

PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



How to...
Connect the SGM740 or SGM840 to an
Omron PLC



PENKO

an ETC Company

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PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

General information

When the SGM740 or SGM840 is powered by USB (not 24Vdc) the communication, load cell interface and the analog output will not work.

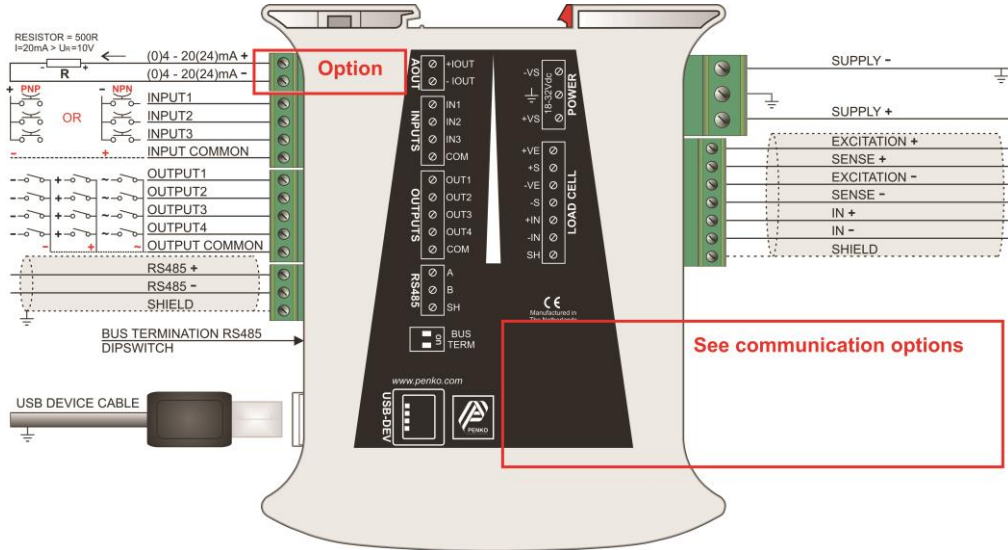
Analoge output (option)

Inputs
Input 1=5khz
18-28Vdc

Outputs
25V/0.5A
AC/DC

Local bus

To PC
Config
software

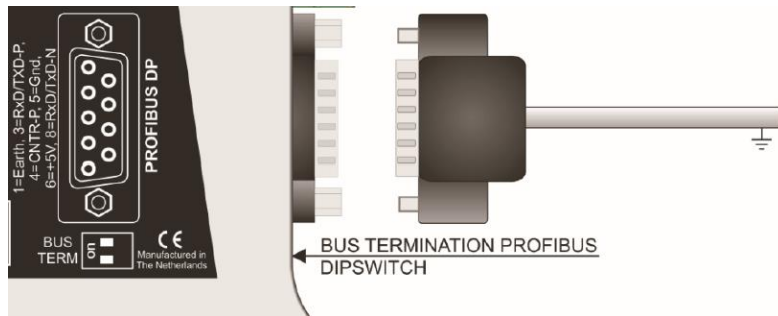


DC POWER SUPPLY
18-32Vdc

6-Wire load cell connection
Vexc=5Vdc

SGM740

Profibus connection



GSD File

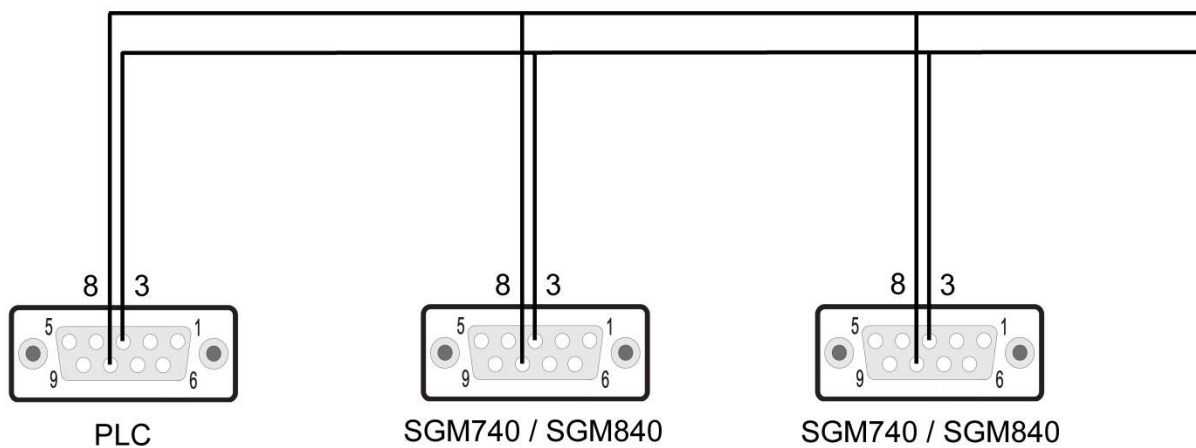
The GSD File can be found at our website www.penko.com. The filename is PSGM0E28.GSD.

Wiring

To connect the SGM740 or SGM840 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.

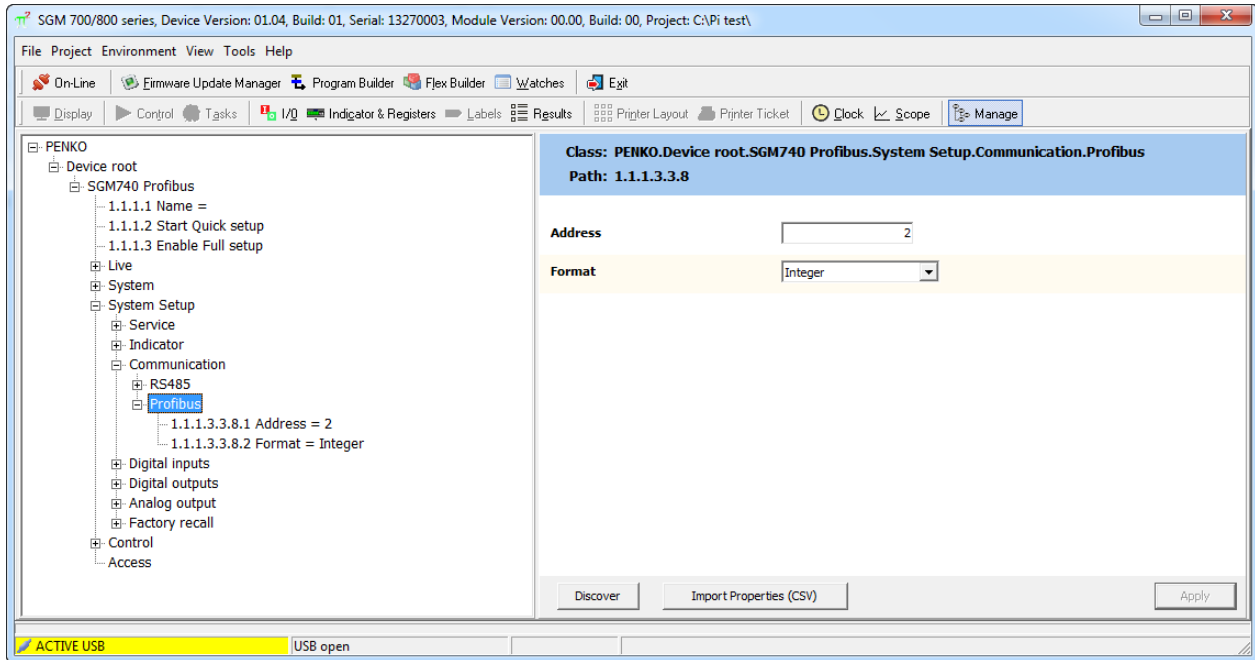
If you use an original Profibus connector make sure that you use the bus termination on the Profibus connector and not on the SGM740 or SGM840 (the dipswitch next to the Profibus connector must be both in the "OFF" position), otherwise the Profibus communication will not work.

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 SGM740 or SGM840

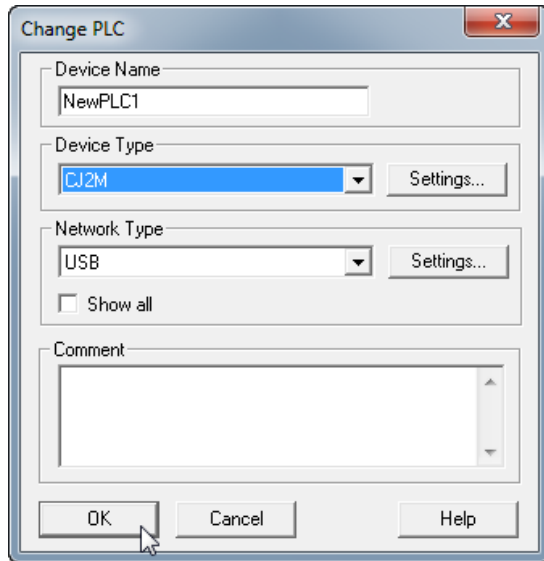
Connect the SGM740 or SGM840 to a PC using an USB-cable and open Pi Mach II and double click on **SGM740** or **SGM840**, double click on **Enable Full Setup** then double click on **System Setup**, then double click on **Communication**, then double click on **Profibus**, set the **Address** and **Format** the same as picture below. Click on **Apply** to save settings.



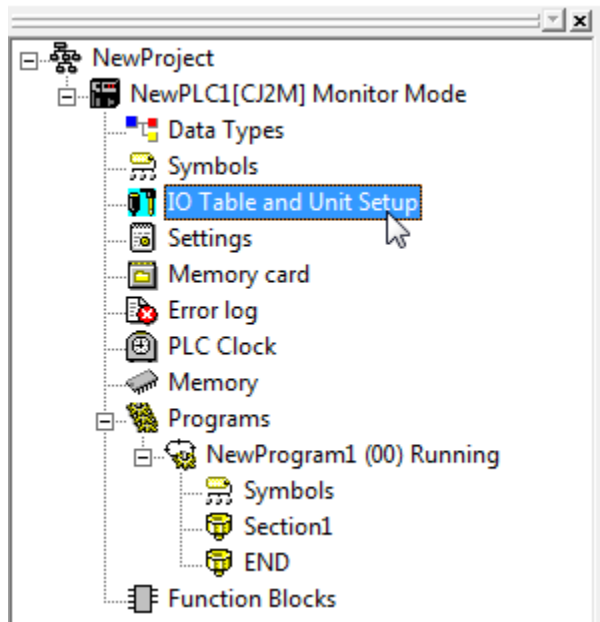
CX-Programmer 1

Open CX-Programmer to set up the PLC. In the example we use an **Omron CJ2M-CPU31 PLC** with an **Omron CJ1W-PRM21 Profibus module**.

Click on **New** and set the **Device Type** and **Network Type** and click on **OK**.



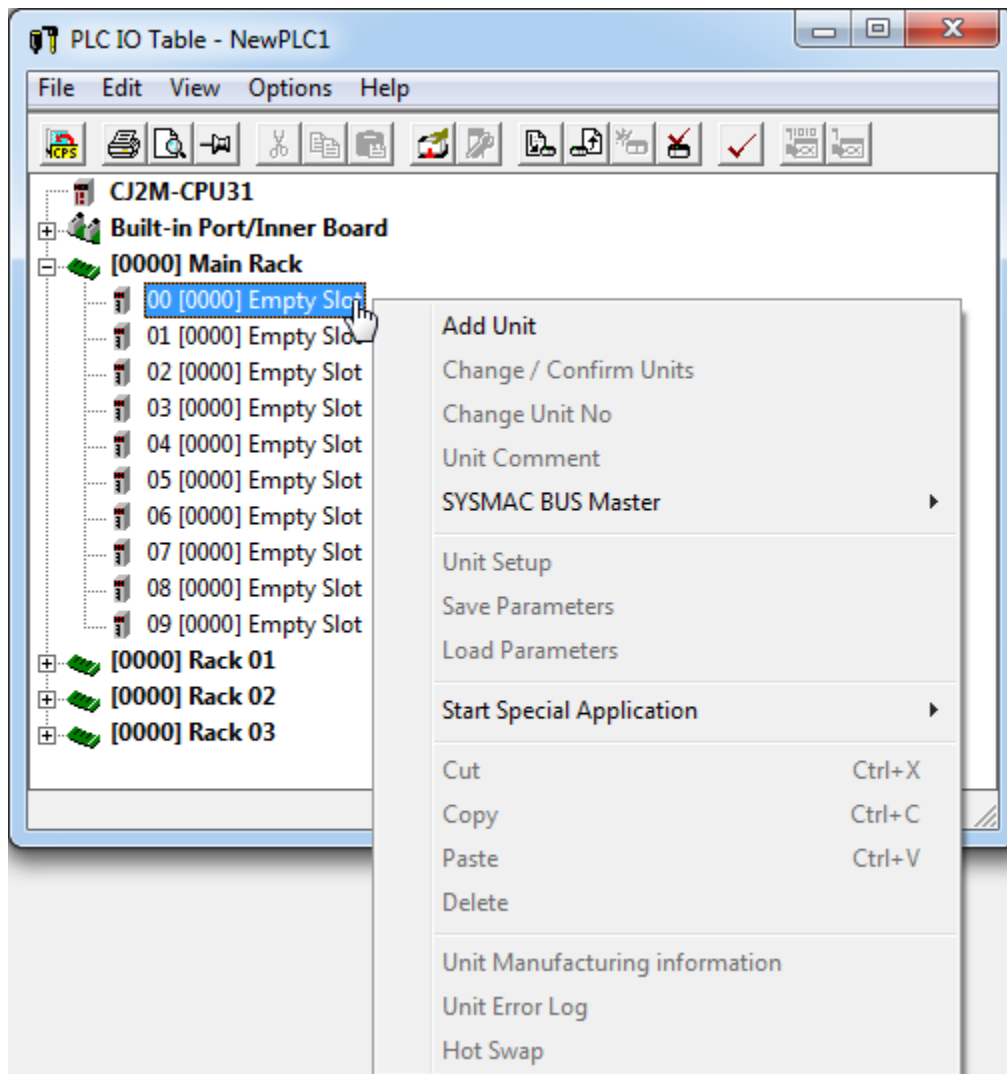
Double click on **IO Table and Unit Setup**.



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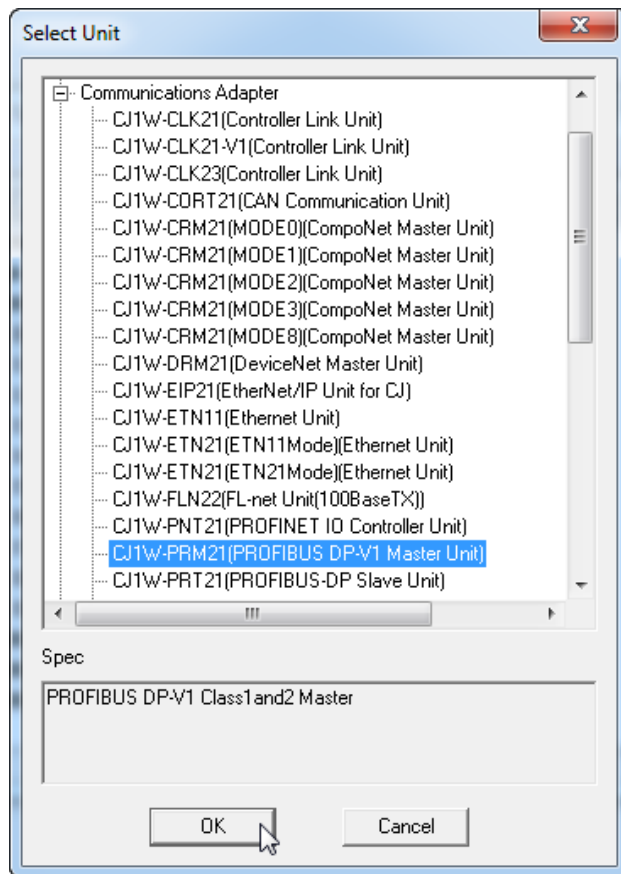
Open the **Main Rack**, right click on the first empty slot and click on **Add Unit**.



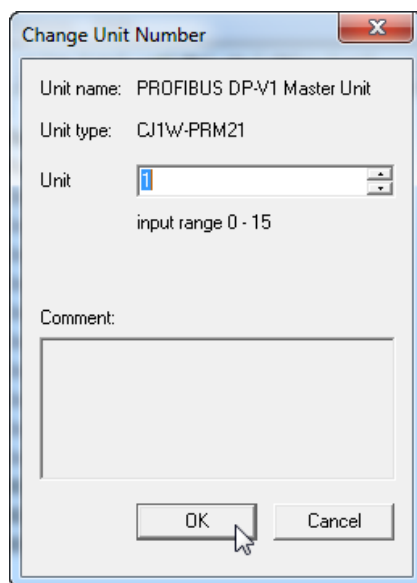
PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

Select the Profibus module and click on **OK**.



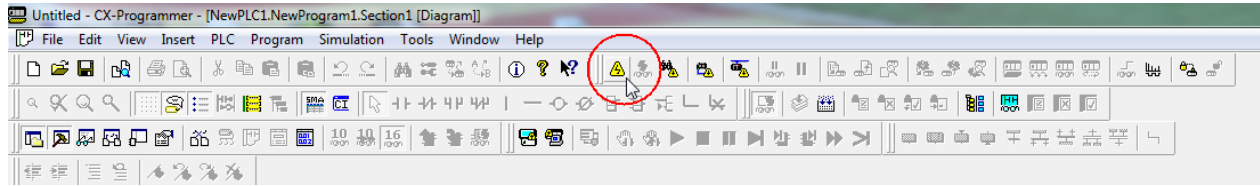
Set **Unit** to **1** and click on **OK**.



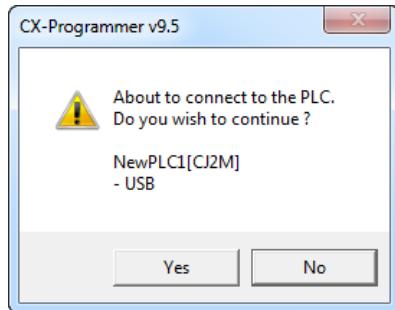
PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

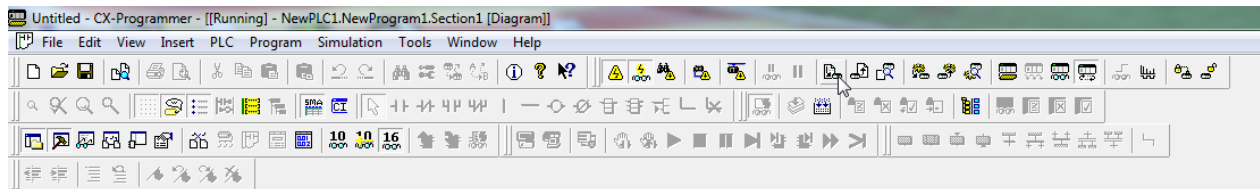
Click on the button **Work online**.



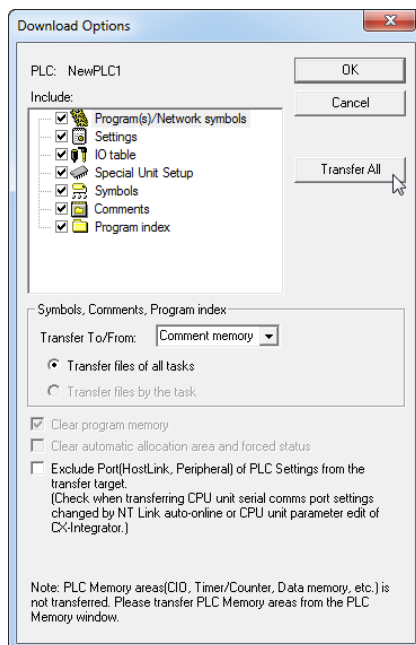
This pop-up will appear, click on **Yes**. The PLC will start in the Run Mode



Click on the button **Transfer to PLC**.



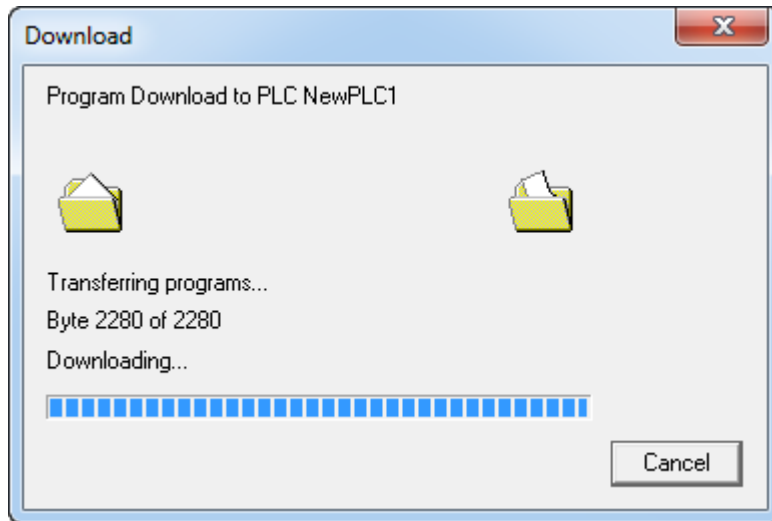
Click on **Transfer All** and say **yes** to all the pop-ups.



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The programs and settings will transfer to the PLC, when the downloading is completed say **Yes** to the pop-up, this will set the PLC back into RUN Mode.

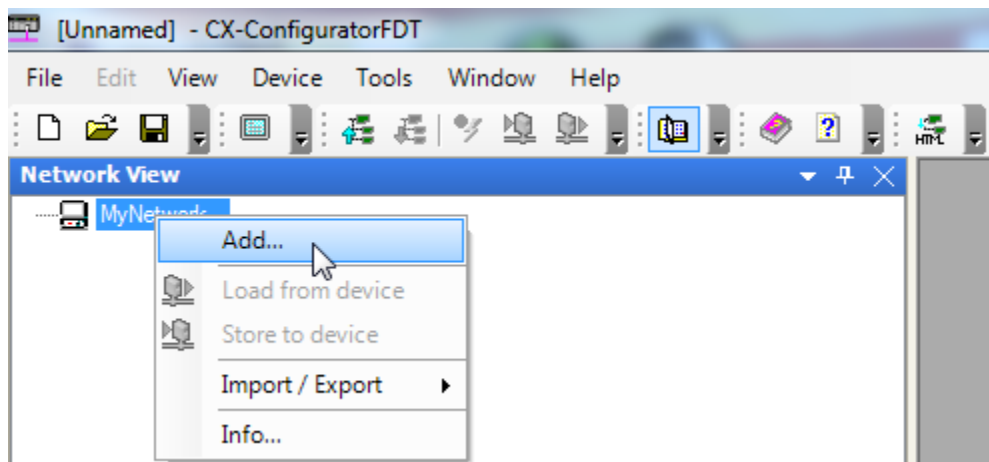


The PLC is now configured.

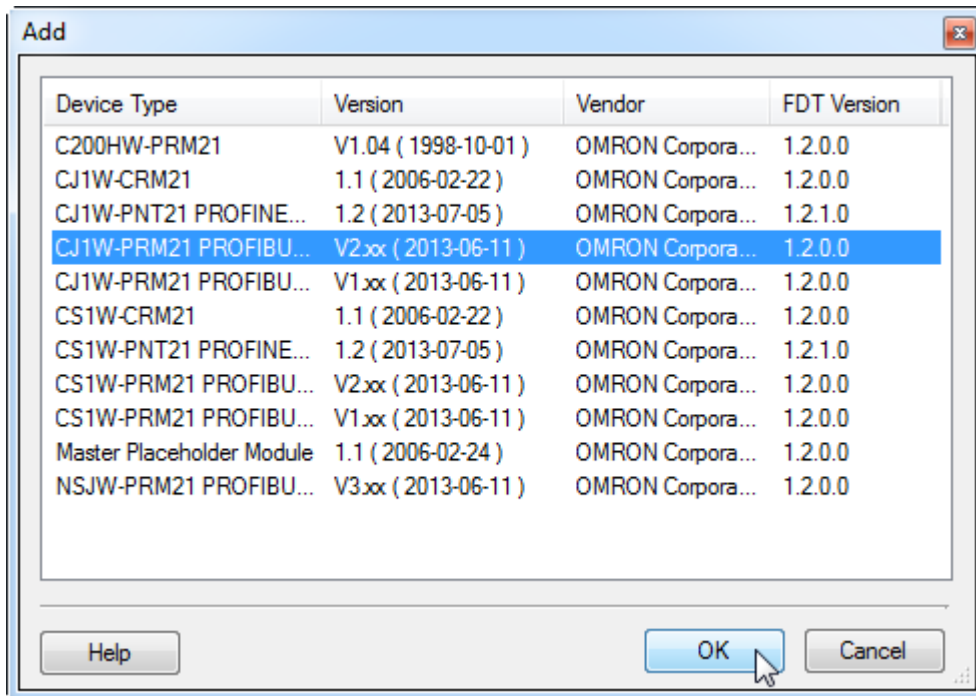
CX-ConfiguratorFDT

Open **CX-ConfiguratorFDT** to setup the Profibus network. In the example we use an **Omron CJ2M-CPU31 PLC** with an **Omron CJ1W-PRM21 Profibus module**.

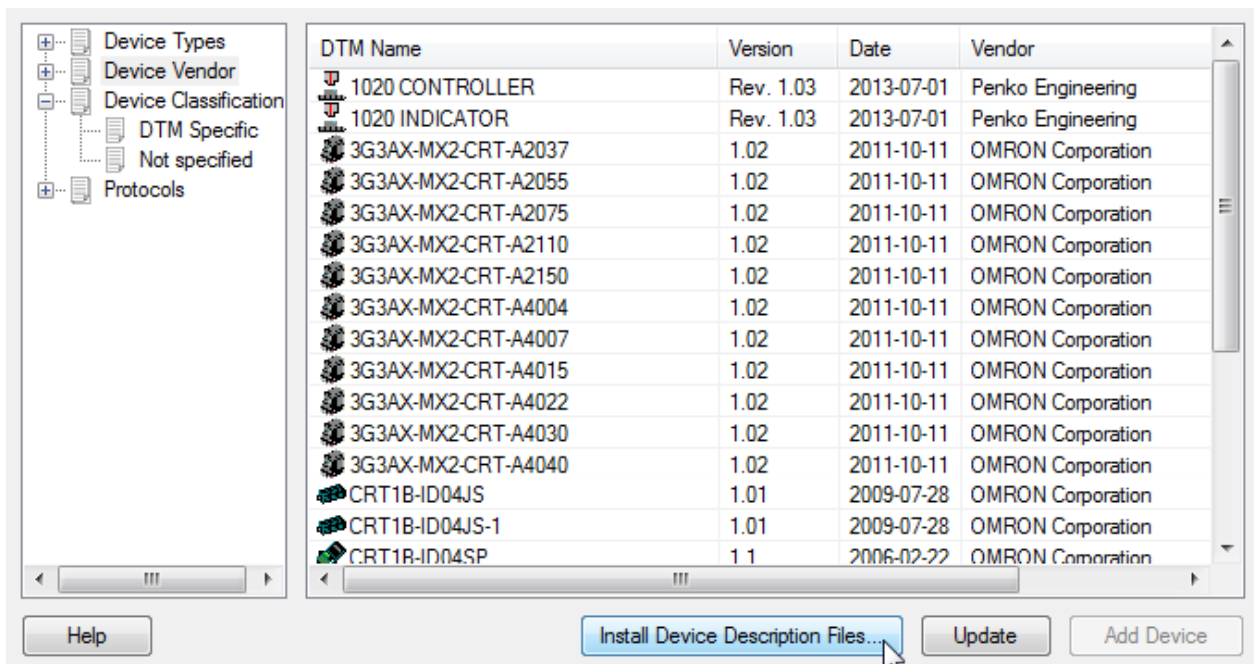
Add the **Omron CJ1W-PRM21 Profibus module** to "My Network". Right click on **My Network** and click on **Add**.



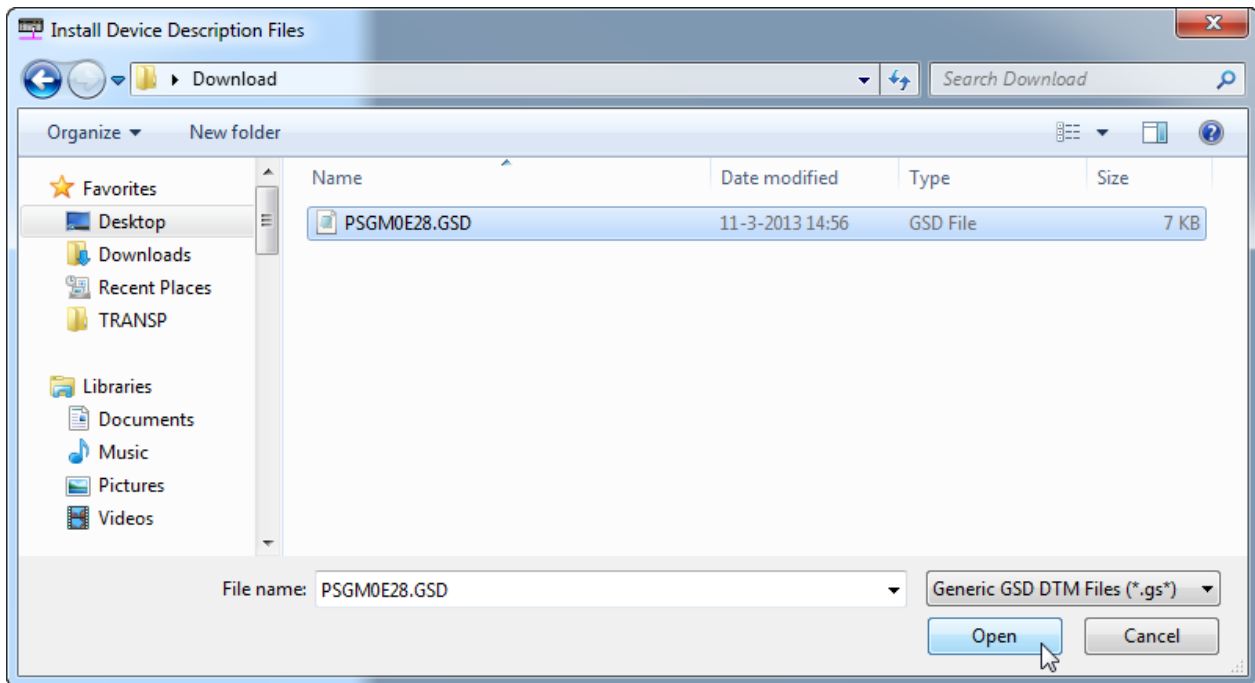
Select the right Profibus module and click on **ok**. The Profibus module is now added to “My Network”.



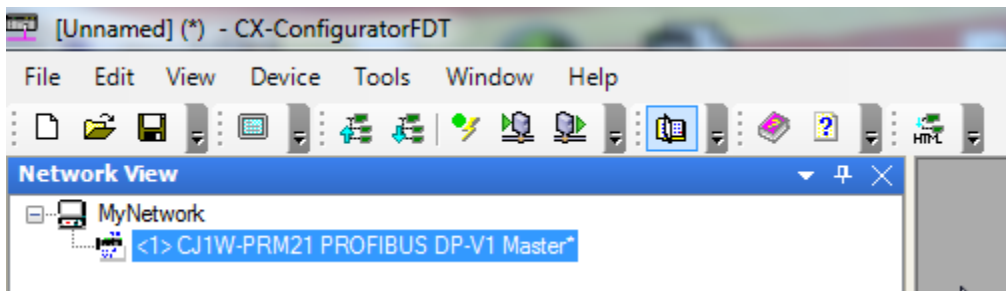
Click on **Install Device Description Files** and add the SGM740/SGM840 GSD file.



Go to the folder where the GSD file is saved and open the GSD file.

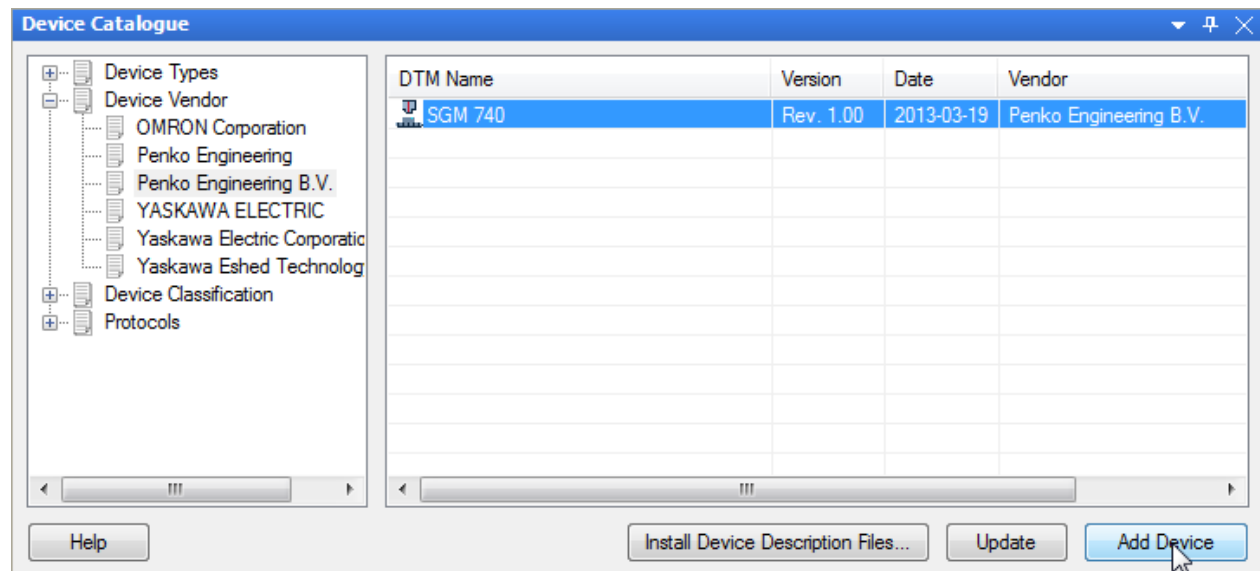


Click on **Device Vendor** and click on **Penko Engineering B.V.** Select the SGM740 and click on **Add Device**. Make sure the Profibus module is selected, otherwise the "Add Device" button is not clickable.

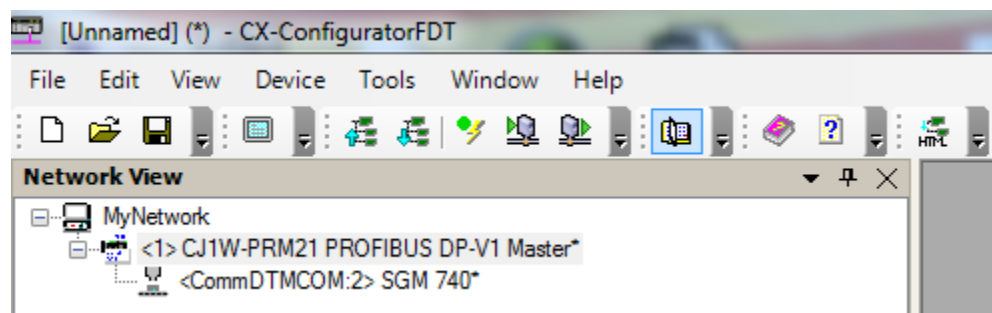


PENKO How to...

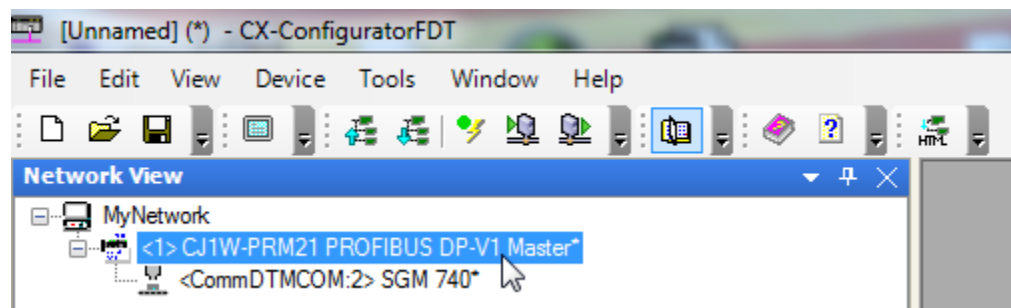
Connect the SGM740 or SGM840 to an Omron PLC



The SGM740/SGM840 is added to “My Network”.



Double click on **CJ1W-PRM21 PROFIBUS DP-V1 Master** to set up the Profibus module.

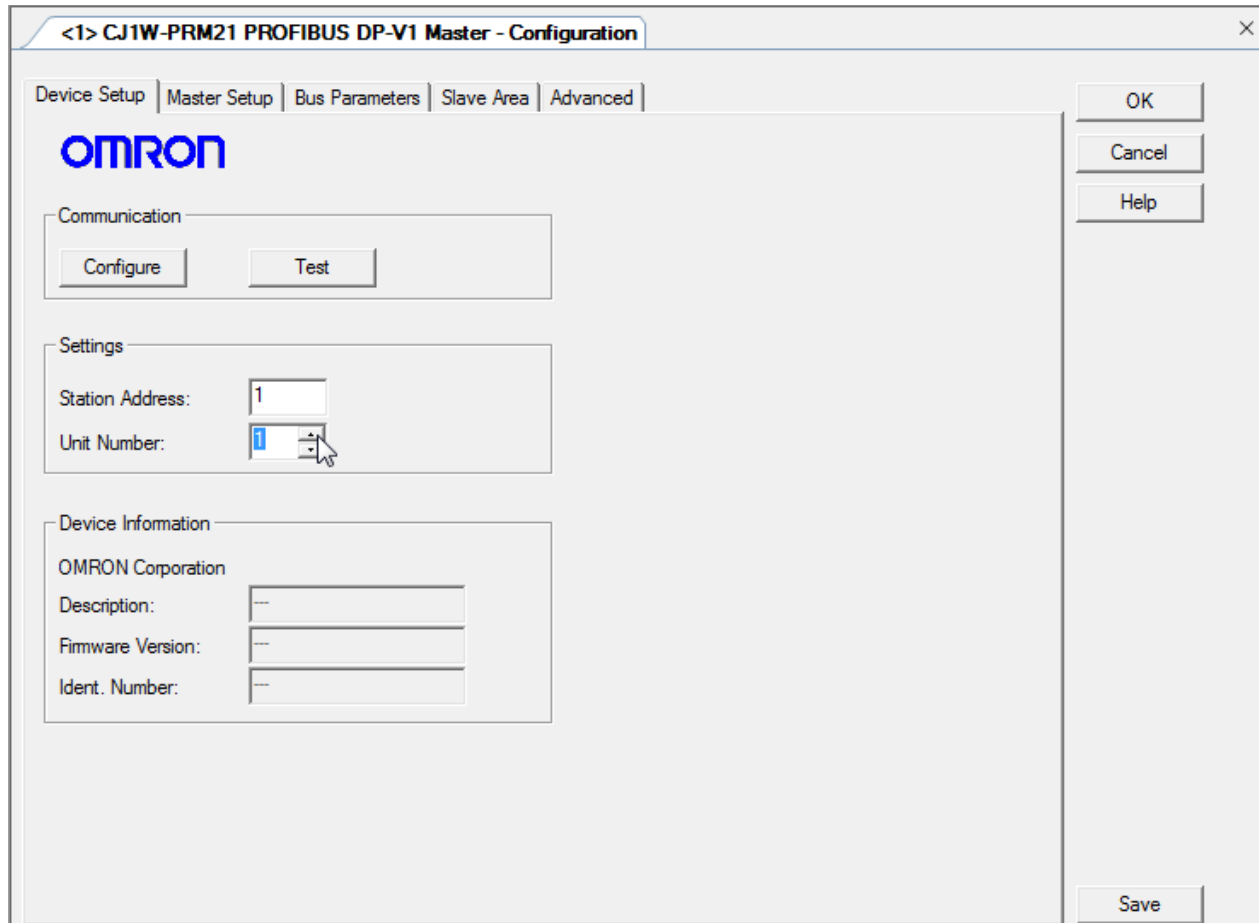


PENKO How to...

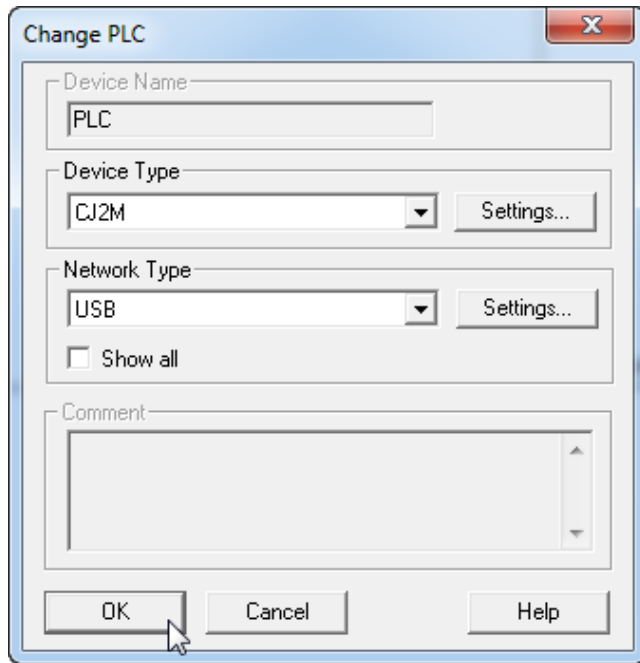
Connect the SGM740 or SGM840 to an Omron PLC

Set the **Unit Number** to 1.

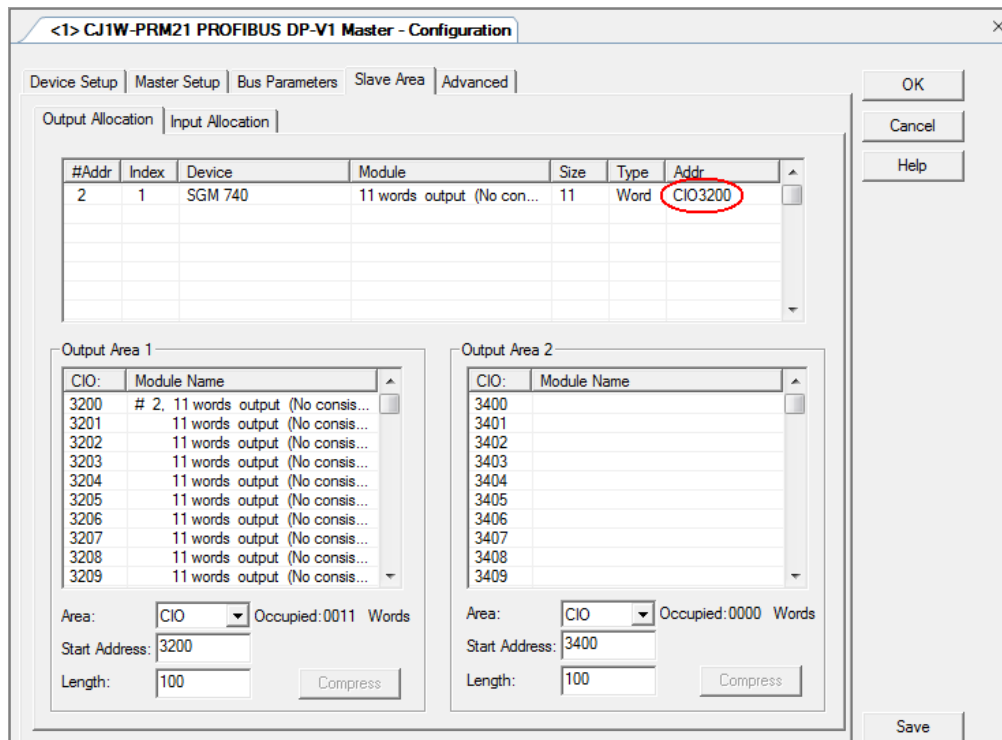
*Note: The hex-switch on the **Omron CJ1W-PRM21 Profibus module** must be set to the same **Unit Number** as in the setting.*



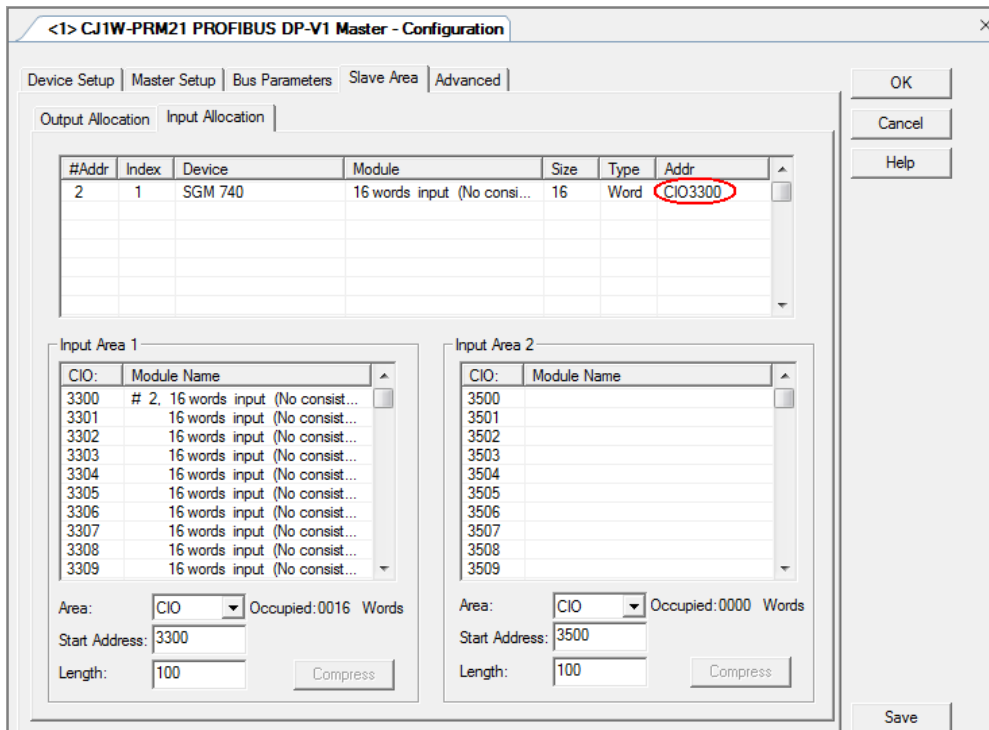
Click on **Configure** and set the **Device Type** and **Network Type** (same settings as used in CX-Programmer).



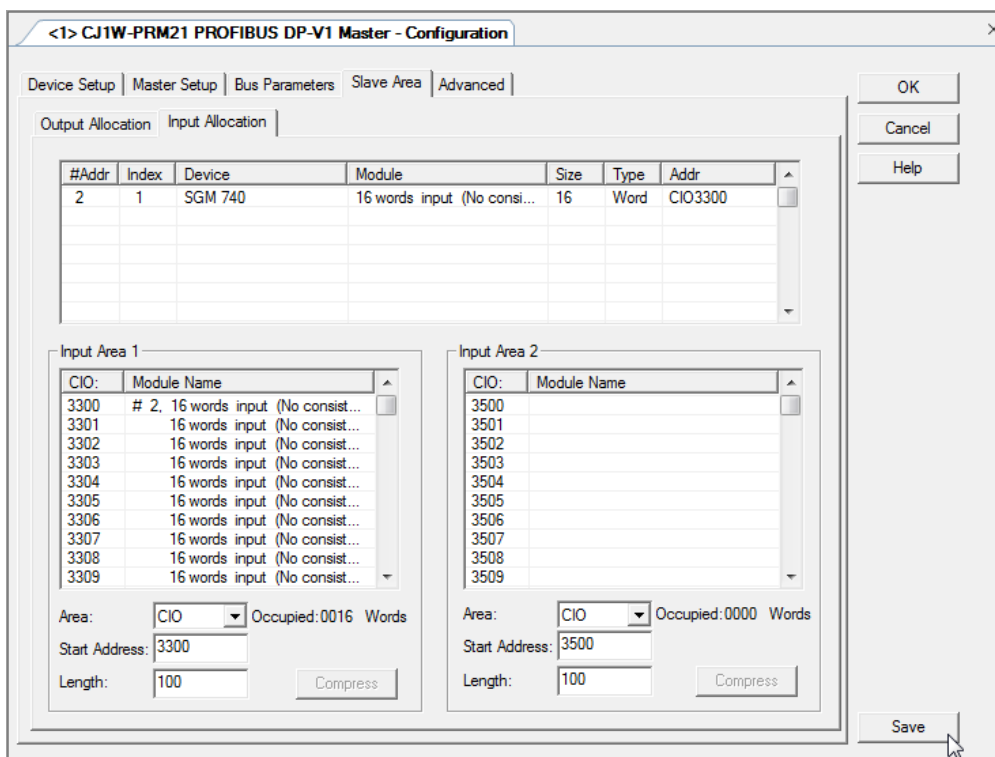
Go to the tab **Slave Area**. In the tab **Output Allocation** the start and length of the output is shown. The start address is **CIO3200** and the length is **11 Words**. The start address and length are important to remember.



In the tap **Input Allocation** the start and length of the input is shown. The start address is **CIO3300** and the length is **16 Words**. The start address and length are important to remember.



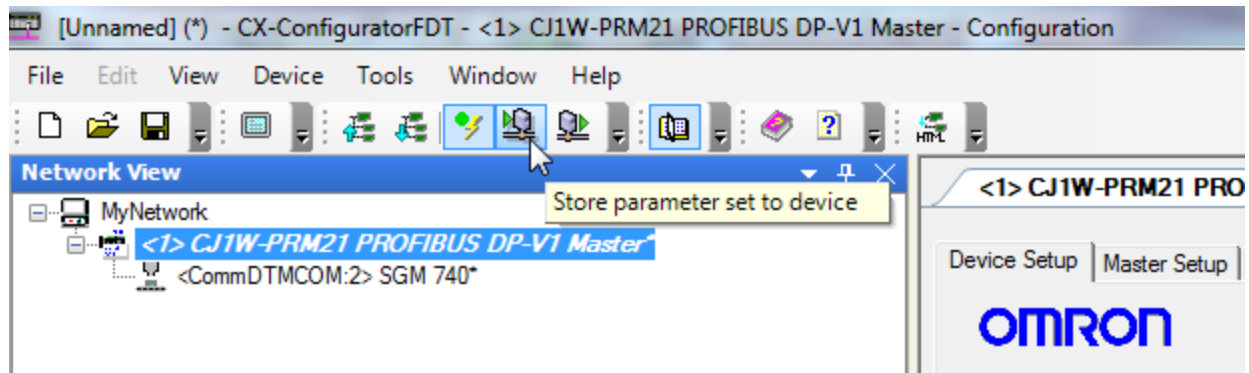
Click on **Save** to save the settings.



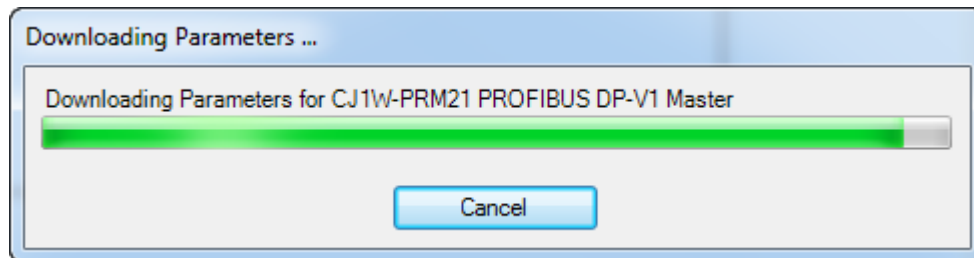
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Click to select the **CJ1W-PRM21 Profibus DP-V1 Master** and click on the button **Store parameters set to device**.




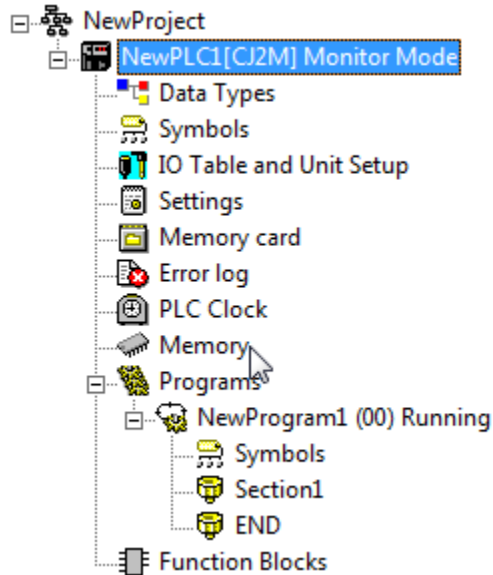
Say **Yes** to the pop-up and the downloading will start.



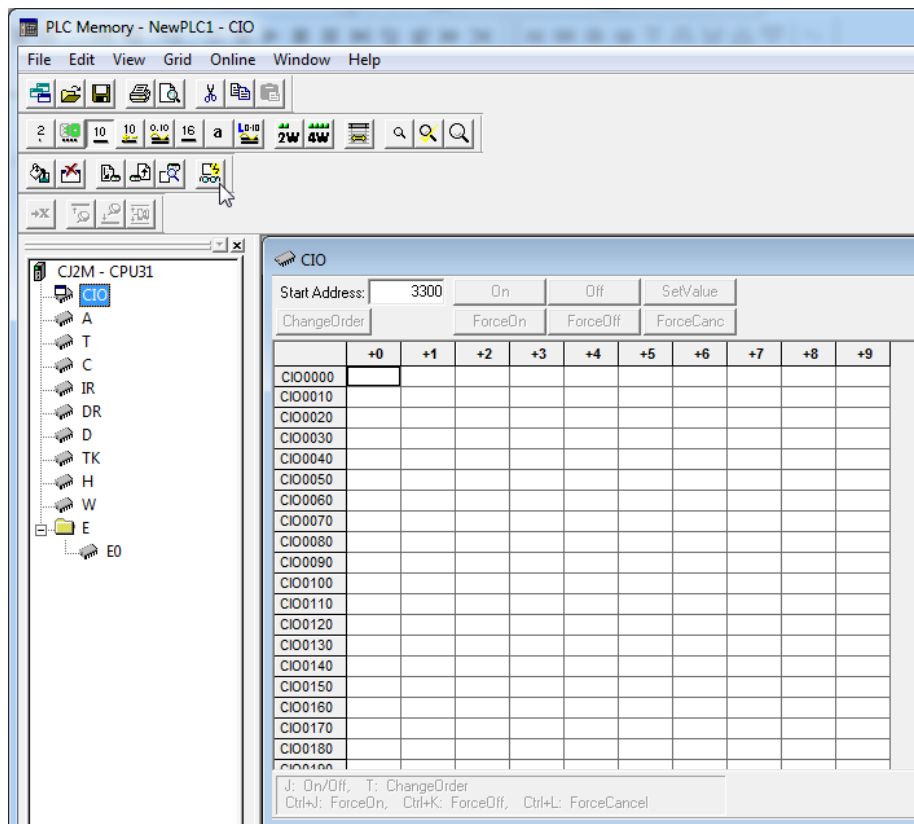
When the downloading is completed, say **Yes** to the pop-up and the PLC will switch back to RUN Mode.

CX-Programmer 2

Go back to CX-Programmer, set the PLC into Monitor Mode by clicking on  and double click on **Memory**.



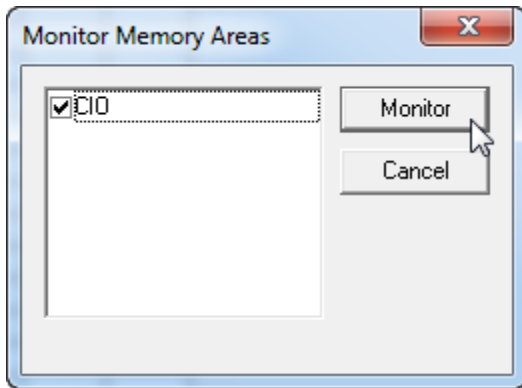
Double click on **CIO**, set **Start Address** to **3300** and click on the **Monitor** button. 



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Connect the SGM740 or SGM840 to an Omron PLC

Click on **Monitor**.



The live data is shown from the SGM740 or SGM840.

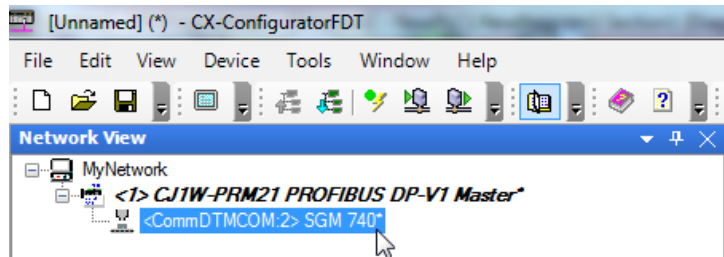
The image shows a software interface for monitoring CIO data. At the top, there is a header "CIO" with a small icon. Below the header, there are several control buttons: "Start Address:" with a text box containing "3300", "On", "Off", "SetValue", "ChangeOrder", "ForceOn", "ForceOff", and "ForceCanc". Below these buttons is a table with 11 columns and 11 rows. The columns are labeled "+0" through "+9". The rows are labeled "CIO3300" through "CIO3390". The table contains numerical data for each address.

| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
|---------|----|-------|------|----|----|------|----|----|----|-------|
| CIO3300 | 0 | 5000 | 8332 | 0 | 8 | 783 | 0 | 0 | 0 | 49996 |
| CIO3310 | 0 | 49996 | 0 | 0 | 0 | 5000 | 0 | 0 | 0 | 0 |
| CIO3320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

GSD file explanation

To make sense of the data, open the GSD file in **Notepad** or use the program **CX-ConfiguratorFDT**.

Double click on **CommDTMCOM:2> SGM 740**.



Click on **GSD** and scroll down to **Module Definitions**. The inputs and outputs are explained in the GSD file.

Inputs

Note: the Start addresses are explained on page 16.

Note: In the examples below the start address of the SGM740 or SGM840 inputs is CIO3300.

```
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, inputs 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)
```

Omron PLC's input addresses have a length of 1 word (2 byte), for example the weight register (double word) has a length of 2 words, so if the start address is CIO3300, so the next data which is the status (word) will start at CIO3302 (2 words further). The table below will show the addresses of all the inputs of the SGM740 or SGM840.

| Address | Description |
|-------------------------|--|
| CIO3300 | Double word, Weight register |
| CIO3302 | Word, Status |
| CIO3303.08 – CIO3303.15 | Byte, Command |
| CIO3303.00 – CIO3303.07 | Byte, Weight select register |
| CIO3304 | Word, Inputs |
| CIO3305 | Word, Outputs |
| CIO3306 | Double word, Preset tare |
| CIO3308 | Double word, Indicator gross x10 |
| CIO3310 | Double word, Indicator net x10 |
| CIO3312 | Double word, Indicator tare x10 |
| CIO3314 | 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 CIO3300 and CIO3301.

```

}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, inputs 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)
    
```

Note: it's possible to choose any of the weight registers listed below, the chosen weight register will show at address CIO3300 and CIO3301 (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 [Set weight register](#).

If the start address of the outputs is CIO3200, the 8 bit weight select register is located at CIO3200.00 to CIO3200.07. In the example below the weight register "Display Net" is chosen. The Display Net value will be shown at address CIO3300 and CIO3301.


```

}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 :
    
```



PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

 CIO

| | | | | |
|----------------|------|---------|----------|-----------|
| Start Address: | 3200 | On | Off | SetValue |
| ChangeOrder | | ForceOn | ForceOff | ForceCanc |

| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
|---------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|------|
| CIO3200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3201 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3202 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0014 |
| CIO3203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 000A |
| CIO3205 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0014 |
| CIO3207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 001E |
| CIO3209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0028 |
| CIO3211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3214 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3215 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3218 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3219 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

J: On/Off, T: ChangeOrder
 Ctrl+J: ForceOn, Ctrl+K: ForceOff, Ctrl+L: ForceCancel

Read status

The status will show at address CIO3302, the following statuses can be read from the SGM740 or SGM840.

```

I092 Module = "SGM740" 0x6A, 0x5F
I093 : Inputs : double word, 32 bit signed integer/float, weight register
I094 :      word, 16 bit status
I095 :      byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I096 :      byte, 8 bit weight select register
I097 :      word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
I098 :      word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
I099 :
I100 :      double word, 32 bit signed integer, preset tare
I101 :
I102 :      double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
I103 :      double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
I104 :      double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
I105 :      double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
I106 :
I107 :      Outputs:      byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I108 :      byte, 8 bit weight select register
I109 :
I110 :      double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
I111 :
I112 :      double word, 32 bit signed integer, level 1
I113 :      double word, 32 bit signed integer, level 2
I114 :      double word, 32 bit signed integer, level 3
I115 :      double word, 32 bit signed integer, level 4
I116 :
I117 :      status bit definition
I118 :      1 = hardware overload detected
I119 :      2 = overload detected
I120 :      3 = stable signal
I121 :      4 = in stable range
I122 :      5 = zero corrected
I123 :      6 = center of zero
I124 :      7 = in zero range
I125 :      8 = zero tracking possible
I126 :      9 = tare active
I127 :      10 = preset tare active
I128 :      11 = new sample available
I129 :      12 = calibration invalid
I130 :      13 = calibration enabled
I131 :      14 = user certified operation
I132 :      15 = reserved
I133 :      16 = reserved
I134 :
    
```

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

| CIO | | | | | | | | | | | | | | | | | |
|----------------|------|----|----|---------|----------|-----------|---|---|---|---|---|---|---|---|---|---|------|
| Start Address: | 3300 | | | On | Off | Set/Value | | | | | | | | | | | |
| ChangeOrder | | | | ForceOn | ForceOff | ForceCanc | | | | | | | | | | | |
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
| CIO3300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3301 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1389 |
| CIO3302 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | | 208C |
| CIO3303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0008 |
| CIO3305 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 030F |
| CIO3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

Read commands

The commands will show at address CIO3303.08 to CIO3303.15 (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, inputs 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 SGM740 or SGM840.

```

}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
    
```

In the example below the "Tare on" is on.

| CIO | | | | | | | | | | | | | | | | | |
|----------------|------|----|---------|----------|-----------|----|---|---|---|---|---|---|---|---|---|---|------|
| Start Address: | 3300 | | On | Off | SetValue | | | | | | | | | | | | |
| ChangeOrder | | | ForceOn | ForceOff | ForceCanc | | | | | | | | | | | | |
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
| CIO3300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3301 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3302 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 21CC |
| CIO3303 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0800 |
| CIO3304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0008 |
| CIO3305 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 030F |
| CIO3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

To set the commands, please see [Set commands](#) for instructions.

Read weight select register

The weight select register will show at address CIO3303.00 to CIO3303.07 (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, inputs 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 SGM740 or SGM840.

```

}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
    
```

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

| CIO | | | | | | | | | | | | | | | | | |
|----------------|------|----|----|---------|----------|-----------|---|---|---|---|---|---|---|---|---|---|------|
| Start Address: | 3300 | | | On | Off | SetValue | | | | | | | | | | | |
| ChangeOrder | | | | ForceOn | ForceOff | ForceCanc | | | | | | | | | | | |
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
| CIO3300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3301 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3302 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 21CC |
| CIO3303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0008 |
| CIO3305 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 030F |
| CIO3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

To set the weight select register, please see [Set weight select register](#) for instructions.

Read inputs

The 3 inputs of the SGM740 or SGM840 will show at address CIO3304.00 to CIO3304.02.

```

I092 Module = "SGM740" 0x6A, 0x5F
I093 : Inputs : double word, 32 bit signed integer/float, weight register
I094 : word, 16 bit status
I095 : byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I096 : byte, 8 bit weight select register
I097 : word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
I098 : word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
I099 :
I100 : double word, 32 bit signed integer, preset tare
I101 :
I102 : double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
I103 : double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
I104 : double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
I105 : double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
I106 :
I107 : Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I108 : byte, 8 bit weight select register
I109 :
I110 : double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
I111 :
I112 : double word, 32 bit signed integer, level 1
I113 : double word, 32 bit signed integer, level 2
I114 : double word, 32 bit signed integer, level 3
I115 : double word, 32 bit signed integer, level 4
I116 :
    
```

In the Example below input 1 is on.

| CIO | | | | | | | | | | | | | | | | | |
|----------------|------|----|----|---------|----------|-----------|---|---|---|---|---|---|---|---|---|---|------|
| Start Address: | 3300 | | | On | Off | SetValue | | | | | | | | | | | |
| ChangeOrder | | | | ForceOn | ForceOff | ForceCanc | | | | | | | | | | | |
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
| CIO3300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3301 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0028 |
| CIO3302 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 24CC |
| CIO3303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0009 |
| CIO3305 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 030F |
| CIO3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

Read outputs

The 4 outputs of the SGM740 or SGM840 will show at address CIO3305.00 to CIO3305.03.

```
!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, inputs 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 :
```

In the example below output 1 is on.

| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
|---------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|------|
| CIO3300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3301 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0001 |
| CIO3302 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 20DC |
| CIO3303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0008 |
| CIO3305 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0301 |
| CIO3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

Read Preset Tare

The Preset Tare value will show at address CIO3306 to CIO3307.

```

I092 Module = "SGM740" 0x6A, 0x5F
I093 : Inputs : double word, 32 bit signed integer/float, weight register
I094 :     word, 16 bit status
I095 :     byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I096 :     byte, 8 bit weight select register
I097 :     word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
I098 :     word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
I099 :
I100 :     double word, 32 bit signed integer, preset tare
I101 :
I102 :     double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
I103 :     double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
I104 :     double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
I105 :     double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
I106 :
I107 : Outputs:  byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I108 :     byte, 8 bit weight select register
I109 :
I110 :     double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
I111 :
I112 :     double word, 32 bit signed integer, level 1
I113 :     double word, 32 bit signed integer, level 2
I114 :     double word, 32 bit signed integer, level 3
I115 :     double word, 32 bit signed integer, level 4
I116 :
    
```

In the example below the Preset Tare value is 10.

| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
|---------|----|------|-------|-----|----|-----|----|----|----|------|
| CIO3300 | 0 | 201 | 10204 | 4 | 8 | 783 | 0 | 10 | 0 | 2111 |
| CIO3310 | 0 | 2011 | 0 | 100 | 0 | 201 | 0 | 0 | 0 | 0 |
| CIO3320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

To set the preset tare, please see [Set preset tare](#) for instructions.

PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

Read indicator gross x 10

The indicator gross x 10 value will show at address CIO3308 to CIO3309.

```
!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, inputs 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 :
```

In the example below the gross x 10 value is 2509.

| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
|---------|----|-----|------|------|----|-----|----|----|----|------|
| CIO3300 | 0 | 40 | 8668 | 4 | 8 | 783 | 0 | 10 | 0 | 2509 |
| CIO3310 | 0 | 403 | 0 | 2106 | 0 | 40 | 0 | 0 | 0 | 0 |
| CIO3320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

Read indicator net x 10

The indicator net x 10 value will show at address CIO3310 to CIO3311.

```
!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, inputs 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 :
```

In the example below the net x 10 value is 403.

| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
|---------|----|-----|------|------|----|-----|----|----|----|------|
| CIO3300 | 0 | 40 | 8668 | 4 | 8 | 783 | 0 | 10 | 0 | 2509 |
| CIO3310 | 0 | 403 | 0 | 2106 | 0 | 40 | 0 | 0 | 0 | 0 |
| CIO3320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

Read indicator tare x 10

The indicator tare x 10 value will show at address CIO3312 to CIO3313.

```

I092 Module = "SGM740" 0x6A, 0x5F
I093 : Inputs : double word, 32 bit signed integer/float, weight register
I094 : word, 16 bit status
I095 : byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I096 : byte, 8 bit weight select register
I097 : word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
I098 : word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
I099 :
I100 : double word, 32 bit signed integer, preset tare
I101 :
I102 : double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
I103 : double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
I104 : double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
I105 : double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
I106 :
I107 : Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I108 : byte, 8 bit weight select register
I109 :
I110 : double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
I111 :
I112 : double word, 32 bit signed integer, level 1
I113 : double word, 32 bit signed integer, level 2
I114 : double word, 32 bit signed integer, level 3
I115 : double word, 32 bit signed integer, level 4
I116 :

```

In the example below the tare x 10 value is 2106.

| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
|---------|----|-----|------|------|----|-----|----|----|----|------|
| CIO3300 | 0 | 40 | 8668 | 4 | 8 | 783 | 0 | 10 | 0 | 2509 |
| CIO3310 | 0 | 403 | 0 | 2106 | 0 | 40 | 0 | 0 | 0 | 0 |
| CIO3320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



PENKO How to...

Connect the SGM740 or SGM840 to an Omron PLC

Read multirange weight

The indicator multirange weight value will show at address CIO3314 to CIO3315.

```

I092 Module = "SGM740" 0x6A, 0x5F
I093 : Inputs : double word, 32 bit signed integer/float, weight register
I094 :         word, 16 bit status
I095 :         byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I096 :         byte, 8 bit weight select register
I097 :         word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
I098 :         word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
I099 :
I100 :         double word, 32 bit signed integer, preset tare
I101 :
I102 :         double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
I103 :         double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
I104 :         double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
I105 :         double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
I106 :
I107 : Outputs:  byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
I108 :         byte, 8 bit weight select register
I109 :
I110 :         double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
I111 :
I112 :         double word, 32 bit signed integer, level 1
I113 :         double word, 32 bit signed integer, level 2
I114 :         double word, 32 bit signed integer, level 3
I115 :         double word, 32 bit signed integer, level 4
I116 :

```

In the example below the multirange weight value is 40.

| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
|---------|----|-----|------|------|----|-----|----|----|----|------|
| CIO3300 | 0 | 40 | 8668 | 4 | 8 | 783 | 0 | 10 | 0 | 2509 |
| CIO3310 | 0 | 403 | 0 | 2106 | 0 | 40 | 0 | 0 | 0 | 0 |
| CIO3320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Outputs

Note: the Start addresses are explained on page 15.

Note: In the examples below the start address of the SGM740 or SGM840 outputs is CIO3200.

```

; 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
;

```

Omron PLC's output addresses have a length of 1 word (2 bytes), for example the command (high byte) has a length of 1 byte, so if the start address is CIO3200.08 – CIO3200.15, the next data which is the Weight select register (low byte) will start at CIO3200.00 – CIO3200.07. The table below will show the addresses of all the outputs of the SGM740 or SGM840.

| Address | Description |
|-------------------------|------------------------------|
| CIO3200.08 – CIO3200.15 | Byte, Command |
| CIO3200.00 – CIO3200.07 | Byte, Weight select register |
| CIO3201 | Double word, Preset tare |
| CIO3203 | Double word, Level 1 |
| CIO3205 | Double word, Level 2 |
| CIO3207 | Double word, Level 3 |
| CIO3209 | Double word, Level 4 |

Set commands

The commands will start at address CIO3200.08 to CIO3200.15 (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, inputs 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
    
```

In the example below the command “Tare On” is given to the SGM740 or SGM840.

| CIO | | | | | | | | | | | | | | | | | |
|----------------|------|----|----|---------|----------|-----------|---|---|---|---|---|---|---|---|---|---|------|
| Start Address: | 3200 | | | On | Off | SetValue | | | | | | | | | | | |
| ChangeOrder | | | | ForceOn | ForceOff | ForceCanc | | | | | | | | | | | |
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
| CIO3200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0800 |
| CIO3201 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0001 |
| CIO3202 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0002 |
| CIO3203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3205 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| CIO3206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0006 |

To check if the SGM740 or SGM840 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 CIO3200.00 to CIO3200.07 (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, inputs 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
    
```

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

| CIO | | | | | | | | | | | | | | | | | |
|----------------|------|----|----|---------|----------|-----------|---|---|---|---|---|---|---|---|---|---|------|
| Start Address: | 3200 | | | On | Off | SetValue | | | | | | | | | | | |
| ChangeOrder | | | | ForceOn | ForceOff | ForceCanc | | | | | | | | | | | |
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
| CIO3200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0004 |
| CIO3201 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0001 |
| CIO3202 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0002 |

To check if the SGM740 or SGM840 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 CIO3201 to CIO3202.

Note: to change the value of the preset tare, command bit 5 (preset tare command) must be set. The address will be CIO3200.12.

```

J092 Module = "SGM740" 0x6A, 0x5F
J093 ; Inputs : double word, 32 bit signed integer/float, weight register
J094 : word, 16 bit status
J095 : byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J096 : byte, 8 bit weight select register
J097 : word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
J098 : word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
J099 :
J100 : double word, 32 bit signed integer, preset tare
J101 :
J102 : double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
J103 : double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
J104 : double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
J105 : double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
J106 :
J107 ; Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J108 : byte, 8 bit weight select register
J109 :
J110 : double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
J111 :
J112 : double word, 32 bit signed integer, level 1
J113 : double word, 32 bit signed integer, level 2
J114 : double word, 32 bit signed integer, level 3
J115 : double word, 32 bit signed integer, level 4
J116 :
    
```

In the example below the preset tare is set to 20.

| CIO | | | | | | | | | | |
|----------------|------|----|---------|----------|-----------|----|----|----|----|----|
| Start Address: | 3210 | | On | Off | SetValue | | | | | |
| ChangeOrder | | | ForceOn | ForceOff | ForceCanc | | | | | |
| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
| CIO3200 | 4100 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 30 | 0 |
| CIO3210 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

To check if the SGM740 or SGM840 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 CIO3203 to CIO3204.

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 CIO3200.14 and CIO3200.15.

```

J092 Module = "SGM740" 0x6A, 0x5F
J093 ; Inputs : double word, 32 bit signed integer/float, weight register
J094 : word, 16 bit status
J095 : byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J096 : byte, 8 bit weight select register
J097 : word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
J098 : word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
J099 :
J100 : double word, 32 bit signed integer, preset tare
J101 :
J102 : double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
J103 : double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
J104 : double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
J105 : double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
J106 :
J107 ; Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J108 : byte, 8 bit weight select register
J109 :
J110 : double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
J111 :
J112 : double word, 32 bit signed integer, level 1
J113 : double word, 32 bit signed integer, level 2
J114 : double word, 32 bit signed integer, level 3
J115 : double word, 32 bit signed integer, level 4
J116 :
    
```

In the example below the setpoint for level 1 is set to 10.

| CIO | | | | | | | | | | | |
|----------------|------|----|---------|----------|-----------|----|----|----|----|----|--|
| Start Address: | 3210 | | On | Off | SetValue | | | | | | |
| ChangeOrder | | | ForceOn | ForceOff | ForceCanc | | | | | | |
| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 | |
| CIO3200 | 4100 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 30 | 0 | |
| CIO3210 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

Set level 2

The Setpoint for level 2 can be set at address CIO3205 to CIO3206.

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 CIO3200.14 and CIO3200.15.

```

}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, inputs 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 :
    
```

In the example below the setpoint for level 2 is set to 20.

| CIO | | | | | | | | | | | |
|----------------|------|----|---------|----------|-----------|----|----|----|----|----|--|
| Start Address: | 3210 | | On | Off | SetValue | | | | | | |
| ChangeOrder | | | ForceOn | ForceOff | ForceCanc | | | | | | |
| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 | |
| CIO3200 | 4100 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 30 | 0 | |
| CIO3210 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

Set level 3

The Setpoint for level 3 can be set at address CIO3207 to CIO3208.

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 CIO3200.14 and CIO3200.15.

```

J092 Module = "SGM740" 0x6A, 0x5F
J093 ; Inputs : double word, 32 bit signed integer/float, weight register
J094 : word, 16 bit status
J095 : byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J096 : byte, 8 bit weight select register
J097 : word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
J098 : word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
J099 :
J100 : double word, 32 bit signed integer, preset tare
J101 :
J102 : double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
J103 : double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
J104 : double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
J105 : double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
J106 :
J107 ; Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J108 : byte, 8 bit weight select register
J109 :
J110 : double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
J111 :
J112 : double word, 32 bit signed integer, level 1
J113 : double word, 32 bit signed integer, level 2
J114 : double word, 32 bit signed integer, level 3
J115 : double word, 32 bit signed integer, level 4
J116 :
    
```

In the example below the setpoint for level 3 is set to 30.

| CIO | | | | | | | | | | |
|----------------|------|----|---------|----------|-----------|----|----|----|----|----|
| Start Address: | 3210 | | On | Off | SetValue | | | | | |
| ChangeOrder | | | ForceOn | ForceOff | ForceCanc | | | | | |
| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 |
| CIO3200 | 4100 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 30 | 0 |
| CIO3210 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIO3240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Set level 4

The Setpoint for level 4 can be set at address CIO3209 to CIO3210.

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 CIO3200.14 and CIO3200.15.

```

J092 Module = "SGM740" 0x6A, 0x5F
J093 ; Inputs : double word, 32 bit signed integer/float, weight register
J094 : word, 16 bit status
J095 : byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J096 : byte, 8 bit weight select register
J097 : word, 16 inputs 1..16, inputs 4-16 are virtual inputs generated by software
J098 : word, 16 outputs 201..216, outputs 5-16 are virtual outputs generated by software
J099 :
J100 : double word, 32 bit signed integer, preset tare
J101 :
J102 : double word, 32 bit signed integer/float, indicator gross x10(same as weight select register 9)
J103 : double word, 32 bit signed integer/float, indicator net x10(same as weight select register 10)
J104 : double word, 32 bit signed integer/float, indicator tare x10(same as weight select register 13)
J105 : double word, 32 bit signed integer/float, multirange weight(same as weight select register 0)
J106 :
J107 ; Outputs: byte, 8 bit command (if addressed as word high byte is command, low byte is select register)
J108 : byte, 8 bit weight select register
J109 :
J110 : double word, 32 bit signed integer, preset tare. Setup this register and at rising edge of command bit 5 preset tare is activated.
J111 :
J112 : double word, 32 bit signed integer, level 1
J113 : double word, 32 bit signed integer, level 2
J114 : double word, 32 bit signed integer, level 3
J115 : double word, 32 bit signed integer, level 4
J116 :
    
```

In the example below the setpoint for level 4 is set to 40.

| CIO | | | | | | | | | | | |
|----------------|------|----|---------|----------|-----------|----|----|----|----|----|--|
| Start Address: | 3210 | | On | Off | SetValue | | | | | | |
| ChangeOrder | | | ForceOn | ForceOff | ForceCanc | | | | | | |
| | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 | |
| CIO3200 | 4100 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 30 | 0 | |
| CIO3210 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CIO3240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |



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.

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