f</b> alse					
19		M 104.7	"Reserverd"	BOOL	false		E			

### Note: The low byte and high byte are switched.

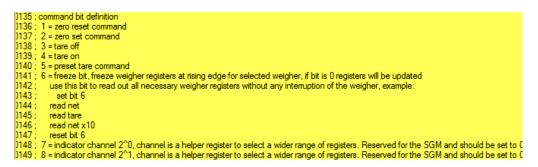


#### **Read commands**

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

ed.

The following commands can be read from the 1020.



To read out the commands, write the following lines:

L	PIB 262	<pre>//Load Command bits and weight select register</pre>	
т	"Read Command bits"	<pre>//Store Command bits and weight select register</pre>	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.

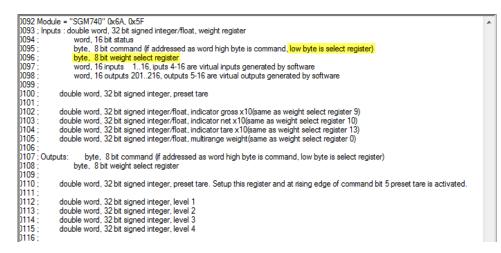
5	🕍 Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]									
5	👪 Table Edit Insert PLC Variable View Options Window Help									
-14										
	1	Address	Symbol	Display format	Status value	Modify value				
21		MB 106	"Read Command bits"	BIN	2#0000_1000					
22		M 106.0	"Read 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 <u>Set commands</u> for instructions.



#### Read weight select register

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



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

1)154 :	general:
)155 ;	weight selection register definition
)156 ;	0x00 = display weight includes multi range/interval step
)157 ;	0x01 = fast gross
	0x02 = fast net
)159 ;	0x03 = display gross
	0x04 = display net
	0x05 = tare
	0x06 = peak
	0x07 = Valley
	0x08 = display weight x10
	0x09 = fast gross x10
	0x0A = fast net x10
	0x0B = display gross x10
	0x0C = display net x10
	0x0D = tare x10
	0x0E = peak x10
	0x0F = Valley x10
	0x10 = ADC Sample
	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.

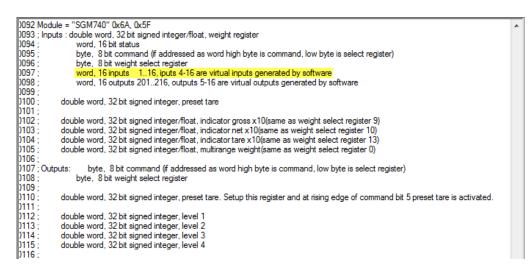
🕍 Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]								
E	'n	Ta	ble Edit	Insert PLC Variable View Option	ons Window	Help	]	_ 8 ×
[								
IC	ł	1	Address	Symbol	Display format	Status value	Modify value	*
1	1		MB 107	"Read Weight select reg"	HEX	B#16#04		

To set the weight select register, please see <u>Set weight select register</u> for instructions.



#### **Read inputs**

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



To read out the inputs, write the following lines:

г	PIW 264	//Load inputs	
т	"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.

L

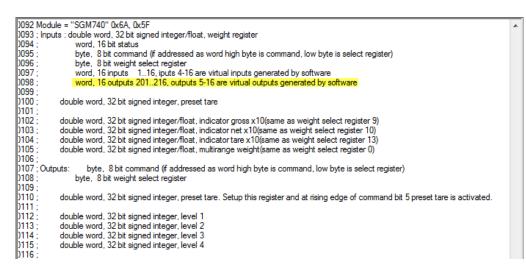
In the Example below input 1 is on.

	Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]										×		
Table Edit Insert PLC Variable View Options Window Help										_ 8	×		
-6													
		<b>^</b> [1]		<b>ab #</b> 6	£ 12								
	1	Addr	ess	Symbol			Displa	ay format	Status valu	e	Modify value		^
33	3	MW	108	"Read Input	s"		BIN			0_0000_0000_1001			
34	ŧ	М	109.0	"Input 1"			BOOI	L	true				
35	5	М	109.1	"Input 2"			BOOI	-	false				
36	5	м	109.2	"Input 3"			BOOI		<b>false</b>				



#### **Read outputs**

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



To read out the outputs, write the following lines:

г	PIW 266	//Load outputs	
т	"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.

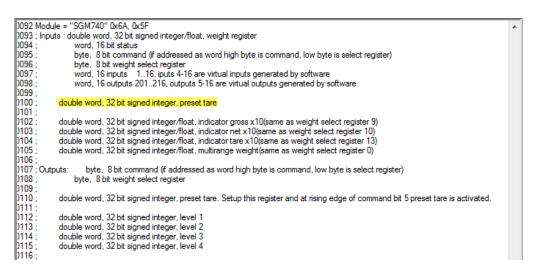
In the example below output 1 is on.

Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]												
Table Edit Insert PLC Variable View Options Window Help												
Г	1	Address	Symbol	Display format	Status value	Modify value						
38	8	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	L	M 111.2	"Output 3"	BOOL	false							
42	2		"Output 4"	BOOL	false							



#### **Read preset Tare**

The Preset Tare value will show at address PID 268.



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

L	PID 268	//Load preset tare value
т	"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.

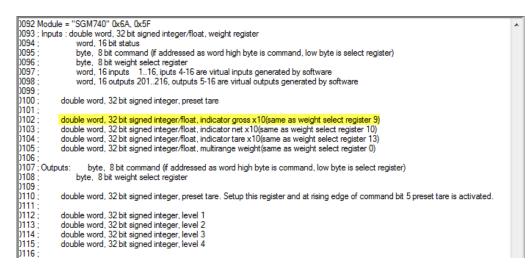
	Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]											_ 🗆 🗙
	Tab	e Edit	Insert	PLC	Variable	View	Optior	s Window	Help			_ 8 ×
	A	ddress	Symbo	ol				Display format	Status value		Modify value	×
44	N	D 112	"Read	d Pres	et tare va	lue"		DEC	L#100			

To set the preset tare, please see <u>Set preset tare</u> for instructions.



#### Read indicator gross x 10

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



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.

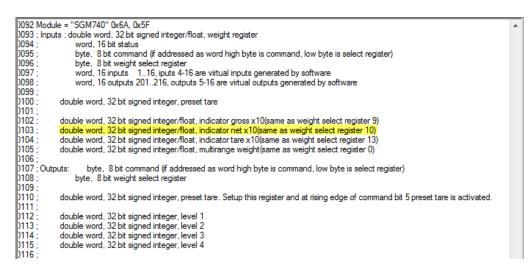
In the example below the gross x 10 value is 50004.

	🌃 Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]										_ 🗆 🗙				
s.	Ta	able E	dit	Insert	PLC	Variable	View	Option	ns Wi	indow	Help				_ 8 ×
F															
	Address Symbol								Display	format	Status	value		Modify value	<b>^</b>
46	5	MD	116	"Read	l Ind v	alue gros/	s x10"		DEC		L#5	50004			



#### Read indicator net x 10

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



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

L	PID 276	//Load indicator value net x10	
т	"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.

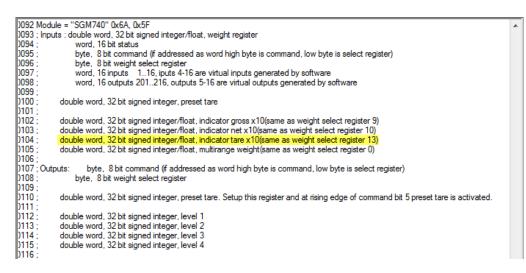
In the example below the net x 10 value is 50005.

	🌃 Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]										_ 🗆 🗙	
	👪 Table Edit Insert PLC Variable View Options Window Help									_ 8 ×		
	1	Address	Syr	lodr			Di	splay format	Status value		Modify value	<b>^</b>
48		MD 12	0 "Re	ad Ind	value net >	<10"	D	EC	L#50005			



#### Read indicator tare x 10

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



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.

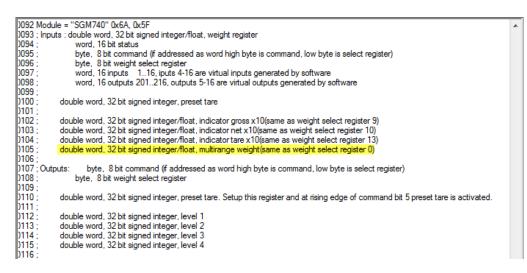
In the example below the tare x 10 value is 50004.

N.	Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]								_ 🗆 🗙				
N.	Ta	able	Edit	Insert	PLC	Variable	View	Option	s Window	Help			_ 8 ×
Γ.													
	1	Addre	ess	Symbo	ol				Display format	Status value		Modify value	*
5	)	MD	124	"Rea	d Ind v	alue tare/	x10"		DEC	L#50004	1		



#### Read multirange weight

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



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

L	PID 284	//Load indicator value multirange weight	
т	"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.

🖌 Var - [\	Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]								_ 🗆 🗙	
🕌 Table	Edit 1	Insert PLC	Variable	View	Options	Window	Help			_ 8 ×
🖌 📩	dress	Symbol			Dis	play format	Status value		Modify value	<b>^</b>
52 ME	) 128	"Read Mu	ltirange we	ight"	DE	С	L#5001			



#### 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

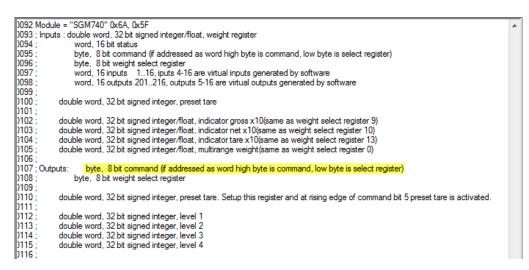
1 Double word equals 4 bytes

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).



The following commands can be used.



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 "Set commands" MB132 //Load Command ь т 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.

	Var - [VAT @	SGM740\SIMATIC 300 Station\CPU 3	15-2 DP\S7 Prog	gram(1) ONLINE]	_ 🗆 🗙
5	Table Edit I	Insert PLC Variable View Opti	ons Window	Help	_ 8 ×
-[#]	0 🖻 🖬		° <u>a</u> 2 N?	🎯 🚱 🗤 🚳 🗤	ller
1		₽ <u>*</u> #. 6⊈ ₩			
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 <u>Read commands</u> for instructions.



#### Set weight select register

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

```
)092 Module = "SGM740" 0x6A, 0x5F
                                                                                                                                                                                         ٠
)093 ; Inputs : double word, 32 bit signed integer/float, weight register
)094
)095 ;
                      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
0096
 )097
0098 :
                     word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
 0099
 )100 ;
                double word, 32 bit signed integer, preset tare
)101 ;
                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)
b102 :
)103 ;
)104
                double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
0105
                double word, 32 bit signed integer/float, multirange weight (same as weight select register 0)
0106
)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
                double word, 32 bit signed integer, level 1
double word, 32 bit signed integer, level 2
double word, 32 bit signed integer, level 3
)112 ;
)113 ;
)114
)115 ;
                double word, 32 bit signed integer, level 4
b116
```

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
	0x04 = display net
	0x05 = tare
	0x06 = peak
)163 ;	0x07 = Valley
	0x08 = display weight x10
)165 ;	0x09 = fast gross x10
	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
т	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.

Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]									
Table Edit Insert PLC Variable View Options Window Help									
Address Symbol	Display format	Status value	Modify value	<u> </u>					
64 MB 133 "Set weight select reg"	HEX	B#16#04	<mark>}∢</mark> B#16#04						

To check if the 1020 has executed the weight select register, it's possible to read out the weight select register. Please see <u>Read weight select register</u> 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.

		_
	Module = "SGM740" 0x6A, 0x5F	*
	Inputs : double word, 32 bit signed integer/float, weight register	
)094 ;		
)095 ;		
)096 ;		
)097 ;		
)098 ;		
)099 ;		
)100 ;		
)101 ;		
)102 ;		
)103 ;	double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)	
)104 ;		
)105 ;		
)106 ;		
	Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)	
)108 ; )109 ;		
0110 ;		
b111 :	double word, 52 bit signed integer, preset tale, setup this register and at hsing edge of command bit 5 preset tale is activated.	
0112		
0113		
b114		
0115		
D116 :		

To set the preset tare, write the following lines:

	"Set preset tare"		To set a new preset tare value, command "Preset tare" must be set high (M132.4)	ID134
т	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"	<pre>//Load set preset tare value To set a new preset tare value, command "Preset tare" must be set high (M132.4)</pre>	MD134
т	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.

🕍 Var - [VAT @SGM740\SIMATIC 300 Station\CPU 315-2 DP\S7 Program(1) ONLINE]									
Table Edit Insert PLC Variable View Options Window Help									
Address Symbol	Display format	Status value	Modify value						
66 MD 134 "Set preset tare"	DEC	L#100	L#100						

To check if the 1020 has executed the preset tare value, it's possible to read out the preset tare. Please see <u>Read preset tare</u> 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	
	; Inputs : double word, 32 bit signed integer/float, weight register	
)094		
)095		
)096		
)097		
)098		
)099		
)100		
)101		
)102		
)103		
)104		
)105	; double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)	
)106		
	; Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)	
)108		
)109		
)110		
)111		
)112		
)113		
)114		
)115		
)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.

5	Var - [VAT @	SGM740\SIMATIC 300 Station\CPU 3	15-2 DP\S7 Pro	gram(1) ONL	INE]	_ 🗆 X
	Table Edit	Insert PLC Variable View Option	ons Window	Help		_ & ×
-[2]			° <u>a</u> 2 <u>k</u> ?		<b>⊘</b> / 6€′ 4⊅	60°1 47 //w
1		₽ <u>ab</u> #, 64, 47				
	Address	Symbol	Display format	Status value	Modify value	*
81	MD 138	"Set level 1"	DEC	L#10	L#10	
82	M 106.6	"Read Ind channel 2, 0"	BOOL	📘 true		
83		"Read Ind channel 2, 1"	BOOL	📘 true		
84						
			•			*
SGM	1740\SIMATIC 3	00 Station\\S7 Program(1)				🔶 RUN //



#### 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.

	Module = "SGM740" 0x6A, 0x5F	
	; Inputs : double word, 32 bit signed integer/float, weight register	
)094		
)095		
0096		
0097		
)098	; word, 16 outputs 201216, outputs 5-16 are virtual outputs generated by software	
)099		
)100		
)101		
)102		
)103		
)104		
)105		
)106		
)107	; Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)	
)108		
)109		
)110		
)111		
)112		
)113	; double word, 32 bit signed integer, level 2	
)114		
)115		
)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 FQD 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.

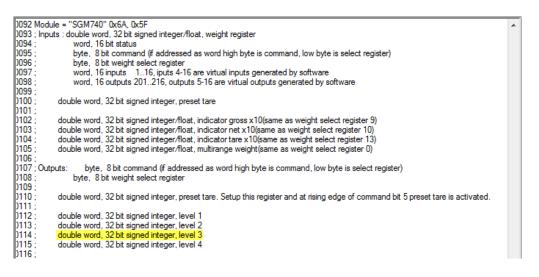
5	Var - [V/	AT (	DSGM740\SIMATIC 300 Station\CPU 3	15-2 DP\S7 Pro	gram(1) ONLI	NE]	_ 🗆 X
*	Table	Edit	Insert PLC Variable View Optic	ons Window	Help		_ 8 ×
-ja		-		° <u>a</u> 2 <u>k</u> ?		<b>⊘∌</b> 66° 4∕2	6°i ≤7 ////
1	<b>^</b> [1].		⊉ <u>≉</u> 64 47				
	🖌 Addr	ess	Symbol	Display format	Status value	Modify value	*
81	MD	142	"Set level 2"	DEC	L#20	L#20	
82	М	106.6	"Read Ind channel 2, 0"	BOOL	true		
83	М	106.7	"Read Ind channel 2, 1"	BOOL	true		
84							
							Ŧ
SGM	1740\SIN	IATIC 3	00 Station\\S7 Program(1)				🔶 RUN //



#### 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.



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) 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.

52	Var - [VAT (	DSGM740\SIMATIC 300 Station\CPU 3	15-2 DP\S7 Pro	gram(1) ONL	INE]	_ 🗆 X
	Table Edit	Insert PLC Variable View Option	ons Window	Help		_ 8 ×
-[2]			° <u>a</u> 2 N?		<b>⊘</b> / 6€′ 4⊅	6°i ≤Z
1		₽ <u>*</u> #. 64 ₩				
	Address	Symbol	Display format	Status value	Modify value	*
81	MD 146	"Set level 3"	DEC	L#30	L#30	
82	M 106.6	"Read Ind channel 2, 0"	BOOL	📘 true		
83	M 106.7	"Read Ind channel 2, 1"	BOOL	📘 true		
84						
<b>—</b>			*			*
SGN	1740\SIMATIC 3	00 Station\\S7 Program(1)				🔶 RUN //



MD146

#### 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.

	Module = "SGM740" 0x6A, 0x5F	
	; Inputs : double word, 32 bit signed integer/float, weight register	
)094 ;		
)095 ;		
)096 ;		
)097 ;		
)098 ;		
)099 ;		
)100 ;		
)101 ;		
)102 ;		
)103 ;		
)104 ;		
)105 ;		
)106 ;		
)107	Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)	
)108		
)109		
)110 ;		
)111 ;		
)112		
)113 ;		
)114		
)115		
)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.

50	Var - [VA	T @	SGM740\SIMATIC	300 Station	CPU 3	L5-2 DP\S7 Pro	gram(1) ONL	INE]	_ 🗆 🗙
	Table	Edit 1	insert PLC Vari	able View	Optic	ons Window	Help		_ & ×
-¤		-	a 1 B	<b>1 1 1</b>	×	°∎ 🖁 🕅		<b>⊘/</b> 6€′ 4≯	6°i ≤°i <i>Ika</i> r
<b>1</b>	A 11.0		⊒ <u>ab</u> #. 6⊈ ¶	2					
Π	Addre	ess	Symbol			Display format	Status value	Modify value	*
81	MD	150	"Set level 4"			DEC	L#40	L#40	
82	M	106.6	"Read Ind chann	nel 2, 0"		BOOL	📘 true		
83			"Read Ind chann			BOOL	📘 true		<
84									
<b>—</b>					••••••				•
SGN	1740\SIM	ATIC 3	00 Station\\S7 Pr	ogram(1)					🔶 RUN //



### Complete program to read and write values

#### Read:

//sg	4 740 o	r SGM840 Weight, status, wei	ght select register, inputs, outputs information to the PLC	]
	L	PID 256	//Load Weight register	
	т	"Read Weight register"	//Store Weight register	MD100
	L T	PIW 260 "Read Status bits"	//Load Status //Store Status	MW104
	-			MALON
	L	PIB 262 "Read Command bits"	//Load Command bits and weight select register	MB106
	T	"Read Command bits"	//Store Command bits and weight select register	MB106
	L	PIB 263	//Load Weight select register	
	т	"Read Weight select reg"	//Store Weight select register	MB107
	L	PIW 264	//Load inputs	
	т	"Read Inputs"	//Store inputs	MW108
	L	PIW 266	//Load outputs	
	т	"Read Outputs"	//Store cutputs	MW110
	L	PID 268	//Load preset tare value	
	т	"Read Preset tare value"	//Store preset tare value	MD112
	L	PID 272	//Load indicator value gross x10	
	т	"Read Ind value gross x10"	//Store indicator value gross x10	MD116
	ь	PID 276	//Load indicator value net x10	
	т	"Read Ind value net x10"	//Store indicator value net x10	MD120
	L	PID 280	//Load indicator value tare x10	
	т	"Read Ind value tare x10"	//Store indicator value tare x10	MD124
	г	PID 284	//Load indicator value multirange weight	
	т	"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

т	"Set commanda"	//Load Command	MB132
т	PQB 256	//Store Command	
L T	"Set weight select reg" PQB 257	//Load weight select register //Store weight select register	MB133
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 L <>D	PQD 258 "Read Preset tare value" "Set preset tare"	<pre>//Store set preset tare value //Load current preset tare value //Load set preset tare //Load set preset tare not equel with read preset tare</pre>	MD112 MD134
=	"Set Preset tare command"	//Command bit "preset tare" is on, storing the new preset tare into the SGM740 or SGM840	M132.4
L T	"Set level 1" PQD 262	<pre>//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) //Store value level 1</pre>	MD138
L T	"Set level 2" PQD 266	//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) //Store value level 2 $$	MD142
L T	"Set level 3" PQD 270	//Load Value level 3 To set a new setpoint level, command "indicator channel 2,0 and 2,1 must be set high (132.6 and 132.7) //Store value level 3 $$	MD146
L T	"Set level 4" PQD 274	//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) //Store value level 4 $\!\!\!$	MD150



#### Variable table

#### Read:

≝ -₩	able Edit	SGM740\SIMATIC 300 Station\CPU Insert PLC Variable View Op	otions Window	Help	 6_ 7	-
1	-	₽ <u>₽</u> ## <u>64</u> 47				_
	-	Symbol	Display format	Status value	Modify value	_
2	MD 100	"Read Weight register"	DEC	L#5001		
3	MW 104	"Read Status bits"	BIN	2#0010_0000_1001_1100		
4				2#0010_0000_1001_1100		
	M 105.0	"Hardware overload"	BOOL	false		
5	M 105.1	"Overload detected"	BOOL	false		
5	M 105.2	"Stable signal"	BOOL	true		
7	M 105.3	"In stable range"	BOOL	true		
В	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	107	Redu Weight Select Teg	TILA	5#10#00		-
33	MW 108	"Read Inputs"	BIN	2#0000_0000_0000_1001		
34	M 109.0	·	BOOL			
35		"Input 1"		true		-
	M 109.1	"Input 2"	BOOL	false		
36	M 109.2	"Input 3"	BOOL	false		
37		"D! 0. tt-"		D#0000 0014 0000 44		
38	MW 110	"Read Outputs"	BIN	2#0000_0011_0000_1111		
39		"Output 1"	BOOL	true		
40	M 111.1	"Output 2"		true		
41		"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		
٠ 👘			;			,i



#### Write:

ت 🏜 است		Insert PLC Variable View Op		Help	<u>-</u>	-
-144						
1	A 11.0 Z	₽ <u>*</u> #. 6⊈ ₩				
ŕ	Address	Symbol	Display format	Status value	Modify value	ŀ
54	MB 132	"Set commands"	BIN	2#0000_0000		
55	M 132.0	"Set Zero reset command"	BOOL	<b>false</b>		
56	M 132.1	"Set Zero set command"	BOOL	<b>f</b> alse		
57	M 132.2	"Set Tare off"	BOOL	<b>f</b> alse		
58	M 132.3	"Set Tare on"	BOOL	<b>f</b> alse		
59	M 132.4	"Set Preset tare command"	BOOL	<b>false</b>		
50	M 132.5	"Set Freeze bit"	BOOL	<b>f</b> alse		
61	M 132.6	"Set Ind channel 2, 0"	BOOL	<b>f</b> alse		
62	M 132.7	"Set Ind channel 2, 1"	BOOL	<b>f</b> alse		
63						
64	MB 133	"Set weight select reg"	HEX	B#16#00	💓 B#16#00	
65						
56	MD 134	"Set preset tare"	DEC	L#100	🙀 L#100	
57						
58	MD 138	"Set level 1"	DEC	L#10	L#10	
59						1
70	MD 142	"Set level 2"	DEC	L#20	L#20	
71						
72	MD 146	"Set level 3"	DEC	L#30	L#30	1
73						
74	MD 150	"Set level 4"	DEC	L#40	L#40	L
75			ĺ			1.





#### 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

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#### **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

