# PENKO Engineering B.V.

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Manual: SGM800 Digitizer



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### SGM800 Digitizer IMPORTANT SAFETY INFORMATION

#### **READ THIS PAGE FIRST!**

and international standards. It is vital that maintenance procedures for this product. this instrument is correctly installed, used, and maintained to ensure it continues to operate to its optimum specification.

to and incorporated into your safety when installing. program using. and maintaining Penko products. Failure to follow the recommended instructions can affect the system's safety and may increase the risk of serious personal injury, property damage, damage to this instrument and may invalidate the product's warranty.

Read the instructions fully prior to installing. operating, or servicing the product. If this Instruction Manual is not the correct manual for the Penko product you are using, call 0031(0)318-525630 for a replacement copy. Keep this Instruction Manual in a safe place for future reference.

• If you do not fully understand these instructions, contact Penko vour representative for clarification.

• Pay careful attention to all warnings, cautions, and instructions marked on and supplied with the product.

Penko Engineering manufactures and tests • Inform and educate your personnel about its products to meet all applicable national the correct installation, operation, and

• Install your equipment as specified in the installation instructions of the appropriate Instruction Manual and as per applicable The following instructions must be adhered local and national codes. Connect all products to the proper electrical sources.

> • To ensure correct performance, use qualified personnel to install, operate, update, program, and maintain the product.

> • When replacement parts are required, ensure that gualified technicians use replacement parts specified by Penko. Unauthorized components and procedures can affect the product's performance and may affect the continued safe operation of your processes. The use of non-specified 'lookalike' substitution parts may result in the risk of fire, electrical hazards, or improper operation.

> • Ensure that all equipment doors are closed and protective covers are in place, except when maintenance is being performed by qualified persons, to prevent electrical shock and personal injury.

#### WARNING

#### ELECTRICAL SHOCK HAZARD

Installing cable connections and servicing this instrument require access to shock hazard level voltages which can cause death or serious injury.

Disconnect separate or external power sources to relay contacts before commencing any maintenance.

The electrical installation must be carried out in accordance with CE directions and/or any other applicable national or local codes.

Unused cable conduit entries must be securely sealed by non-flammable blanking plates or blind grommets to ensure complete enclosure integrity in compliance with personal safety and environmental protection requirements.

To ensure safety and correct performance this instrument must be connected to a properly grounded, three-wire power source.

Proper relay use and configuration is the responsibility of the user.

Do not operate this instrument without the front cover being secured. Refer any installation, operation or servicing issues to qualified personnel.

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6.15 Calibration settings

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### 1. Load cell / power connection

### 1.1 SGM800 basic digitizer

This product is intended to be supplied by a Class 2 or Limited Power Source, rate 18 - 32 Vdc, 0.2A@24Vdc.

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the analog output don't work.

### 1. Load cell / power connection

### 1.2 SGM810 digitizer analog

reference point, e.g. the din rail. interfaces must be earthed to a The shields of all connected Example:



This product is intended to be supplied by a Class 2 or Limited Power Source, rate 18 - 32 Vdc, 0.2A@24Vdc.

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When the SGM800 is powered by USB (not 24Vdc) the loadcell interface and the analog output don't work.









2. Indication of Display

### With cover closed



- 2. Zero active
- 3. Tare active

5. Weigher value

### With cover opened



Functions of these keys will be described on the next page.

### 3. Explanation of front keys

All keys have different functions depending if you are in weighing or menu mode.



Pressing key 1 "short".

In Weighing mode: create a new zero level. In Menu mode: increase value by 1 or move up in menu.



Pressing key 1 "long". In Weighing mode: reset zero level to the original zero level. In Menu mode: decrease value by 1 or move down in menu.



Pressing key 2 "short". In Weighing mode: set/ reset tare and reset preset tare. In Menu mode: go into sub-menu or move cursor 1 position to the left.



*Pressing key 2 "long".* In Weighing mode: set preset tare. In Menu mode: move cursor 1 position to the right.



*Pressing key* 3 *"short".* In Weighing mode: enter menu.

In Menu mode: escape move back in menu without saving changes.



Pressing key 3 "long".

In Weighing mode: enter configuration menu.

In Menu mode: Confirm made changes.

Menu will jump back one level every 30 seconds of inactivity.



### 4. First use of indicator

### 4.1 First use of indicator -Configuration menu structure-

Fun	setpoint function settings (not for SGM810 or controller)
ACn	setpoint action settings (not for SGM810 or controller)
dAC	Analog output settings
485	Local bus communication settings (RS485)
Eth	Ethernet settings (SGM820 only)
CAn	Can bus port settings (SGM830 only)
Pb	Profibus settings (SGM840 only)
232	RS232 port settings (SGM850 only)
422	RS422 port settings (SGM850 only)
Ind	Indicator settings
rng	Multi range/interval settings
FIL	Filter settings
dSF	Digital filter settings
PCL	Pre-calibration settings
CAL	Calibration settings
tCL	Theoretic calibration
gCL	Geographic calibration
CLo	Date and time configuration
rcL	Recall
SoF	Firmware update



### 4. First use of indicator

### 4.2 Display indication at startup

### The start

Turn the indicator on by connecting it to the power supply.

A series of display will appear:



**Dislay test.** All LED will turn on to confirm that the device display is functioning correctly.



**Model Name.** This shows the model name of the device (in this case a SGM820 Ethernet).



**Software version.** This is the software version installed in the device.



**Software update counter.** The number of times that the software of the device is updated.



**TAC code.** The Traceable Access Code is the counter that keeps track how many times indicator setting are changed.



**CAL Code.** The Calibration code is the counter that keeps track how many times the calibration setting are changed.



**Delay time.** The delay time is warming up. This is needed for certification. The counter will count back from 180 to 0.



### 4. First use of indicator

### 4.3 First use of indicator -Weigher settings-

Set up the correct indicator setting (step size and decimal point position).

Turn the indicator on by connecting it to the power supply.

Press key 3 for >2 sec. to get in to Configuration Menu.





(In SGM810 or controller)

Go to the Indicator parameters pressing key 1 <2 sec.



Go into the Indicator parameters pressing key 2.



Use **Ind 1** to set the **maximum net weight value**. Set maximum load to prevent overload by the user. The indicator will not show any weight above the filled in value. Range: 0 - full display.

To change the value, press key 2 <2 sec.



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



### First use of indicator -continue-

When the maximum net weight value is set succesfully, the following screen is visible:



#### Display step size

Press key 1 <2 sec. untill you see Ind 5 and press key 2 <2 sec.



Use **Ind 5** to set the **display step size**. The step size defines the scaled parts of the weight value. The display value will be rounded off to the nearest value with a valid step size.

Use key 1 to select the correct step size.

Choose between 1, 2, 5, 10, 20, 50, 100, 200, 500 and confirm by pressing key 3 for >2 sec.



Done succesfully, the following screen is visible:



### Decimal point

To set the Decimal point position, enter Ind 6 by pressing key 2 <2 sec.



The following screen is visible:



### First use of indicator -continue-

Press key 1 to define the point position and confirm by pressing key 3 for >2 sec.



Done succesfully, the following screen is visible:



Press key 3 <2 sec to go back to **Configuration Menu**.



Press key 3 <2 sec to go back to **main weigher display**.





First use of indicator -continue-

### 4.4 First use of indicator -Calibration-

Press key 3 for >2sec. to get in to Configuration Menu.





(In SGM810 or controller)

Go to the Calibration parameters by pressing key 1 <2 sec. until you see - - - CAL



Check and delete calibration points.

To enter the Calibration settings, press key 2 <2 sec.



The following screen is visible:



Press key 1 <2 sec. to go to CAL 3 and press key 2 <2 sec.



Use **CAL 3** to **check and delete all existing calibration points**. Step through the calibration points with key 1. Delete a calibration point by pressing key 3 >3 sec.



During deletions, the following screen is visible:



### First use of indicator -continue-

#### Calibration Settings -continue-

When a number is shown, the deletion of one calibration point is completed and more points need to be deleted. Press key 3 >3 sec to do so.



When all calibration points are deleted, the following screen is visible:



#### Entering new calibration points.

Use key 1 <2 sec. to go to CAL 1 and press key 2 <2 sec.



After entering, the following screen is visible:



And will automatically jump to:



First calibrate the **zero point (CP1)**. Make sure the weigher is unloaded and press key 3 >2 sec.





### First use of indicator -continue-

#### Calibration Settings -continue-

The indicator now shows CP2 to calibrate the gain point (CP2).



And will automatically jump to:



Use key 1 and key 2 to enter the reference value. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Load the weigher with the reference value and press key 3 > 2 sec.





Press key 3 <2 sec. to go back to **Configuration Menu.** 



Press key 3 <2 sec. to go back to main weigher display.





### First use of indicator -continue-

#### 4.5 First use by using PI Mach II software

The SGM can also be configured for first use by using PI mach II software.

Download Penko Suite from the PENKO website (http://www.penko.com/db/ downloads/) and install Penko Suite. The following items will be installed:

\*Pi Mach II \*Job Manager XE \*Drivers \*Manuals Program Interface to configure all Penko devices Version Control System for Pi Mach II projects USB drivers for latest series Penko devices Product manuals and protocol descriptions

After installing, connect the SGM800 to the computer using an A-B USB cable.



Start Pi Mach II.



The SGM800 will be found and connected. This is shown in the status bar (lower left corner).



If there appears a USB error, connect the device manually: Go to Environment - Communication





### First use of indicator -continue-

#### First use by using PI Mach II software -continue-

#### The following screen appears:

Communication Setup	×
Comport Ethernet Usb	
Connected usb device(s) SGM700 Digitizer	OK
	Cancel
Discover	

In the Usb tab sheet click Discover, select the SGM800 Digitizer and click OK. If this doesn't work, make sure other USB devices like mobile phones are disconnected from the PC.

In case of Windows 8, a USB driver manual is available in the Penko Suite.

In the communication setup it's also possible to connect the SGM820 through Ethernet. Set the IP-address of the SGM820 in range with the PC (see chapter 6.5 of this manual) and fill in the IP-address in tab "Ethernet".

When communication is established go to Manage.

The following tree is shown:



TS> Manage



### First use of indicator -continue-

#### First use by using PI Mach II software -continue-

Go to Start Quick setup and click the button:

⊡- Penko ⊡- Device root ⊡- SGM720 Ethernet	Class: Penko.Device root.SGM720 Ethernet Path: 1.1.1
	Name
⊕ Live ⊕ System	Start Quick setup
System Setup     Ontrol	Enable Full setup

#### The following tree is shown:

Penko
Quick Setup
Step 1, Weigher Parameters
Step 2, Indicator setup
Step 3, Calibrate
Step 4, Communication
Done

#### Use step 1 to set the Weigher Parameters:

<ul> <li>□- Penko</li> <li>□- Quick Setup</li> <li>□- Step 1, Weigher Parameters</li> </ul>	Class: Penko.Quick Setup.Step 1, Weigher Parameters Path: 1.1.1			
<ul> <li>Step 2, Indicator setup</li> <li>Step 3, Calibrate</li> <li>Step 4, Communication</li> </ul>	Unit	kg		
. Done	Decimal point	000.000		
	Step	STEP 1		
	Maxload	10,009 kg		

The settings you can make are:

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Unit: set the weigher unit (kg, lbs, T, etc.) this will be shown in Pl.

Decimal point: Set the decimal point to show the correct weigher value.

Step: Choose between 1, 2, 5, 10, 20, 50, 100, 200, 500

**Maxload:** Set maximum load to prevent overload by the user. The indicator will not show any weight above the filled in value. Range: 0 – 9999999.

### First use of indicator -continue-

#### First use by using PI Mach II software -continue-

Use step 2 to select the type of indicator:

⊡ Penko ⊡ Quick Setup ⊡ Step 1, Weigher Parameters	Class: Penko.Quick Setup.Step 2, Indicator setup Path: 1.1.2			
Step 2, Indicator setup     Step 3, Calibrate     Step 4, Communication     Step 4, Communication     Done	Application	Unknown		

Set the type of weighing the SGM will be used for.

This will automaticly set the most common filter settings to get a stable weigher signal. The options are: Unknown, Standard indicator, Fast indicator, Silo, Platform, Belt slow, Belt fast, Filling slow, Filling fast, Checkweigher slow or Checkweigher fast.

Use step 3 to calibrate the indicator:

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### First use of indicator -continue-

First use by using PI Mach II software -continue-

Use step 4 to set the communication (different for every type): **SGM820 (Ethernet):** 

⊡ Penko ⊡ Quick Setup ⊕ Step 1, Weigher Parameters	Class: Penko.Quick Setup.S Path: 1.1.4.2	tep 4, Communication.Ethernet
	MAC	00:03:64:02:DD:81
. Ethernet 	Name	Penko
	Address	192 . 168 . 151 . 19
	Mask	255 . 255 . 255 . 0
	Gateway	0.0.0.0
	DHCP	DISABLE

Here you can set:

**Name:** here you can give the SGM820a name. Example "platform 1". **Address:** set the IP-address for the SGM820.

Mask: set the subnetmask for the SGM820.

Gateway: set the Gateway for the SGM820.

**DHCP:** Disable/enable DHCP. When enabled the SGM820 will genarate an IP-address for itself.

#### SGM830 (CANBUS):



#### First use of indicator -continue-

First use by using PI Mach II software -continue-

Here you can set:

**Protocol:** set the Protocol for CANBUS. options are None or Buslink. **Buslink Address:** Set the Buslink Address for the communication between PENKO devices.

**Buslink Subaddress:** Set the Buslink Subaddress for the communication between PENKO devices.

**Baudrate:** Set the commication speed of the SGM830 options are: 100k, 125k, 250k, 500k. (the speed of all PENKO devices in the communication bus must be the same).

#### SGM840 (PROFIBUS):

⊡- Penko ⊡- Quick Setup ⊕- Step 1, Weigher Parameters	Class: Penko.Quick Setup.Step 4, Communication.Profibus Path: 1.4.4.8		
	Address	11	
Profibus 	Format	Integer 💌	
1.4.4.8.2 Format = Integer			

Here you can set:

Address: Set the Profibus address of the SGM840

**Format:** Set the format of the values sent over Profibus (Integer or Floating Point)



### First use of indicator -continue-

First use by using PI Mach II software -continue-

#### SGM850 (Serial):



Here you can set (for both RS232 and RS422):

**Protocol:** Set the Protocol that is used on the serial port. Options are: None, Printerm ASCII, NPV Slave, Mudbus RTU, Modbus ASCII.

Address: set the address of the SGM850 on the communication bus.

Stopbits: set the stopbits of the SGM850 on the communication bus.

**Paritiy:** set the parity of the SGM850 on the communication bus. Options are: None, Odd, Even, Mark, Space.

**Baudrate:** set the speed cummunication of the SGM850. Options are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

Indicator: Set the Indicator that is sent out over the communication bus.



#### First use of indicator -continue-

#### First use by using PI Mach II software -continue-

Use Done to finish the quick setup. Click End Quick setup:



Click Enable Full setup to gain access to all settings (optional):

⊡- Penko ⊡- Device root ⊟- SGM720 Ethernet	Class: Penko.Device root.SGM720 Ethernet Path: 1.1.1
- 1.1.1.1 Name =	
	Name
	Start Quick setup
E- Control	Enable Full setup

The following tree is shown and gives access to all settings:





### 5. Main Menu

In the Main menu you can change the **Setpoints** (this option is not available in the SGM810 or controllers), display the **TAC** code and display the **CAL** code.

#### 5.1 Setpoints. (this option is not available in the SGM810)

The SGM800 has four outputs that can switch on/off on different levels. These levels have to be filled in at the setpoint menu.

Press key 3 <2 sec. to go into the Main menu.



Press key 2 <2sec. to the setpoint change menu.



Press key 1 <2 sec. to select a diffrent setpoint (1-4). Press key 2 <2 sec. to change the selected setpoint. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Press key 3 >2sec. to confirm.



When the selected setpoint is changed, the display changes to the next setpoint.



### Main Menu -continue-

When done with changing the setpoints press key 3 <2 sec to go back to the **main weigher display** 



#### 5.2 TAC code (Traceable Acces Code).

The SGM800 has a TAC code inside. TAC code is number of times the indicator data is changed. When an indicator gets certified this number will be written on the device and is used by the controlling agency to see if the settings aren't changed after sealing.

To check out the **TAC code** Press key 3 <2 sec. to go into the **Main menu**.



Press key 1 <2sec. to the dtAC menu and press key 2 <2sec. to enter.



The following screen will show the actual TAC code.



Press Key 3 <2 sec. to go back to the main menu.



Press key 3 <2 sec. to go back to the main weigher display.



#### Main Menu -continue-

#### 5.2 CAL code (Calibration counter).

The SGM800 has a CAL code inside. CAL code is the number of times the calibration is changed. When an indicator gets certified this number will be written on the device and is used by the controlling agency to see if the settings aren't changed after sealing.

To check out the CAL code Press key 3 <2 sec. to go into the Main menu.



Press key 1 <2sec. 2x to the dCAL menu and press key 2 <2sec. to enter.



The following screen will show the actual CAL code.



Press Key 3 <2 sec. to go back to the main menu.



Press key 3 <2 sec. to go back to the main weigher display.





### 6. Configuration Menu

Press button 3 >2 sec to enter the Configuration Menu.



In the Configuration Menu the following options are available:

Fun	setpoint function settings (not for SGM810 or controller)
ACn	setpoint action settings (not for SGM810 or controller)
dAC	Analog output settings
485	Local bus communication settings (RS485)
Eth	Ethernet settings (SGM820 only)
CAn	Can bus port settings (SGM830 only)
Pb	Profibus settings (SGM840 only)
232	RS232 port settings (SGM850 only)
422	RS422 port settings (SGM850 only)
Ind	Indicator settings
rng	Multi range/interval settings
FIL	Filter settings
dSF	Digital filter settings
PCL	Pre-calibration settings
CAL	Calibration settings
tCL	Theoretic calibration
gCL	Geographic calibration
CLo	Date and time configuration
rcL	Recall
SoF	Firmware update

Scroll thru the menu options pressing key 1 and enter a sub-menu pressing key 2 <2 sec.



### **Configuration Menu - Fun-**

### 6.1 - - - Fun setpoint function settings (not for SGM810 or controller)

Configure the weiger mode the outputs has to switch on press key 2 <2 sec to enter the setpoint function settings menu.



Select the output you want to configure pressing key 1 <2 sec. Fun 1= output 1, Fun 2= output 2, Fun 3= output 3 and Fun 4= output 4. Confirm the selected output by pressing key 2 <2 sec.



The following screen is visible:



Scroll thru the weigher function options pressing key 1 and select which weigher mode is needed by pressing key 3 >2sec. (options are: 1-19)

1	Weigher	10	Weigher x 10	1	1		3
2	Fast gross	11	Fast gross x 10	SHORT	LONG		LONG
3	Fast net	12	Fast Net x 10	Up	Down	C	Confirm
4	Display Gross	13	Display Gross x 10				
5	Display Net	14	Display Net x 10				
6	Tare	15	Tare x 10				
7	Peak	16	Peak x 10				
8	Valley	17	Valley x 10				
9	Hold	18	Hold x 10				
		19	Signal				

For further detais on the weigher functions check appendix I

### **Configuration Menu -ACn-**

### 6.2 - - - ACn setpoint action settings (not for SGM810 or controller)

To set the hysteresis for the outputs press key 2 <2 sec to enter the setpoint function settings menu.



Select the output you want to configure pressing key 1 <2 sec. Acn 1= output 1, Acn 2= output 2, Acn 3= output 3 and Acn 4= output 4. Confirm the selected output by pressing key 2 <2 sec.



The following screen is vissable:



Fill in the hysteresis for the outputs. Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.See diagram next page. Choose value between -99999 and 999999.



### Configuration Menu -ACn- -continue-




### Configuration Menu -dAC-

#### 6.3 - - - dAC Analog output settings

In this menu, all analog output parameters can be set (only for SGM810 or when the analog output option is installed).Options are:

dAC 1	Set analog output to minimum level
dAC 2	Set analog output to maximum level
dAC 3	Set analog output to level in percetage
dAC 4	Analog output weigher mode
dAC 5	Zero value for minimum analog output
dAC 6	End value for maximum analog output
dAC 7	Analog output range

Press key 2 <2 sec to enter the analog output settings.



The following screen is visible:



In **dAC 1** you can set the **analog output to its minimum level** for testing purpose.Press key 2 <2 sec to set the analog output to minimum. Press key 3 <2 sec to go back.



The following screen is vissable:





#### Configuration Menu -dAC- -continue-

In **dAC 2** you can set **the analog output to its maximum level** for testing purpose.Press key 2 <2 sec to set the analog output to maximum. Press key 3 <2 sec to go back.



The following screen is vissable:



In dAC 3 you can set the analog output to a level you want for testing purpose. Press key 2 <2 sec.



Fill in the wanted percentage (0000,00-0100,00 using key 1 and key 2. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec. Press key 3 <2 sec. to go back and reset the analog output.



The following screen is vissable:



In dAC 4 you set the weigher mode that the analog output is based on. Press key 2 < 2sec. to enter dAC 4. Scroll thru the weigher function options pressing key 1 and select which weigher mode is needed by pressing key 3 >2sec. (options are:



#### Configuration Menu -dAC- -continue-

The options are:

1	Weigher	10	Weigher x 10
2	Fast gross	11	Fast gross x 10
3	Fast net	12	Fast Net x 10
4	Display Gross	13	Display Gross x 10
5	Display Net	14	Display Net x 10
6	Tare	15	Tare x 10
7	Peak	16	Peak x 10
8	Valley	17	Valley x 10
9	Hold	18	Hold x 10
		19	Signal

For further detais on the weigher functions check appendix I

The following screen will be vissable:



In dAC 5 you set the weigher start value for the analog output. At this value the analog output starts with its minimum value. Press key 2 < 2sec. to enter dAC 5.



Fill in the wanted start weight using key 1 and key 2. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



**Increase Decrease** Left Right

### Configuration Menu -dAC- -continue-

The following screen will be vissable:



In **dAC 6** you set the **weigher end value** for the analog output. At this value the analog output stops with its maximum value. Press key 2 < 2sec. to enter dAC 6.



Fill in the wanted end value using key 1 and key 2. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



The following screen will be vissable:



In **dAC 7** you set **analog output mode**. Press key 2 < 2sec. to enter dAC 7. Scroll thru the weigher function options pressing key 1 and select which analog output mode is needed by pressing key 3 >2sec. (options are: 1-5).



Increase Decrease Confirm



#### Configuration Menu -dAC- -continue-

Options are:

1	RAW	Register value 65535 parts
2	0-24mA	input value 0 to 24 mA will be calculated from 0 to 100,00%
3	0-20mA	input value 0 to 20 mA will be calculated from 0 to 100,00%
4	4-20mA	input value 4 to 20 mA will be calculated from 0 to 100,00%
5	4-24mA	input value 4 to 24 mA will be calculated from 0 to 100,00%

When confirmed the following screen will be vissable:



#### **Configuration Menu -485-**

6.4 - - - 485 Local bus communication settings (RS485)

In this menu, the communication address can be set for communication with multiple devices. Press key 2 <2 sec to enter the settings.



The following screen will be vissable:



In **485 1** you set the **address** of the SGM800. Press key 2 < 2sec. to enter 485 1. Set the address using key 1 and key 2.. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2sec. (options are: 1-32).



#### **Configuration Menu -Eth-**

6.5 - - - Eth Ethernet settings (SGM820 only)

**Protocols that can be used are Ethernet IP, Omron Fins and Modbus TCP.** For protocol description please download PENKO Suite from www.penko.com

In this menu, the communication settings can be set for the ethernet port. Options are:

Adr 1	First three numbers of the IP address
Adr 2	Second three numbers of the IP address
Adr 3	Third three numbers of the IP address
Adr 4	Fourth three numbers of the IP address
Sub 1	First three numbers of the Subnet address
Sub 2	Second three numbers of the Subnet address
Sub 3	Third three numbers of the Subnet address
Sub 4	Fourth three numbers of the Subnet address
gAt 1	First three numbers of the Gateway address
gAt 2	Second three numbers of the Gateway address
gAt 3	Third three numbers of the Gateway address
gAt 4	Fourth three numbers of the Gateway address

Press key 2 <2 sec to enter the ethernet settings.



The following screen is vissable:



#### Configuration Menu -Eth- -continue-

In **Adr 1** you set the **first three numbers of the IP address** you want to give the SGM820 (example: <u>192</u>.168.151.112). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



In Adr 2 you set the second three numbers of the IP address you want to give the SGM820 (example: 192.<u>168</u>.151.112). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. and confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



In **Adr 3** you set the third **three numbers of the IP address** you want to give the SGM820 (example: 192.168.<u>151</u>.112). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



#### Configuration Menu -Eth- -continue-

When confirmed the following screen will be visible:



In **Adr 4** you set the **fourth three numbers of the IP address** you want to give the SGM820 (example: 192.168.151.<u>112</u>). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



In **Sub 1** you set the **first three numbers of the Subnet address** you want to give the SGM820 (example: <u>255</u>.255.255.000). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:

PENKO



In **Sub 2** you set the **second three numbers of the Subnet address** you want to give the SGM820 (example: 255.255.000). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.

Configuration Menu -Eth- -continue-



When confirmed the following screen will be visible:



In **Sub 3** you set the **third three numbers of the Subnet address** you want to give the SGM820 (example: 255.255.255.000). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



In **Sub 4** you set the **fourth three numbers of the Subnet address** you want to give the SGM820 (example: 255.255.255.000). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.





#### Configuration Menu -Eth- -continue-

In **gAt 1** you set the **first first numbers of the Gateway address** you want to give the SGM820 (example: <u>192</u>.168.001.001). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



In **gAt 2** you set the **second three numbers of the Gateway address** you want to give the SGM820 (example: 192.<u>168</u>.001.001). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



In **gAt 3** you set the **third three numbers of the Gateway address** you want to give the SGM820 (example: 192.168.001.001). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



#### Configuration Menu -Eth- -continue-

When confirmed the following screen will be visible:



In **gAt 4** you set the **fourth three numbers of the Gateway address** you want to give the SGM820 (example: 192.168.001.001). Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec.



When confirmed the following screen will be visible:



Starting at firmware version 1.5.0.9.0.1 the PENKO ASCII protocol is available over TCP at port 23.



#### Configuration Menu –Can-

#### 6.6 - - - Can Canbus settings (SGM830 only)

# The protocol that can be used is PENKO CAN Buslink (CANopen is not supported).

For protocol description please download PENKO Suite from www.penko.com

In this menu, the communication settings can be set for profibus. Options are:

CAn 1	Communication protocol
CAn 2	Busslink address
CAn 3	Busslink subaddress
CAn 4	Baudrate

Press key 2 <2 sec to enter the Canbus settings.



The following screen will be vissable:



In **CAn 1** you set the **Canbus protocol** of the SGM800. Press key 2 <2 sec. to enter CAn 1. Set the protocol using key 1 and key 2 confirm by pressing key 3 >2 sec. 1= none, 2= Buslink



Increase Decrease Confirm



#### Configuration Menu – Can- - continue-

In **CAn 2** you set the **Canbus address** of the SGM800. Up to 8 devices can communicate with eachother, sharing inputs, outputs, markers and indicators. Press key 2 <2 sec. to enter CAn 2. Set the address using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1-8).



When confirmd the following screen will be vissable:



In **CAn 3** you set the **Canbus subaddress** of the SGM800. When using a subaddress, up to 40 devices can communicate with each other. Press key 2 <2 sec. to enter CAn 2. Set the address using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1-5).







#### Configuration Menu –Can- -continue-

In **CAn 4** you set the **Canbus Baudrate** of the SGM800. Set the communication speed using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1= 100kbps, 2=125kbps, 3=250kbps and 4=500kbps).



Increase Decrease Confirm





### Configuration Menu – Pb-

#### 6.7 - - - - Pb Profibus settings (SGM840 only)

For GSD file and protocol description please download PENKO Suite from www.penko.com.

In this menu, the communication settings can be set for profibus. Options are:

Pb 1	Profibus address
Pb 2	Value mode

Press key 2 <2 sec to enter the profibus settings.



The following screen will be vissable:



In **Pb 1** you set the **profibus address** of the SGM840. Press key 2 <2 sec. to enter Pb 1. Set the address using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 0-255).





#### Configuration Menu -Pb- -continue-

In **Pb 2** you set the **profibus Value mode**. The profibus value can be shown as Integer (direct value without decimal point) or as Floating Point (real value with decimal point). Press key 2 <2 sec. to change the mode.



The oprions are:

Pb2 FLFloating pointPb2 InInteger

Select the option you want to use by pressing key 1 and confirm by pressing key 3 >2 sec.



Increase Decrease Confirm

The following screen will be vissable:



Note: after a recall or a firmware update, the Profibus needs to be reset. This is done by power down the device and power it up again.



### Configuration Menu –232-

#### 6.8 - - - 232 RS232 Port settings (SGM850 only)

In this menu, the communication settings can be set for RS232 communication. Options are:

232 1	Protocol
232 2	Address
232 3	Stopbits
232 4	Parity
232 5	Baudrate
232 6	Indicator

Press key 2 <2 sec to enter the RS232 port settings.



The following screen will be vissable:



In **232 1** you set the **RS232 Protocol** of the SGM850. Press key 2 <2 sec. to enter 232 1. Set the Prot using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1= None, 2= Printer, 3= ASCII, 4= NPV Slave, 5= Modbus-RTU, 6= Modbus ASCII). For protocol descriptions please download PENKO Suite from www.penko.com



#### Configuration Menu –232- -continue-

When confirmd the following screen will be vissable:



In **232 2** you set the **RS232 address** of the SGM850. Press key 2 <2 sec. to enter 232 2 Set the address using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 0-255).



When confirmd the following screen will be vissable:



In **232 3** you set the **RS232 stopbits** of the SGM850. Press key 2 <2 sec. to enter 232 3. Set the number of stopbits the protocol needs by using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1-2).



Increase Decrease Confirm



#### Configuration Menu –232- -continue-

In **232 4** you set the **RS232 Parity** of the SGM850. Press key 2 <2 sec. to enter 232 4 Set the Parity using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1= none, 2= odd, 3= even, 4= mark, 5=space).



When confirmd the following screen will be vissable:



In **232 5** you set the **RS232 Baudrate** of the SGM850. Press key 2 <2 sec. to enter 232 5. Set the speed of the protocol by using key 1 and key 2 confirm by pressing key 3 > 2 sec. (options are: 1=1200, 2= 2400, 3= 4800, 4= 9600, 5= 19200, 6= 38400, 7= 57600, 8= 115200 kbps).







#### Configuration Menu –232- -continue-

In **232 6** you set the **RS232 ASCII Indicator** of the SGM850. This setting only takes effect when using the ASCII protocol. Press key 2 <2 sec. to enter 232 6 Set the Indicator numer that you want to sent out over the RS232 port by using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1-100).







### Configuration Menu –422-

#### 6.9 - - - 422 RS422 Port settings (SGM850 only)

In this menu, the communication settings can be set for RS422 communication. Options are:

422 1	Protocol
422 2	Address
422 3	Stopbits
422 4	Parity
422 5	Baudrate
422 6	Indicator

Press key 2 <2 sec to enter the RS422 port settings.



The following screen will be vissable:



In **422 1** you set the **RS422 Protocol** of the SGM850. Press key 2 <2 sec. to enter 422 1. Set the Prot using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1= None, 2= Printer, 3= ASCII, 4= NPV Slave, 5= Modbus-RTU, 6= Modbus ASCII).For protocol descriptions please download PENKO Suite from www.penko.com





#### Configuration Menu –422- -continue-

When confirmd the following screen will be vissable:



In **422 2** you set the **RS422 address** of the SGM850. Press key 2 <2 sec. to enter 422 2 Set the address using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 0-255).



When confirmd the following screen will be vissable:



In **422 3** you set the **RS422 stopbits** of the SGM850. Press key 2 <2 sec. to enter 422 3. Set the number of stopbits the protocol needs by using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1-2).



Increase Decrease Confirm



#### Configuration Menu –422- -continue-

In **422 4** you set the **RS422 Parity** of the SGM850. Press key 2 <2 sec. to enter 422 4 Set the Parity using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1= none, 2= odd, 3= even, 4= mark, 5=space).



When confirmd the following screen will be vissable:



In **422 5** you set the **RS422 Baudrate** of the SGM850. Press key 2 <2 sec. to enter 422 5. Set the speed of the protocol by using key 1 and key 2 confirm by pressing key 3 > 2 sec. (options are: 1=1200, 2= 2400, 3= 4800, 4= 9600, 5= 19200, 6= 38400, 7= 57600, 8= 115200 kbps).



Increase Decrease Confirm





#### Configuration Menu –422- -continue-

In **422 6** you set the **RS422 ASCII Indicator** of the SGM850. This setting only takes effect when using the ASCII protocol. Press key 2 <2 sec. to enter 422 6 Set the Indicator numer that you want to sent out over the RS424 port by using key 1 and key 2 confirm by pressing key 3 >2 sec. (options are: 1-100).







#### Configuration Menu -Ind-

6.10 - - - Ind Indicator settings

In this menu, the Indicator settings can be set. Options are:

Ind 1	Maximum display value
Ind 2	No motion band
Ind 3	Stable time
Ind 4	Digital overall filter
Ind 5	Display step size
Ind 6	Decimal point position
Ind 7	Display refreshment speed
Ind 8	Operation mode
Ind 9	Sample time

Press key 2 <2 sec to enter the indicator settings.



The following screen is vissable:



In **Ind 1** you set the **maximum net weight value**. Set maximum load to prevent overload by the user. The indicator will not show any weight above this value. Range: 0 - full display.

To change the value press key 2 < 2 sec.



#### Configuration Menu -Ind- -continue-

The following screen is vissable:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.





In **Ind 2** you set the **No motion band** Indicator gives stable signal when weigher value is stable within this range and time set with Ind 3. Choose a value between: 0 - 999999.

To change the value press key 2 < 2 sec.



The following screen is vissable:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



#### Configuration Menu -Ind- -continue-

The following screen is vissable:



In **Ind 3** you set the **Stable time** Indicator gives stable signal when weigher value is stable within the range set in Ind 2 and time set with Ind 3. Choose a value between: 000.000 – 16.959 seconds.

To change the value press key 2 < 2 sec.



The following screen is vissable:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



The following screen is vissable:



In Ind 4 you set the Digital overall filter. Set the overall filter to effect all indicator signals used in the device. 0dB means no effect and –50dB is the strongest damping. Choose between -: 0dB, 1: -6dB, 2: -12dB, 3: -24dB, 4: -30dB, 5: -36dB, 6: -42dB and 7: -50dB.



To prevent a loss of information or accuracy, don't set the overall filter higher than 24dB. When no accuracy is needed, a higher filter setting is allowed to enable extreme filtering.

#### Configuration Menu -Ind- -continue-

To change the filter press key 2 < 2 sec.



The following screen is vissable:



Use key 1 change the filter. Confirm by pressing key 3 for >2 sec.



The following screen is vissable:



In **Ind 5** you set the **display step size**. The step size defines the scaled parts of the weight value. The display value will be rounded off to the nearest value with a valid step size.

To change the display step size press key 2 < 2 sec.



The following screen is vissable:





#### Configuration Menu -Ind- -continue-

Use key 1 to select the correct step size.

Choose between 1, 2, 5, 10, 20, 50 and confirm by pressing key 3 for >2 sec.



Example step size:

weigher value is 2005 kg

Step Size	Weight (kg)
1	2005
2	2006
5	2005
10	2010

The following screen is vissable:



In **Ind 6** you set the **decimal point**. The decimal point defines the point position of the weight value.

To change the decimal point press key 2 < 2 sec.



The following screen is vissable:



Press key 1 to define the point position and confirm by pressing key 3 for >2 sec.



#### Configuration Menu -Ind- -continue-

The following screen is vissable:



In **Ind 7** you set the **Display refreshment speed**. The Display refreshment speed defines the times the weigher value is refresht per second. Options are: 1, 2, 3, 5, 10, 25, 50.

To change the display refreshment speed press key 2 < 2 sec.



The following screen is vissable:



Press key 1 to choose the display refreshment speed and confirm by pressing key 3 for >2 sec.



The following screen is vissable:





#### Configuration Menu -Ind- -continue-

In **Ind 8** you set the **operation mode** of the SGM800. Set the operation mode of the unit to Industrial or Certified. In Industrial mode it's always possible to change the indicator parameters and calibration. In certified mode the unit will be sealed by marks and also the weighing parameters will be blocked to satisfy to the calibration laws. A weighing unit must be certified when it's used for measuring for trade aims. Note: In certified mode the zero band = 4% (+2 and -2%). Also zero suppressing (FIL 3) is disabled.

Options are: In = Industrial mode, CE = Certified mode.

To change the operation mode press key 2 < 2 sec.



The following screen is vissable:



Press key 1 to choose the operation mode and confirm by pressing key 3 for >2 sec.



The following screen is vissable:



In **Ind 9** you set the **sample rate** of the indicator. The sample rate is the refreshment speed of the weigher signal.

Options are: 10, 20, 25, 50, 100, 200, 400, 800, 1600 samples/sec.



#### Configuration Menu -Ind- -continue-

To change the sample rate press key 2 < 2 sec.



The following screen is vissable:



Press key 1 to choose the sample rate and confirm by pressing key 3 for >2 sec.



The following screen is vissable:



### Configuration Menu -rng-

6.11 - - - rng Multi range/interval settings

In this menu, the multi range/interval can be set. Options are:

Rng 1	Number of display divisions
Rng 2	Maximum auto range step size
Rng 3	Auto range reset option

Press key 2 <2 sec to enter the multi range/interval settings.



#### Configuration Menu -rng- -continue-

The following screen is visable:



In **mg 1** you set the **number of display divisions**. Set the number of divisions when the indicator has to display with the next step size. Auto ranging starts with step size set at **Ind 5** and is disabled when range size is set to 0. Choose a value between 000.00 and 999.999.

To change the value press key 2 < 2 sec.



The following screen is vissable:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



The following screen is vissable:



In **rng 2** you set the **maximum auto range step size**. Set the biggest step size allowed. Choose between 1, 2, 5, 10, 20, 50, 100, 200 and 500.



#### Configuration Menu -rng- -continue-

To change the maximum step size press key 2 < 2 sec.



The following screen is vissable:



Use key 1 change the filter. Key 1 is for changing the number. Confirm by pressing key 3 for >2 sec.



#### Example Max Step:

If the settings are:

Step size = 1, Range = 100 and Max. Step = 50, the table on the right shows the accompanying step size with which the weigher values reduces within the displayed ranges.

When the indicator is set certified, the maximum preset tare is equal to the first level of the autorange. In this example the preset tare is valid to 100.

Displayed range	Step size
0-100	1
100-200	2
200-500	5
500-1000	10
1000-2000	20
2000-5000+	50

The following screen is vissable:





#### Configuration Menu -rng- -continue-

In rng 3 you set the auto range reset option. Choose between:

**oF**: Multi Range = the highest shown step size will be reseted after the signal has been lower or equal to zero

**on**: Mulit Interval = the highest shown step size will be reseted after the signal reaches the previous range.

To change the auto range reset option press key 2 < 2 sec.



The following screen is vissable:



Use key 1 change the reset option. Confirm by pressing key 3 for >2 sec.



6.12 - - FIL Filter settings

In this menu, the **filter settings** can be set. The display filter will damp the weigher signal to the display to get a calm display view.

Options are:

FIL 1	Display filter band
FIL 2	Display filter factor
FIL 3	Zero suppressing
FIL 4	Shown indicator on display

Press key 2 <2 sec to enter the filter settings.



### Configuration Menu -FIL- -continue-

The following screen is visible:



In **FIL 1** you can set the **display filter band.** Set the band where the filter is active. This parameter works together wit FIL 2. Choose a value between -99999 kg and 999999 kg. Press key 2 <2 sec. to change the filter band.



The following screen is visible:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



In **FIL 2** you can set the **display filter factor.** Set the strength of the filter. OdB means no effect and –50 is the strongest damping. This parameter works together wit FIL 1. Choose between -: 0dB, 1: -6dB, 2: -12dB, 3: -18dB, 4: -24dB, 5: -30dB, 6: -36dB, 7: -42dB and 8: -50dB.

Press key 2 <2 sec. to change the filter factor.


### Configuration Menu -FIL- -continue-

The following screen is visible:



Use key 1 change the filter. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



In **FIL 3** you set the **band** within the indicator will show 0. When the indicator is certified, this parameter will be disabled. Choose a value between 000000 and 999999. Press key 2 <2 sec. to change the zero suppressing band.



The following screen is visible:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.





### Configuration Menu -FIL- -continue-

In **FIL 4** you can set the **number of the indicator shown in the display**. Choose a number between 1 and 19. When using the FIL parameters use 4, 5, 12 or 13.



The following screen is visible:



The options are:

1	Weigher	10	Weigher x 10
2	Fast gross	11	Fast gross x 10
3	Fast net	12	Fast Net x 10
4	Display Gross	13	Display Gross x 10
5	Display Net	14	Display Net x 10
6	Tare	15	Tare x 10
7	Peak	16	Peak x 10
8	Valley	17	Valley x 10
9	Hold	18	Hold x 10
		19	Signal

For further detais on the weigher functions check appendix I

Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



### **Configuration Menu -dSF-**

### 6.13 - - - dSF Digital filter settings

In this menu, the **digital filter settings** can be set. This filter is a 2<sup>nd</sup> order filter. The filter effects all signals up to and including the cutoff frequency. Options are:

dSF 1	Filter type
dSF 2	Cutoff frequency
dSF 3	Moving average cutoff frequency

Press key 2 <2 sec to enter the digital filter settings.



The following screen is visible:



In dSF 1 you can set the filter type.

Choose between None, Dynamic and Static. Dynamic application = used when the weighing signal is constantly changing. Static application = used when the weighing signal is stable . Press key 2 < 2 sec. to change the filter band.



The following screen is visible:



Use key 1 change the filter type. Confirm by pressing key 3 for >2 sec.



### Configuration Menu -dSF- -continue-

The following screen is visible:



In **dSF 2** you can set the **Cutoff frequency**. Determines the range used for filtering the signal. Choose between oFF, 1.0Hz, 1.4Hz, 2.5Hz, 5.0Hz, 10.0Hz, 20.0Hz and 40Hz. Press key 2 <2 sec. to change the cutoff frequency range.



The following screen is visible:



Use key 1 change the cutoff frequency. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



In **dSF 3** you can set the **moving average cutoff frequency**. Choose a value between 0-320 Hz. Press key 2 <2 sec. to change the cutoff frequency range.







### **Configuration Menu -PCL-**

Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



### 6.14 - - - PCL Pre-calibration settings

In this menu, the Pre-calibration settings can be set. Options are:

Pcl 1	Polarity of input range
PcL 2	Amplifier sensitivity
PcL 3	Input offset
PcL 4	Recall pre-calibration

Press key 2 <2 sec to enter the pre-calibration settings.







### Configuration Menu -PCL- -continue-

In **PcL 1** you can set the **polaritiy of the input range**. Un=Unipolar mode the input range for load cells is -0.2 mV/V to + value set at *Range*. Bi=Bipolar mode the input range for load cells is -value set at *Range* to + value set at *Range*.Press key 2 <2 sec. To change the polaritity og the input range.



The following screen is visible:



Use key 1 change the polarity. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



In **PcL 2** you can set the **Amplifier sensitivity**. Choose between 1.0mV/V, 1.5mV/V, 2.0mV/V, 2.5mV/V and 3.0mV/V. Press key 2 <2 sec. to change the amplifier sensitivity.







### Configuration Menu -PCL- -continue-

Use key 1 change the sensitiviy. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



In **PcL 3** you can set the **Input offset**. Choose between choose a sample value between –50000 and 50000. Press key 2 <2 sec. to change the input offset



The following screen is visible:



Use key 1 and 2 to change the value. Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 for >2 sec.



The following screen is visible:



In **PcL** you can **Recall** the Pcl parameters.The PcL parameters will be reset to its factory settings. Press key 2 <2 sec. to recall to factory settings



### Configuration Menu -PCL- -continue-

The following screen is visible:



The following screen is visible:



To recall the factory settings press key 3 >2 sec. To cancel press key 3 <2 sec.



The following screen is visible:



**Configuration Menu -CAL-**

#### 6.15 - - - CAL Calibration settings

In this menu, the Calibration settings can be set. Options are:

CAL 1	Add calibration point
CAL 2	Check weiger information
CAL 3	Show/remove calibration points
CAL 4	Deadload compensation
CAL 5	Show CAL code



### Configuration Menu -CAL- -continue-

Press key 2 <2 sec to enter the calibration settings.



The following screen is visible:



In **CAL 1** you can set the **calibration points** for the weigher. Press key 2 <2 sec. to set the calibration points.



After entering, the following screen is visible (if there are no calibration points available):



And will automatically jump to:



First calibrate the **zero point (CP1)**. Make sure the weigher is unloaded and press key 3 >2 sec.





### Configuration Menu -CAL- -continue-

The indicator now shows CP2 to calibrate the gain point (CP2).



And will automatically jump to:



Use key 1 and key 2 to enter the reference value. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Load the weigher with the reference value and press key 3 > 2 sec.



Done succesfully the following screen is visible:



In **CAL 2** you can check the **weiger** information. You can check out the, actual weigher value, actual weigher value x10 and the actual ADC value. Press key 2 <2 sec. to check out the weigher information.







### Configuration Menu -CAL- -continue-

Use key 1 <2 sec. to toggle between the actual weight and the actual weight x10. Use key 2 <2 sec. to toggle between the actual weight and the ADC value. When finished press key 3< 2 sec.



The following screen is visible:



Use CAL 3 to check and delete all existing calibration points.

Press key 2 <2 sec. to enter CAL 3.



The following screen is visible:



Step through the calibration points with key 1. Delete a calibration point by pressing key 3 >3 sec.



During deletions, the following screen is visible:





### Configuration Menu -CAL- -continue-

When a number is shown, the deletion of one calibration point is completed and more points need to be deleted. Press key 3 >3 sec to do so.



>3 sec.

When all calibration points are deleted, the following screen is visible:



In **CAL 4** you can set a **Deadload compensation**. In this menu, the deadload can be set to pull the whole weighing line back to zero. The zero point could be different because of some modification on the scale or dirt. Press key 2 <2 sec. to set a new deadload compensation.



The following screen is visible:



Use key 1 and key 2 to enter the weight that is in/on the weigher. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. And press key 3 >2 sec.to set the new deadload.





### Configuration Menu -CAL- -continue-

Normally, the deadload is zero, but it is possible to change the line position if there is weight on the scale. To do so, edit the actual weigh value to the new known value.



When the new dead load is set the following screen is visible:



### **Configuration Menu -tCL-**

### 6.16 - - - tCL Theoretic calibration

In this menu, the **Theoretic calibration settings** can be set. Here you can set a calibration without using a refrence weight. For this you only need the specification sheets of the used loadcells. Options are:

tCL 1	Maximum load loadcells
tCL 2	Sensitivity loadcell 1
tCL 3	Sensitivity loadcell 2
tCL 4	Sensitivity loadcell 3
tCL 5	Sensitivity loadcell 4



### Configuration Menu -tCL- -continue-

Press key 2 <2 sec to enter the theoreatic calibration settings.



The following screen is visible:



In **tcL 1** you can set the **maximum loadcell load**. When more then one loadcell is used all loadcells should have the same maximum load. Press key 2 <2 sec. to set the maximum load.



The following screen is visible:



Use key 1 and key 2 to enter the maximum load of the loadcell(s). Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. And press key 3 > 2 sec.to set the maximum load.



The following screen is visible:



In **tcL 2** you can set the **loadcell sensitivity** for loadcell 1. This information can be found on the datasheet deliverd with the loadcell. Press key 2 <2 sec. to set the loadcell sensitivity.



### Configuration Menu -tCL- -continue-



The following screen is visible:



Use key 1 and key 2 to enter the sensitivitiy of loadcell 1. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Sensitivity has to be filled in as 0.00000 mV/V. Press key 3 >2 sec. to set the sensitivity of the loadcell.



The following screen is visible:



In **tcL 3** you can set the **loadcell sensitivity** for loadcell 2. This information can be found on the datasheet deliverd with the loadcell. Press key 2 <2 sec. to set the loadcell sensitivity.







### Configuration Menu -tCL- -continue-

Use key 1 and key 2 to enter the sensitivitiy of loadcell 2. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Sensitivity has to be filled in as 0.00000 mV/V. Press key 3 >2 sec. to set the sensitivity of the loadcell.



The following screen is visible:



In **tcL 4** you can set the **loadcell sensitivity** for loadcell 3. This information can be found on the datasheet deliverd with the loadcell. Press key 2 <2 sec. to set the loadcell sensitivity.



The following screen is visible:



Use key 1 and key 2 to enter the sensitivitiy of loadcell 3. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Sensitivity has to be filled in as 0.00000 mV/V. Press key 3 >2 sec. to set the sensitivity of the loadcell.





### Configuration Menu -tCL- -continue-

The following screen is visible:



In **tcL 5** you can set the **loadcell sensitivity** for loadcell 4. This information can be found on the datasheet deliverd with the loadcell. Press key 2 <2 sec. to set the loadcell sensitivity.



The following screen is visible:



Use key 1 and key 2 to enter the sensitivitiy of loadcell 4. Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. Sensitivity has to be filled in as 0.00000 mV/V. Press key 3 >2 sec. to set the sensitivity of the loadcell.



The following screen is visible:



When using a theoretical calibration, note that the 2mV/V and 3mV/V range are calibrated ranges.



### Configuration Menu -gCL-

### 6.17 - - - gCL Geographic calibration

In this menu, the **Geographic calibration settings** can be set. Here you can set a geographic information of the loadcells filled in al **tCL**. Options are:

gCL 1	Origin latitude
gCL 2	Origin elevation
gCL 3	Location latitude
gCL 4	Location elevation

Press key 2 <2 sec to enter the Geographic calibration settings.



The following screen is visible:



In **gcL 1** you can set the **origin latitude** of the loadcell. This is the geographic latitude of where the loadcell is manufactured. Press key 2 <2 sec. to set the origin latitude.



The following screen is visible:



Use key 1 and key 2 to enter the origin latitide of the loadcell(s). Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. And press key 3 > 2 sec.to set the origin latitude. Choose value between -90,00 and  $90,00^{\circ}$ 

Configuration Menu -gCL- -continue-



The following screen is visible:



In **gcL 2** you can set the **origin elevation** of the loadcell. This is the geographic elevation of where the loadcell is manufactured. Press key 2 <2 sec. to set the origin elevation.



The following screen is visible:



Use key 1 and key 2 to enter the origin elavation of the loadcell(s). Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. And press key 3 > 2 sec.to set the origin elevation. Choose value between -1000 and 30000 meter.







### Configuration Menu -gCL- -continue-

In **gcL 3** you can set the **location latiude** of the loadcell(s). This is the geographic latitude of where the loadcell is going to be used. Press key 2 <2 sec. to set the location latitude.



The following screen is visible:



Use key 1 and key 2 to enter the location latitude of the loadcell(s). Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. And press key 3 > 2 sec.to set the location latitude. Choose value between -90,00 and  $90,00^{\circ}$ 



The following screen is visible:



In **gcL 4** you can set the **location elevation** of the loadcell. This is the geographic elevation of where the loadcell is going to be used. Press key 2 <2 sec. to set the location elevation.







## Configuration Menu -gCL- -continue-

Use key 1 and key 2 to enter the location elevation of the loadcell(s). Key 1 is used for changing the number (1-9), key 2 is used for changing the position of the cursor. And press key 3 > 2 sec.to set the location latitude. Choose value between -1000 and 30000 meter.



The following screen is visible:



## Configuration Menu – CLo-

### 6.18 - - - CLo Date and time configuration

In  $\ensuremath{\textbf{Clock}}$  , you can set the internal date and time.

Press key 2 <2 sec to enter Clock.



The following screen is visible:



Set the date. Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec. Format DD.MM.YY



### Configuration Menu -CLo- -continue-

The following screen is visible:



Set the time. Use key 1 and key 2 to change the number Key 1 is for changing the number (1-9), key 2 is for changing the position of the cursor. Confirm by pressing key 3 >2 sec. Format HH.MM.SS



In Recall, you can reset all parameters back to facatory settings.

Press key 2 <2 sec to enter Recall.



The following screen is visible.



There are two recalls available. Parameters back to factory, or an erase of the file system. Use the erase function only when a normal recall does not solve the problem.



### Configuration Menu -rcl- -continue-

To set all parameters back to factory settings Press key 3 >2 sec



The device will reboot.

To reset the file system Press key 1 >2 sec.



The following screen is visible. Confirm by pressing key 3 >2 sec.



The device will reboot.

Starting at firmware version 1.6.0.9.0.3 a backup of the device configuration can be made within the device. A password is required for the backup. Contact PENKO for this password.

The backup can only be made using Pi Mach II manage. Enter the password in the service code field.



The backup can be made in the Factory Recall menu.



### Configuration Menu -rcl- -continue-

**Restore Parameters** only restores the non-certified parameters. This option is also available in the device menu, RCL menu, option RCL 2.

**Restore Full** restores all parameters. This option is also available in the device menu, RCL menu, option RCL 3.

The device restarts after a restore action.

### **Configuration Menu -SoF-**

#### 6.20 - - - SoF Firmware update

In SoF, you can set the SGM800 in boot mode for software update.



Press key 2 <2 sec to enter Boot mode.



The following screen is visible:



Press key 3 >2 sec to set the SGM800 in Boot mode.





### 7. Firmware update

Connect the SGM to the computer through USB. Start PI Mach II. Set communication to USB.



Start the Firmware Update Manager.

🛞 Eirmware Update Manager

Click Open and select the PIP file.



Click Search For Devices and select the device with source "0".



Use double click or the arrow button to put the address in the Destination List and click OK.





#### Firmware update -continue-

Now set the SGM in boot mode:

Go into the configuration menu by pressing key 3 >2 sec. The following screen will appear:



Go to- - - SoF by pressing key 1 <2 sec untll you see - - - SoF



Press key 2 <2 sec to enter Boot mode.



The following screen is visible:



Press key 3 >2 sec to set the SGM800 in Boot mode.



Now click Firmware Update to start the update.



The SGM will reboot automatically and the Firmware Update Manager wil show Updated.

Der Der Der Der Der Der Der Der State Der Der Der Der State State Der Der Der State Der Der State Der Der Der State	1000 🔽 <u>C</u> hecksum	Search for d	evices 🚨 Firmware update 🛛 🖡	🛃 <u>E</u> xit
Device	Id-code	Softw Version	Status	
<b>☑</b> 0 ·		0624 V:0100	Updated	
PENKO				
an ETC Company				98

### 8. Event Log

Event Log automatically records various system events like Software Updates and Calibrations.

Event Logs can be viewed via Pi Mach II Manage:



How you can connect your SGM800 to PI Mach II Manage is explained in chapter 4.4 of this manual. Enter the Event number at "Entry Number" and confirm with Enter or the Apply button. The event is shown.

In this example you can see that Entry 11 is a Calibration change on Februari 1st 2014 at 12:19:52 and it gest the Unique Identification Code (UID) 1583349770.

Number of entries	12	
Entry Number	11	
Record	Header	
Tag/Code	CAL Changed	
Date/Value	01-02-14	
Time/Unit	12:19:52	
UID	1583349770	
	Clear	



### 9. Alibi Memory

The SGM800 has a Alibi Memory function inside. This saves information about Dosed weight of the SGM800 MFL, checked weight of the SGM800 CHK and actual weigher value of the SGM800 Indicator. In the SGM800 Belt the Alibi Memory has no function.

The Alibi memory can be viewed via Pi Mach II Manage:



How you can connect your SGM800 to PI Mach II Manage is explained in chapter 4.4 of this manual.



### 9. Alibi Memory -continue-

#### 9.1 SGM800 Indicator Alibi Memory

An input can be programmed as PRINT command. Every time the PRINT command is executed, the current weigher value is written to the Alibi Memory.

- 1.1.1.2 Start Quick setup - 1.1.1.3 Enable Full setup	Function 1	
e Live System	Function 2	TARE OT TARE TOGGLE PRESET TARE ON
⊨ System Setup ⊡ Service	Function 3	PRINT SUBTOTAL (reserve PRINT TOTAL
Indicator     Communication		PRINT DAY TOTAL (reserve PRINT BATCH TOTAL (rese
Digital inputs - 1.1.1.3.4.1 Function 1 = NONE		
- 1.1.1.3.4.2 Function 2 = NONE - 1.1.1.3.4.3 Function 3 = NONE		

Enter the Alibi number at "Entry Number" and confirm with Enter or the Apply button. The Alibi data is shown.

⊡- SGM820 Ethernet	Faul: 1.1.1.0.2	
- 1.1.1.1 Name =		
- 1.1.1.2 Start Quick setup	Number of entries	0
- 1.1.1.3 Enable Full setup		
. Live	Entry Number	0
⊕ System		
⊞ System Setup	Record	
	Tag/Code	
i Access		
⊡ Program	Date/Value	
-1.1.1.8.2.1 Number of entries = 0	Time/Unit	
1.1.1.8.2.2 Entry Number = 0		
1.1.1.8.2.3 Record =		Clear
1.1.1.8.2.4 Tay/Code =		
1.1.1.0.2.5 Date/Value =		
1.1.1.0.2.0 Time/Onc =		
Event Log		

It shows the weigher value that is saved with the time and date it is saved on.

Pressing the	Clear	button will erase the complete alibi memory.
--------------	-------	--

### 9. Alibi Memory -continue-

#### 9.2 SGM800 Controller CHK Alibi Memory

In the SGM800 CHK the Alibi Memory can be enabled in the configuration.

⊡ Penko		
Device root		
SGM820 Ethernet		
System Setup		
Configuration	Use Alibi Memory	Yes 🔽
⊟ • Edit		
1.1.1.3.10.1.11	Use Alibi Memory = No	

For more information about the configuration please check the SGM800 Check weigher manual supplement.

To get the Alibi information enter the Alibi number at "Entry Number" and confirm with Enter or the Apply button. The Alibi data is shown.

🖻 SGM820 Ethernet	Faul. 1.1.1.0.2	
- 1.1.1.1 Name =		
- 1.1.1.2 Start Quick setup	Number of entries	0
- 1.1.1.3 Enable Full setup		
tive	Entry Number	0
🕀 System		
System Setup	Record	
	Tag/Code	
	Date/Value	
1 1 1 9 2 1 Number of entries = 0	Time (II)-it	
1.1.1.8.2.2 Entry Number = 0	Time/Onit	
1111823 Record =		dura
1.1.1.8.2.4 Tag/Code =		Clear
1.1.1.8.2.6 Time/Unit =		
1.1.1.8.2.8 Clear		

It shows the checked weight that is saved with the time and date it is saved on.

Pressing the	Clear	button will erase the complete alibi memory.

### 9. Alibi Memory -continue-

#### 9.3 SGM800 Controller MFL Alibi Memory

In the SGM800 MFL the Alibi Memory can be enabled in the configuration.



For more information about the configuration please check the SGM800 Mono Filler manual supplement.

To get the Alibi information enter the Alibi number at "Entry Number" and confirm with Enter or the Apply button. The Alibi data is shown.

⊟- SGM820 Ethernet	Faul. 1.1.1.0.2	
- 1.1.1.1 Name =		
- 1.1.1.2 Start Quick setup	Number of entries	0
- 1.1.1.3 Enable Full setup		
tive	Entry Number	0
🕀 System		
System Setup	Record	
	Tag/Code	
	Date/Value	
1 1 1 9 2 1 Number of entries = 0	Time - /11-14	
1.1.8.2.1 Number of entries = 0	Time/onic	
1111823 Record =		dara
		Cieai
1.1.1.8.2.5 Date/Value =		
- 1.1.1.8.2.6 Time/Unit =		
1.1.1.8.2.8 Clear		
Event Log		

It shows the dosed weight that is saved with the time and date it is saved on.

Pressing the	Clear	button will erase the complete alibi memory.

### 10. Error Codes

Error Code	Description	Solution
2001	Parameter error	Invalid entry, choose a valid value
2005	Input value is not valid	Invalid entry, choose value within range
2101	Weigher not stable	Wait for stable weigher signal and try again
2102	Parameter exceeds maxload	Remove load from scale
2103	Parameter below zero	Check if scale is blocked
2104	Not in zero range	Remove load
2105	Arithmetic overflow occurred	Change calibration levels
2106	A/D reads all 1's	Check load cell connection
2107	A/D reads all 0's	Check load cell connection
2108	Gain ref. < zero ref.	Change calibration levels
2109	Gain > 0.99984741211	Change calibration levels
2110	Save error	Contact PENKO
2111	Flash ROM exhausted	Contact PENKO
2112	Error on header creation	Contact PENKO
2113	Error on date write	Contact PENKO
2114	Header validation failed	Contact PENKO
2115	De-active old data fail	Contact PENKO
2116	Load errors	Contact PENKO
2117	Item not found in store	Contact PENKO
2118	Error in stored data	Contact PENKO
2119	Bad calibration	Change calibration levels



### 12. Profibus Protocol Description

Note that the GSD Profibus file for the SGM840 Indicator differ from SGM840 controller GSD file. Use **PSGM0E28.GSD** This file is available in the Penko Suite.

Inputs to PLC			
D word 32 bit	Weight register		
word 16 bit	Status		
byte 8 bit	Reserved		
byte 8 bit	Weight selected register	Outputs from PLC	
word 16 inputs	Input 1-16	byte 8 bit	Command
word 16 outputs	Output 201-216	byte 8 bit	Weight selector register
D word 32 bit	Preset Tare	D word 32 bit	Preset Tare
D word 32 bit	Gross indicator x10	D word 32 bit	Level 1
D word 32 bit	Net indicator x10	D word 32 bit	Level 2
D word 32 bit	Indicator tare x10	D word 32 bit	Level 3
D word 32 bit	Multirange weight	D word 32 bit	Level 4

Command bit definition:		
1	Zero reset command	
2	Zero set command	
3	Tare off	
4	Tare on	
5	Preset tare command	
6	Freeze bit	
7	Reserved	
8	Reserved	



Weight selection register definition:		
0x00	Display weigt includes multi range/interval step	1
0x01	Fast gross	2
0x02	Fast net	3
0x03	Display gross	4
0x04	Display net	5
0x05	Tare	6
0x06	Peak	7
0x07	Valley	8
0x08	Display weight x10	9
0x09	East gross x10	10
	Fast netv10	11
	Dioploy groop v10	12
0,00	Display gloss x to	13
		14
0x0D	Tare x10	15
0x0E	Peak x10	16
0x0F	Valley x10	10
0x10	ADC Sample	
0x11-0x75	Indicator register 1-100	
0x76-0xFF	Reserved	

Status bit definition:			
1	hardware overload detected		
2	overload detected		
3	stable signal		
4	in stable range		
5	zero corrected		
6	center of zero		
7	in zero range		
8	zero tracking possible		
9	tare active		
10	preset tare active		
11	new sample available		
12	calibration invalid		
13	calibration enabled		
14	user certified operation		
15	reserved		
16	reserved		

## 10.1 Weigher error Codes

Error Code	Description	Solution
CCCCCC	No proper calibration available	Check calibration setting
υυυυυυ	Underflow	Check loadcell Check platform construction
000000	Overflow	Check loadcell Check platform construction
=====	Display overflow; Exceed maximum display value (max. load)	Reduce load on platform



## 13. Standard Factory Settings

Description	Display	Value	Your setting
Setpoint function	Fun 1	1	
	Fun 2	1	
	Fun 3	1	
	Fun 4	1	
Setpoint action	Acn 1	000,010	
	Acn 2	000,010	
	Acn 3	000,010	
	Acn 4	000,010	
Analog output	dAC 4	2	
	dAC 5	000.000	
	dAC 6	010.000	
	dAC 7	4	
Local bus communication	485 1	1	
Profibus	Pb 1	1	
	Pb 2	FL	
		<b></b>	
Ethernet	Adr 1	010	
	Adr 2	001	
	Adr 3	002	
	Adr 4	004	
	Sub 1	255	
	Sub 2	255	
	Sub 3	255	
	Sub 4	0	



## 13. Standard Factory Settings -continue-

Description	Display	Value	Your setting
Ethernet	gAT 1	0	
	gAT 2	0	
	gAT 3	0	
	gAT 4	0	
Indicator	Ind 1	10.009	
	Ind 2	2	
	Ind 3	1.000	
	Ind 4	-	
	Ind 5	1	
	Ind 6		
	Ind 7	25	
	Ind 8	In	
	Ind 9	1.60	
Multi range/interval	Rng 1	0	
	Rng 2	1	
	Rng 3	oF	
Filter	FIL 1	0	
	FIL 2	-	
	FIL 3	0	
Digital filter	dSF 1	Dynamic	
	dSF 2	2.5Hz	
	sSF 3	50	


# SGM800 Digitizer

## 13. Standard Factory Settings -continue-

Description	Display	Value	Your setting
Pre-calibration	Pcl 1	un	
	Pcl 2	2.0	
	Pcl 3	0	
Theoretic calibration	tCL 1	10.000	
	tCL 2	0.000	
	tCL 3	0.000	
	tCL 4	0.000	
	tCL 5	0.000	
Geographic calibration	gCL 1	52.00	
	gCL 2	0	
	gCL 3	52.00	
	gCL 4	0	



# SGM800 Digitizer

## Appendix I

Definition
filtered net weigher value that can react on mulit range/interval
unfiltered gross weigher value
unfiltered net weigher value
filtered gross weigher value
filtered net weigher value
tare value
highest reached weigher value can be reset by button peak reset
lowest reached weigher value can be reset by button valley reset
Stored hold value
filtered net weigher value shown with extra decimal that can react on multi range / multi interval
unfiltered gross weigher value shown with extra decimal
unfiltered bet weigher value shown with extra decimal
filtered gross weigher value shown with extra decimal
filtered net weigher value shown with extra decimal
tare value shown with extra decimal
highest reached weigher value shown with extra decimal can be reset by button peak reset
lowest reached weigher value shown with extra decimal can be reset by button valley reset
Stored hold value shown with extra decimal
mV signal from the load cell(s)





#### 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: www.penko.com

#### **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

### PENKO Alliances

PENKO's worldwide network: Australia, Bangladesh Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Sweden and Vietnam.

A complete overview you will find on: www.penko.com



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