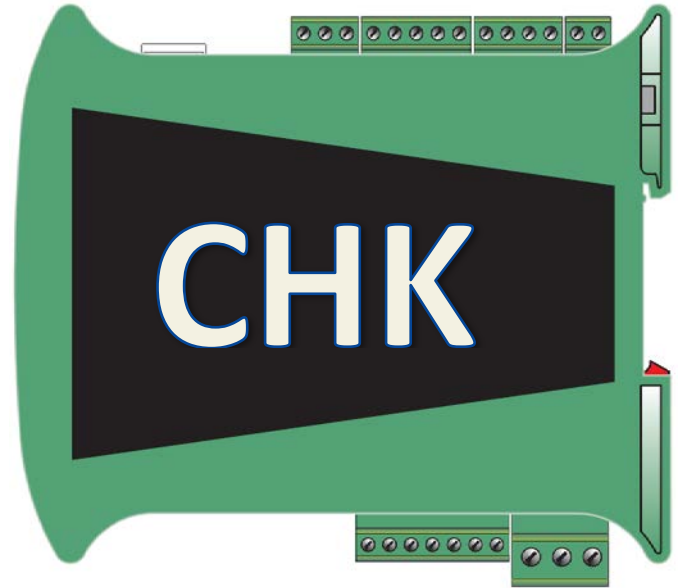


PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



Manual:
SGM8xx Supplement Check Weigher Controller



PENKO

an ETC Company

SGM8xx Check Weigher

Table of Contents

1	Introduction	3
2	Indication of display	4
3	Explanation of front keys	5
4	Configure and control	6
4.1	PENKO configuration software	6
4.2	Industrial protocols	7
5	Parameters	8
5.1	Configuration parameters	8
5.2	Recipe parameters	10
5.3	Live process values	11
5.4	Live process values	12
6	Inputs and outputs	13
6.1	Inputs	13
6.2	Outputs	13
6.3	Analog output	13
7	Program basics	14
7.1	Static check mode, Reject mode set to Time	14
7.2	Static check mode, Reject mode set to Photocell	14
7.3	Dynamic check mode, Reject mode set to Time	15
8	Default settings	16

SGM8xx Check Weigher

1 Introduction

This manual is applicable for the following Check Weigher devices:

- SGM820 Ethernet CHK
- SGM830 CAN CHK
- SGM840 Profibus CHK
- SGM850 Serial CHK

To configure and control the Check Weigher, the following options are available:

Full control:

- PENKO Pi Mach II software
- PENKO PDI Client software
- Modbus protocol
- Profibus protocol
- EtherNet/IP protocol
- ASCII protocol

Basic control:

- Fins protocol*
- PENKO TP protocol*

** Register functions not available*

Note:

This manual does not describe the basic functionality of the device. Consult the device manual for this.

SGM8xx Check Weigher

2 Indication of display

The SGM with closed cover:



- | | | | |
|----|----------------|---|---------------------|
| 1 | Weigher stable | 4 | Output active 1 - 4 |
| 2* | Zero active | 5 | Weigher value |
| 3* | Tare active | | |

* When the check weigher program is active, LED 2 and 3 are blinking

The SGM with open cover:



- | | | | | | |
|---|---------------------|-------------------|---|---------------------|-------------------|
| 1 | key 1 press <2sec.= | 1
SHORT | 3 | key 3 press <2sec.= | 3
SHORT |
| | key 1 press >2sec.= | 1
LONG | | key 3 press >2sec.= | 3
LONG |
| 2 | key 2 press <2sec.= | 2
SHORT | | | |
| | key 2 press >2sec.= | 2
LONG | | | |

Function of these keys are described on the next page

SGM8xx Check Weigher

3 Explanation of front keys

All keys have different functions depending on weighing, menu or program 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

In running mode: disabled



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

In running mode: disabled



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

In running mode: disabled



Pressing key 2 "long".

In Weighing mode: set preset tare

In Menu mode: move cursor 1 position to the right

In running mode: disabled



Pressing key 3 "short".

In Weighing mode: enter menu

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

In running mode: disabled



Pressing key 3 "long".

In Weighing mode: enter configuration menu

In Menu mode: Confirm made changes

In running mode: disabled

Menu will jump back one level every 30 seconds of inactivity

SGM8xx Check Weigher

4 Configure and control

To configure and control the Check Weigher, the following options are available:

- PENKO configuration software
- Industrial protocols

4.1 PENKO configuration software

PENKO Pi Mach II and PENKO PDI Client can be downloaded from www.penko.com



USB driver and user manual are included in the download

Pi Mach II supports USB and Ethernet connection. PDI Client is USB only.

Consult the manuals on how to install and connect to the device.

In the tree structure of the device, the configuration parameters are found at:

PENKO - Device root - SGM8xx - System Setup - Configuration

Configuration parameters

<ul style="list-style-type: none">PENKO<ul style="list-style-type: none">Device root<ul style="list-style-type: none">SGM820 Ethernet<ul style="list-style-type: none">1.1.1.1 Name =1.1.1.2 Start Quick setup1.1.1.3 Enable Full setupLiveSystem<ul style="list-style-type: none">System Setup<ul style="list-style-type: none">ServiceIndicatorCommunicationDigital inputsDigital outputsAnalog outputClockPrinterConfigurationFactory recallWELMECRecipeControlAccess	<table><tr><td>Mode</td><td>Static</td></tr><tr><td>Stability</td><td>Off</td></tr><tr><td>H-Time</td><td>0,00 s</td></tr><tr><td>Display Hold</td><td>0,00 s</td></tr><tr><td>Reject Mode</td><td>Time</td></tr><tr><td>Fixed Speed</td><td>No</td></tr><tr><td>Min Speed</td><td>0,00 %</td></tr><tr><td>Max Speed</td><td>0,00 %</td></tr><tr><td>Recipe</td><td>Local</td></tr><tr><td>Online Ticket</td><td>No</td></tr><tr><td>Use Alibi Memory</td><td>No</td></tr></table>	Mode	Static	Stability	Off	H-Time	0,00 s	Display Hold	0,00 s	Reject Mode	Time	Fixed Speed	No	Min Speed	0,00 %	Max Speed	0,00 %	Recipe	Local	Online Ticket	No	Use Alibi Memory	No
Mode	Static																						
Stability	Off																						
H-Time	0,00 s																						
Display Hold	0,00 s																						
Reject Mode	Time																						
Fixed Speed	No																						
Min Speed	0,00 %																						
Max Speed	0,00 %																						
Recipe	Local																						
Online Ticket	No																						
Use Alibi Memory	No																						

The parameters are explained in [chapters 5](#)

SGM8xx Check Weigher

In the tree structure of the device, the recipe parameters are found at:

PENKO - Device root - SGM8xx - Recipe

Recipe parameters

The screenshot shows the configuration interface for a PENKO device. On the left is a tree structure with the following nodes: PENKO, Device root, SGM820 Ethernet, 1.1.1.1 Name =, 1.1.1.2 Start Quick setup, 1.1.1.3 Enable Full setup, Live, System, System Setup, Service, Indicator, Communication, Digital inputs, Digital outputs, Analog output, Clock, Printer, Configuration, Factory recall, WELMEC, Recipe (highlighted), Control, and Access. On the right is a list of recipe parameters, each with a text input field and a unit:

- Low Level: 0,00 kg
- High Level: 0,00 kg
- Preset Tare: 0,000 kg
- Sample Time: 0,00 s
- Correction: 0,00 %
- Check Delay: 0,00 s
- Belt Speed: 0,00 %
- Rejector Delay: 0 ms
- Reject Hold: 0 ms
- Code: 0

The parameters are explained in [chapters 5](#)

4.2 Industrial protocols

The protocols Modbus, Profibus, EtherNet/IP and ASCII have a function set called register functions. These functions allow the user to configure and control the device.

Protocol descriptions can be downloaded from www.penko.com

Consult these on how to connect the device and use the register functions.

	SGM800	SGM810	SGM820	SGM830	SM840	SGM850
Modbus TCP			✓			
Modbus SERIAL						✓
Profibus					✓	
EtherNet/IP			✓			
ASCII TCP			✓			
ASCII SERIAL						✓

Note: the FINS and PENKO TP protocol do not support register functions, only basic read and write operations for markers and registers.

The parameters are explained in [chapters 5](#)

SGM8xx Check Weigher

5 Parameters

These parameters correspond with the parameters in the tree structure of the device configuration. When using the industrial protocol register functions, each parameter can be reached using its number.

Some parameters can be reached directly using ASCII, TP protocol, Modbus RTU, Modbus TCP, Fins, Profibus or EtherNet/IP. The parameters for Profibus or EtherNet/IP are prefixed with **PB** or **EIP**.

Note: when the device is rebooted or the configuration is manually changed, all configuration parameters are changed back to the value that were last set manually in the configuration.

5.1 Configuration parameters

No.	Name	Description
1	Check mode	Select if the check weigher is used for dynamic or static weighing. <ul style="list-style-type: none">• Dynamic => the product will move during weighing (belt is running).• Static => the product will be stopped during weighing (belt is stopped when check input is high and restarted when check is done).
2	Stability	Select the type of check delay. In static check mode the belt will stop during the check delay. <ul style="list-style-type: none">• Off => check starts directly• Stable => check starts after Stable• H-Time => check starts after H-time• H-Time+Stable => check starts after H-time and then Stable• H-Time/Stable => check starts after H-time or Stable• Stable+H-Time => check starts after Stable and then H-Time
3	H-Time	Time to wait for stable weight measurement. Δ Not used if Stability parameter is set to Off or Stable
4	Display hold	The time to freeze the checked value on the display after the check is done. When a check starts before the display hold time is elapsed, the hold time will be cut off. Δ Not used if Stability parameter is set to Off or Stable

SGM8xx Check Weigher

5	Rejector mode	Select when the packages should be rejected. <ul style="list-style-type: none">• Time => reject after a set time (settings are in recipe)• Photocell => reject when passing the photocell (input 3)
6	Fixed speed	Select if the belt speed is fixed or variable. <ul style="list-style-type: none">• No => belt speed is variable between set minimum and maximum speed and is controlled by the analog output• Yes => belt speed is fixed (setting is in recipe)
7	Min. speed	Enter the minimum variable belt speed.
8	Max. speed	Enter the maximum variable belt speed.
9	Recipe	Select the used recipe. <ul style="list-style-type: none">• Local => use the recipe selected on the device• Remote => use the recipe from a remote device (e.g. PLC)
10	Online ticket	Select if a printer ticket must be printed for each checked product.
11	Use alibi memory	Select if a result must be written to the internal alibi memory.

SGM8xx Check Weigher

5.2 Recipe parameters

These parameters correspond with the parameters in the tree structure of the device Recipe. When using the industrial protocol register functions, each parameter can be reached using its number.

Some parameters can be reached directly using ASCII, TP protocol, Modbus RTU, Modbus TCP, Fins, Profibus or EtherNet/IP. The parameters for Profibus or EtherNet/IP are prefixed with **PB** or **EIP**.

Note: when the device is rebooted or the recipe is manually changed, all recipe parameters are changed back to the value that were last set manually in the recipe.

No.	Name	Description	Location
1	Low level	If the checked value is below this value, the package will be rejected.	PB-R85 EIP-R11
2	High level	If the checked value is above this value, the package will be rejected.	PB-R86 EIP-R12
3	Preset tare	The preset tare will be subtracted from the checked value.	PB-R87 EIP-R13
4	Sample time	Duration of the package weight measurement.	PB-R88 EIP-R14
5	Correction	Correction factor to correct the fault caused by the dynamic characteristics of the machine. Correction can be set from 0% to 200%. 100% means no correction is used.	
6	Check delay	Enter the time between detecting a product and start checking or stopping the belt.	
7	Belt speed	The speed of the transport belt in %	
8	Rejector delay	Delay time to activate the rejector after detecting a faulty package.	
9	Reject hold	Time to hold the rejector output active for a certain time after activating.	
10	Batch code	Enter a Batch code for printing reports.	

Note: when using Ethernet IP, the four parameters can be changed using the Instance: 0x0378 (888) (Control out)

SGM8xx Check Weigher

5.3 Live process values

When using the industrial protocol register functions, each parameter can be read using its number.

Example: to read the value of low level, Use the function code 701 and value 1.

No.	Name	Description
1	Low level	Get the low level value.
2	High level	Get the high level value.
3	Subtotal std.dev	Get the standard deviation of the subtotal.
4	Subtotal average	Get the average value of the subtotal.
5	Subtotal (weight) ok	Get the weight of the accepted products of the subtotal.
6	Subtotal count ok	Get the number of accepted product of the subtotal.
7	Subtotal count low	Get the number of too low product of the subtotal.
8	Subtotal count high	Get the number of too high product of the subtotal.
9	Subtotal count total	Get the number of all product of the subtotal.
10	Total std.dev	Get the standard deviation of the total batch.
11	Total average	Get the average value of the total batch.
12	total (weight) ok	Get the weight of the accepted products of the total batch.
13	Total count ok	Get the number of accepted product of the total batch.
14	Total count low	Get the number of too low product of the total batch.
15	Total count high	Get the number of too high product of the total batch.
16	total count total	Get the number of all product of the total batch.
17	Alibi no.	Get the number of the Alibi record.

SGM8xx Check Weigher

5.4 Live process values

The following process markers can be reached directly using ASCII, TP protocol, Modbus RTU, Modbus TCP, Fins, Profibus or EtherNet/IP.

Name	Description	Marker
Check Low	Checked weight is below low level	M401
Check High	Checked weight is above high level	M402
Check OK	Checked weight is in between low and high level	M403
Check Ready	Check is ready	M404
Sec Alive Bit	Will switch between on and off every second	M405
Sample Busy	Weight sampling is busy	M406
Check Busy	Check is busy	M407
Check Done	Weight checking is done	M410
Display Hold	Display Hold is active	M411
SGM Online	SGM is online	M412
Stop Belts	Transport belt is stopped	M414
Reset Sub Totals	Sub totals is reset	M415
Reset Totals	Totals is reset	M416
IND Error	Indicator has an error	M417

Note: when using Ethernet IP, the live process status markers can be viewed using the Instances: 0x0364 (868) (Device In) or 0x0374 (884) (Control In)

SGM8xx Check Weigher

6 Inputs and outputs

The following inputs and outputs are used.

6.1 Inputs

Input	Name	Description	Profibus marker	EtherNet/IP marker
1	Start/Stop	Input must be high to set the program in run mode.	969	433
2	Start Sampling	Input to start sampling the package.	970	434
3	Reject Sensor	Input to detect the package on the reject position. Input must be placed diagonal over the belt.	971	435

Note: when using Ethernet IP, the 3 input functions can also be controlled using the Instance: 0x0378 (888) (Control out)

6.2 Outputs

Output	Name	Description
1	Rejector	Output to enable the rejector after the package is detected on the reject position.
2	Sampling Busy	Output to enable the busy output. Output is high from detecting the package until sampling is done.
3	Transport Belts	Output to enable the transport belts. In dynamic mode the output is always on if no alarm is generated. In static mode the output is off during sampling and during an indicator alarm.
4	Alarm	Output to enable the indicator alarm. This output is used to activate the indicator alarm. This alarm can be reset by switching off input 1.

6.3 Analog output

Output	Name	Description
Analog out	Belt Speed	Belt Speed will be available from 0.00% to 100.00%.

SGM8xx Check Weigher

7 Program basics

This chapter describes a few basics of the Check Weigher program which can be used when starting the program for the first time.

7.1 Static check mode, Reject mode set to Time

With input 1 you can Start (input high) and Stop (input low) the program. The Transport Belt (output 3) will start. With a pulse on Start Sampling (input 2) the checking will start. During checking the Transport Belt (output 3) will stop and Sample Busy (output 2) is on.

When the checking is complete and the weight is ok, the Transport belt (output 3) will start again, Sample Busy (output 2) is off. With a pulse on Start Sampling (input 2) the checking will start again.

If the weight is below Low Level or above High Level the Transport belt (output3) will start again. After the Reject Delay time, the Rejector (output 1) will turn on, and will remain on for the duration of the Reject Hold time. With a pulse on Start Sampling (input 2) the checking will start again.

7.2 Static check mode, Reject mode set to Photocell

With input 1 you can Start (input high) and Stop (input low) the program. The Transport Belt (output 3) will start. With a pulse on Start Sampling (input 2) the checking will start. During checking the Transport Belt (output 3) will stop and Sample Busy (output 2) is on.

When the checking is complete and the weight is ok, the Transport belt (output 3) will start again, Sample Busy (output 2) is off. With a pulse on Start Sampling (input 2) the checking will start again.

If the weight is below Low Level or above High Level the Transport belt (output3) will start again. When the photocell (connected to input 3) has detected the product, the Rejector (output 1) will turn on, and will remain on as long as input 3 (photocell) is on. With a pulse on Start Sampling (input 2) the checking will start again.

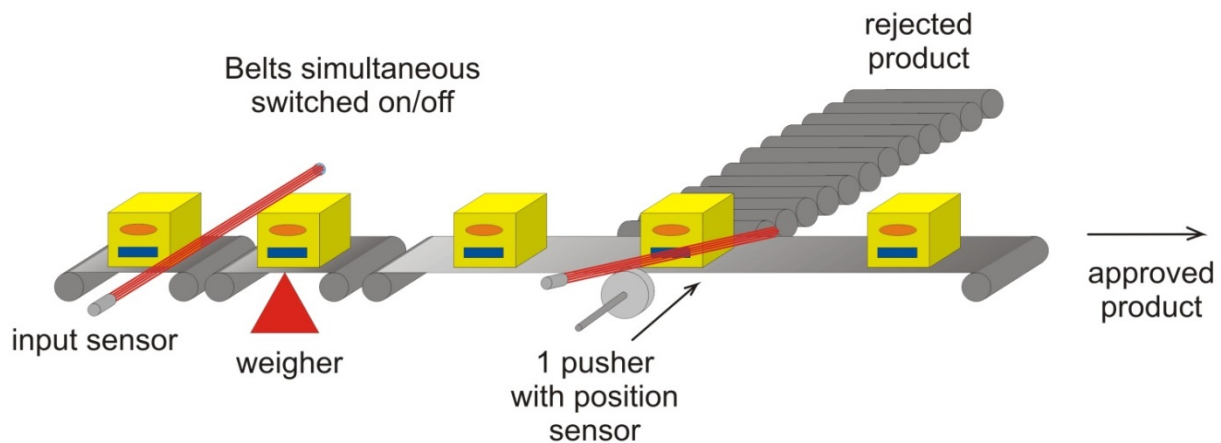
SGM8xx Check Weigher

7.3 Dynamic check mode, Reject mode set to Time

With input 1 you can Start (input high) and Stop (input low) the program. The Transport Belt (output 3) will start. With a pulse on Start Sampling (input 2) the checking will start. During the checking the Sample Busy (output 2) is on.

When the checking is complete and the weight is ok. The Transport belt (output 3) will start again, Sample Busy (output 2) is off. With a pulse on Start Sampling (input 2) the checking will start again.

If the weight is below Low Level or above High Level the Transport belt (output3) will start again. After the Reject Delay time, the Rejector (output 1) will turn on, and will remain on for the duration of the Reject Hold time. With a pulse on Start Sampling (input 2) the checking will start again.



SGM8xx Check Weigher

8 Default settings

Configuration

Configuration	Static check mode, Reject mode set to Time	Static check mode, Reject mode set to Photocell	Dynamic check mode, Reject mode set to Time
Check Mode	Static	Static	Dynamic
Stability	Stable + H-Time	Stable + H-Time	Stable + H-Time
H-Time	1.00 sec	1.00 sec	1.00 sec
Display Hold (Disabled if stability parameter is set to off or stable)	1.00 sec	1.00 sec	1.00 sec
Rejector Mode	Time	Photocell	Time
Fixed Speed	Yes	Yes	Yes
Min. Speed	0.00%	0.00%	0.00%
Max. Speed	100.00%	100.00%	100.00%
Recipe	Local	Local	Local
Online Ticket	No	No	No
Use Alibi Memory	No	No	No

SGM8xx Check Weigher

DAC

DAC setup	Setting
Indicator	Speed
Min	0.00%
Max	100.00%
Mode	4 – 20 mA

Weigher

Weigher	Setting
Unit Label	Kg
Step	1
Decimal point	0.00
Operation Mode	Industrial
Max Load	1000.00

Stable

Stable Condition	Setting
Range	0.10 kg
Time	0.50 sec

SGM8xx Check Weigher

Filter

Filter Digital	Setting
Digital Filter	Dynamic App.
Cutoff Frequency	1.0 Hz
Frequency	10 Hz





About PENKO

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

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

Certifications

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

http://penko.com/nl/publications_certificates.html



PENKO Professional Services

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

PENKO Alliances

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

