USER MANUAL

Z-SG / Z-SG-L

Strain gauge converter with ModbusRTU protocol

MI002633

Non è stata trovata alcuna voce d'indice.

Seneca Z-PC Line modules: **Z-SG / Z-SG-L**

The Z-SG / Z-SG-L modules allows to manage the load cell signals and to process the weight value.

1. General characteristics

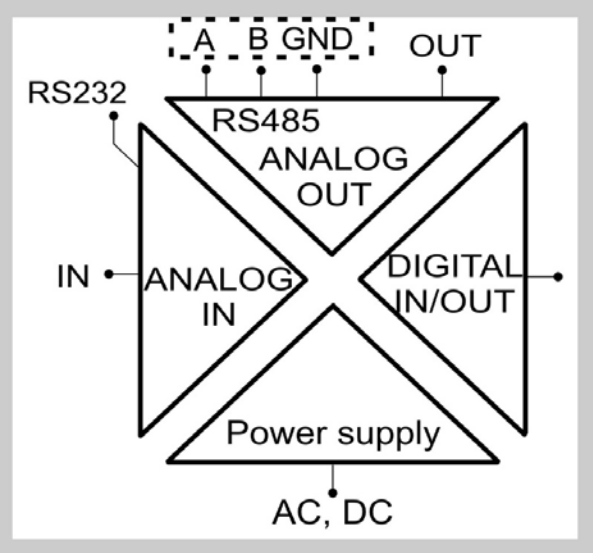
- ADC with 24bits resolution
- 4 wires or 6 wires load cell measure mode
- Compression and Traction or only compression load mode
- NR 1 analog output configurable in Current or Voltage mode (only Z-SG model)
- Load cell sensitivity configurable from +-1mV/V to +-64mV/V or virtually every sensitivity
- Measure resolution configurable
- RS232 and RS485 port with Modbus RTU protocol
- Moving average filtering
- Digital input for Tare acquisition (only Z-SG model)
- General purpose Digital input (only Z-SG-L model)
- Digital output with one configurable weight threshold or “stable measure” condition
- Configuration of the module (node) address and baud-rate by Dip-Switches

2. Features

ANALOG INPUT	
Number	1 (for one load cell: + Excitation, - Excitation, +Sense, - Sense, + Signal, - Signal)
Resolution	24bits
Sampling frequency	Configurable between: 12.53Hz; 16.65Hz; 24.82Hz; 37.59Hz; 49.95Hz; 50.57Hz; 74.46Hz; 151.71Hz
Rejection	50Hz or 60Hz
Accuracy	Initial: 0.1% of E.E.S.
	Linearity: 0.03% of E.E.S.
	Thermal stability: 25ppm/K
	EMI: < 1%
ANALOG OUTPUT (only Z-SG model)	
Number	1
Accuracy	0.1% of output scale range
Response time (10%-90%)	5ms
Voltage-type OUT	Output scale range configurable between: 0..5V or 0..10V by Dip-Switches. Minimum resistance that can be connected: 2 kΩ
Current-type OUT	Output scale range configurable between: 0..20mA or 4..20mA by Dip-Switches. Max resistance that can be connected: 500 Ω
LOAD CELLS	

A load cell or more load cells (if they are parallel-connected) can be connected to the Z-SG module.	
Load impedance	Minimum impedance that can be connected: 87 Ω. This value can be equivalent impedance of more parallel-connected load cells. For example: up to 4 load cells (if each cell has input impedance:

	350Ω), up to 8 load cells (if each cell has input impedance: 1000Ω)
Cell sensitivity	Configurable between: ±1mV/V; ±2mV/V; ±4mV/V; ±8mV/V; ±16mV/V; ±32mV/V; ±64mV/V by Dip-Switches. Cell sensitivity can be acquired by register (in alternative)
Internal load cell voltage supply	the #7 screw terminal (+Excitation) powers 5Vdc with reference to the #10 screw terminal (-Excitation). The #8 screw terminal (+Sense) reads "+Excitation", the #11 screw terminal (-Sense) reads "-Excitation"
CONNECTIONS	
RS485 interface	IDC10 connector
RS232 interface	Jack stereo 3.5mm connector: plugs into COMport
PROTECTION	
	This module provides inputs protection against the ESD (up to 4kV) for every screw terminals
1500 Vac ISOLATIONS	
	Between: power supply, ModBUS RS485 and analog output, analog input, digital input/output



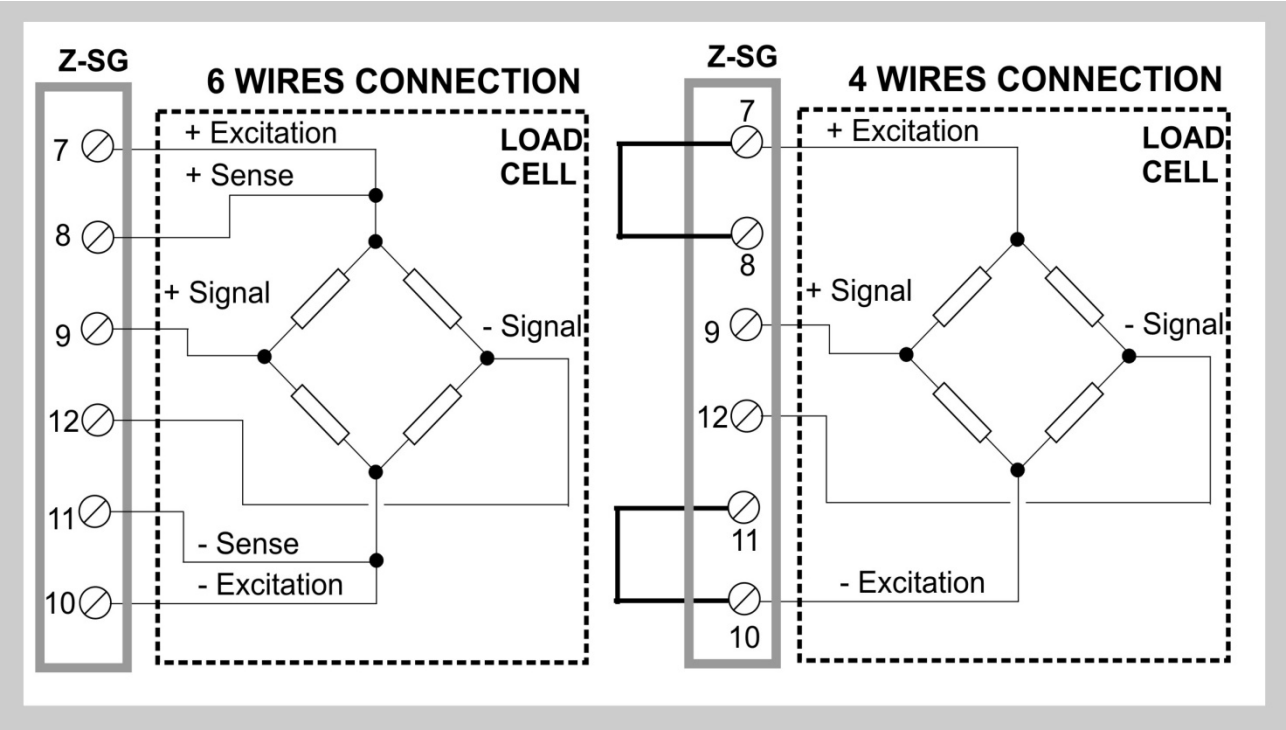
POWER SUPPLY	
Supply voltage	10 – 40 Vdc or 19 – 28 Vac (50Hz - 60Hz)
Power consumption	Max: 2W

The power supply transformer necessary to supply the module must comply with EN60742 (Isolated transformers and safety transformers requirements). To protect the power supply, it is recommended to install a fuse.

3. Functioning and connections

Z-SG / Z-SG-L setting parameters are: digital input/output, analog output, operating modality, load cell sensitivity. These parameters are settable only by Dip-Switches (except load cell sensitivity, settable by Dip-Switches and by bus communication).

ANALOG INPUT



Input	Screw terminal	Meaning
+ Excitation	7	Load cell power (+)
+ Sense	8	Reading of load cell power (+)
+ Signal	9	Load cell output signal (+)
- Signal	12	Load cell output signal (-)
- Sense	11	Reading of load cell power (-)
- Excitation	10	Load cell power (-)

To connect the Z-SG / Z-SG-L to load cell in 4-wires modality:

- short-circuit screw terminal 7 to screw terminal 8;

- short-circuit screw terminal 10 to screw terminal 11.

Use shielded cables for connections.

ANALOG OUTPUT (ONLY Z-SG MODEL)

"V" means voltmeter, "A" means amperemeter.

Z-SG module allows to associate net weight to the analog output value (and normalized net-weight measure), as described in the following points:

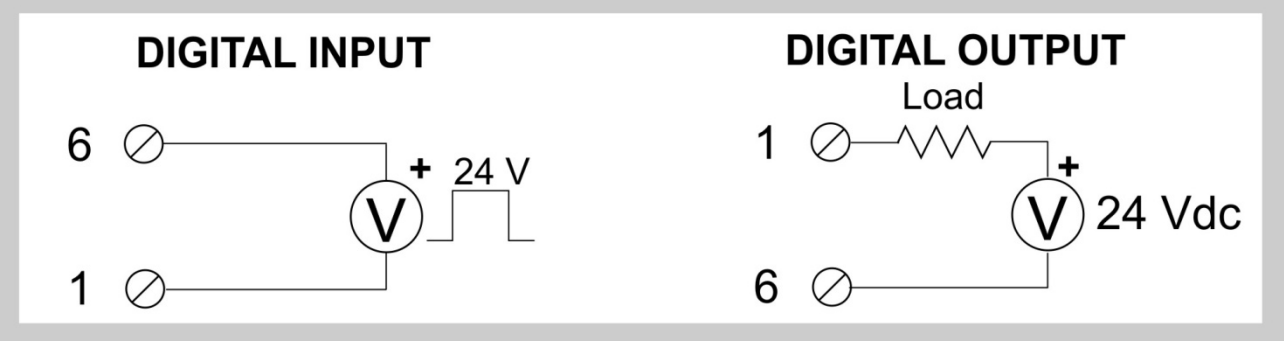
- if technical net weight measure (reg.40064, 40065 FP) is less than min tech net-weight (reg.40050, 40051 FP): normalized net-weight measure (reg.40063) is equal to 0 and analog output is 0% (0V, 0mA, 4mA), available through screw terminals 4 and 5;
- if technical net weight measure (reg.40064, 40065 FP) is greater than max tech net-weight (reg.40052, 40053 FP): normalized net-weight measure (reg. 40063) is equal to 30000 and analog output is 100% (5V, 10V, 20mA), available through screw terminals 4 and 5;
- if technical net weight measure (reg.40064, 40065 FP) is between min tech net-weight and max tech net-weight, analog output (current/voltage) is directly proportional to the net weight measure and it is available through screw terminals 4 and 5.

STABLE WEIGHT

Z-SG / Z-SG-L module allows to detect when a weight is stable: weight stability information is available through bit40066.4 or through digital output.

In particular, a weight measure is stable if the weight variation of net weight (reg.40064, 40065), in a given time interval ("delta time", reg.40058), is less than weight interval ("delta weight", reg.40056, 40057 floating point).

DIGITAL INPUT OR DIGITAL OUTPUT



”V” means equivalent voltage generator.

Z-SG module allows to activate a digital input or (in alternative) a digital output only by Dip-Switch. In the Z-SG model the digital input allows to storage tare value and it can be always used in alternative to calibration button, in the Z-SG-L model the digital input can be used for acquire a general purpose input. Digital output allows to open/close a opto-isolated contact: to use this information, it is possible to connect a 24Vdc voltage generator with a series resistive load. In this way, if one of the following setting (selected by bit40059.[6:0]) occurs, there is a no zero current through resistive load (example: lamp).

- gross weight is greater than load cell end scale
- weight is stable and net weight is greater than Threshold
- weight is stable

Dip-switches table

In the following tables: box without circle means Dip-Switch=0 (OFF state); box with circle means Dip-Switch=1 (ON state).

BAUD-RATE (Dip-Switches: SW1)		
1	2	Meaning
		Baud-rate=9600 Baud
	●	Baud-rate=19200 Baud
●		Baud-rate=38400 Baud
●	●	Baud-rate=57600 Baud

ADDRESS (Dip-Switches: SW1)						
3	4	5	6	7	8	Meaning
						Address and Baud-Rate are acquired from memory(EEPROM)
					●	Address=1
				●		Address=2
				●	●	Address=3
			●			Address=4
X	X	X	X	X	X	……
●	●	●	●	●	●	Address=63

DIGITAL INPUT/OUTPUT (Dip-Switches: SW2)	
1	Meaning
	Digital input. Calibration button (used during calibration procedure) is enabled
●	Digital output

ANALOG OUTPUT (Dip-Switches: SW2)		
2	3	Meaning
		Output scale range=0..10V
	●	Output scale range=0..5V
●		Output scale range=0..20mA
●	●	Output scale range=4..20mA

OPERATING MODALITY (Dip-Switches: SW2)

4	5	Meaning
		Factory calibration
	●	Calibration with known weight
●		Factory calibration using calibration button (or digital input)
●	●	Calibration with known weight using calibration button (or digital input)

LOAD CELL SENSITIVITY (Dip-Switches: SW2)			
6	7	8	Meaning
			±1 mV/V
		●	±2 mV/V
	●		±4 mV/V
	●	●	± 8mV/V
●			±16 mV/V
●		●	±32 mV/V
●	●		±64 mV/V
●	●	●	The module acquires load cell sensitivity from register 40044, 40045 (FP): in this case, real numbers for sensitivity are allowed

RS485 TERMINATOR (Dip-Switches: SW3)		
1	2	Meaning
		RS485 terminator disabled
●		RS485 terminator enabled

4. RS485 Register table

Generic parameters of Z-SG/Z-SG-L module are shown in the following table.

Name	Range	Interpretation of register	R/W	Default	Address
MachineID	/	MSB, LSB	R		40001
	Id_Code (Module ID)			0x17 (23 decimal)	Bit [15:8]
	Ext_Rev (Module version)				Bit [7:0]
FWREV	/	Word	R		40002
	Firmware Code				
ADC POLARITY	/	Word	R/W		40003
	ADC POLARITY: if it is 0, the ADC is bipolar; if it is 1, is unipolar				
Status	/	Bit	R/W		40066
	These bits aren't used			0	Bit [15:7]
	Z-SG-L MODEL: 0= digital input is low, 1= digital input is high Z-SG MODEL: not used			0	Bit 6
	Not used			0	Bit 5
	Weight stability. 0=weight is not stable; 1=weight is stable			0	Bit 4
	Tare-value storage in RAM memory. 0=no operation; 1=save the tare value			0	Bit 3
	0=gross weight is greater than tare-value saved in			0	Bit 2

	memory; 1=gross weight is less than tare-value saved in memory				
	0=gross weight is less than load cell end scale; 1=gross weight is greater than load cell end scale			0	Bit 1
	0=net weight is less than Threshold (reg.40054, 40055 FP) or weight measure is not stable 1=net weight is greater than Threshold (reg.40054, 40055 FP) and weight measure is stable			0	Bit 0
Command	/	Bit	R/W		40068
	Reset of module, if reg.40068=0xABAC=43948; save value-tare in RAM memory, if reg.40068=0xC1BA=49594 (equivalent command to bit40066.1=1); save standard weight in EEPROM memory, if reg.40068=0xC60C=50700 save value-tare in EEPROM and RAM memory, if reg.40068=0xC2FA=49914			0	
Dip-Switch Status	/	Bit	R		40067
	Switch1 of “SW1” state. Bit40067.15=0 corresponds to Switch1=”0”, bit40067.15=1 corresponds to Switch1=”1”			/	Bit 15
	Switch2 of “SW1” state. Bit40067.14=0 corresponds to Switch2=”0”, bit40067.14=1 corresponds to Switch2=”1”			/	Bit 14
	Switch3 of “SW1” state. Bit40067.13=0 corresponds to Switch3=”0”, bit40067.13=1 corresponds to Switch3=”1”			/	Bit 13
	Switch4 of “SW1” state. Bit40067.12=0 corresponds to Switch4=”0”, bit40067.12=1 corresponds to Switch4=”1”			/	Bit 12
	Switch5 of “SW1” state. Bit40067.11=0 corresponds to Switch5=”0”, bit40067.11=1 corresponds to Switch5=”1”			/	Bit 11
	Switch6 of “SW1” state. Bit40067.10=0 corresponds to Switch6=”0”, bit40067.10=1 corresponds to Switch6=”1”			/	Bit 10
	Switch7 of “SW1” state. Bit40067.9=0 corresponds to Switch7=”0”, bit40067.9=1 corresponds to Switch7=”1”			/	Bit 9
	Switch8 of “SW1” state. Bit40067.8=0 corresponds to Switch8=”0”, bit40067.8=1 corresponds to Switch8=”1”			/	Bit 8
	Switch1 of “SW2” state. Bit40067.7=0 corresponds to Switch1=”0”, bit40067.7=1 corresponds to Switch1=”1”			/	Bit 7
	Switch2 of “SW2” state. Bit40067.6=0 corresponds to Switch2=”0”, bit40067.6=1 corresponds to Switch2=”1”			/	Bit 6
	Switch3 of “SW2” state. Bit40067.5=0 corresponds to Switch3=”0”, bit40067.5=1 corresponds to Switch3=”1”			/	Bit 5
	Switch4 of “SW2” state. Bit40067.4=0 corresponds to Switch4=”0”, bit40067.4=1 corresponds to Switch4=”1”			/	Bit 4
	Switch5 of “SW2” state. Bit40067.3=0 corresponds to Switch5=”0”, bit40067.3=1 corresponds to Switch5=”1”			/	Bit 3
	Switch6 of “SW2” state. Bit40067.2=0 corresponds to Switch6=”0”, bit40067.2=1 corresponds to Switch6=”1”			/	Bit 2
	Switch7 of “SW2” state. Bit40067.1=0 corresponds to Switch7=”0”, bit40067.1=1 corresponds to Switch7=”1”			/	Bit 1
	Switch8 of “SW2” state. Bit40067.0=0 corresponds to Switch8=”0”, bit40067.0=1 corresponds to Switch8=”1”			/	Bit 0
Sampling Freq Rejection	/	Word	R/W		40060
	The value of reg.40060 relates to one of the configuration shown in the following table, for sampling frequency, 50Hz rejection and 60Hz rejection. As you can see, only a few			0x0052	

	register (40060) values are allowed		

Register (40060) value		Sampling frequency (Hz)	50Hz rejection	60Hz rejection
0x	decimal			
001B	27	151.71	NO	NO
0037	55	74.46	NO	NO
0052	82	49.95	YES	YES
006D	109	37.59	NO	YES
009B	155	50.57	NO	NO
00B7	183	24.82	YES	NO
00D2	210	16.65	YES	YES
00ED	237	12.53	NO	YES

Resolution	/	Bit	R/W		40059
	0=resolution value is acquired from bit[14:8]; 1=resolution is equal to 24bits			0	Bit 15
	Resolution value (needs to be multiplied by 1000), if bit40059.15=0			30	Bit [14:8]
Number Of Samples	Between: 1; 100	Word	R/W		40061
	These bits aren't used			/	Bit [15:8]
	Number of samples to execute the moving average of weight. Registers 40064 and 40065 contain the result of moving average (floating point weight)			100	Bit [7:0]

To choose the number of samples, see the following table.

Number of samples	Weight measure stability	Weight measure speed
High values (up to 100)	Better	Worst
Low values (up to 1)	Worst	Better

Address Parity	/	MSB, LSB	R/W		40004
	Address for RS485 (address of module/node if parameters are configurated by memory modality): from 0x01=1 to 0xFF=255			1	Bit [15:8]
	Parity for RS485: 0=there isn't; 1=even parity; 2=odd parity			0	Bit [7:0]
Baudrate Delay	/	MSB, LSB	R/W		40005
	Baud-rate for RS485 (baud-rate of module/node if parameters are configurated by memory modality): 0=4800; 1=9600; 2=19200; 3=38400; 4=57600;			38400	Bit [15:8]

	5=115200; 6=1200; 7=2400		
	Delay for RS485 (delay of communication response: it represents the number of the pauses(*) between the end of Rx message and the start of Tx message): from 0x00=0 to 0xFF=255 (*)1 pause=6 characters	0	Bit [7:0]

Load-cell configuration parameters are shown in the following table.

Sensitivity MSW		FP32bit_MSW	R/W		40044
Sensitivity LSW		FP32bit_LSW	R/W		40045
	If Dip-Switches SW2-7 is “ON”, SW2-8 is “ON”, SW2-9 is “ON”, the module acquires sensitivity [mV/V] from these registers (reg.40044, 40045 FP)			2[mV/V]	
Load cell end scale MSW		FP32bit_MSW	R/W		40046
Load cell end scale LSW		FP32bit_LSW	R/W		40047
	If load cell end scale is known, switch Dip-Switches SW2-4 to OFF and SW2-5 to OFF. In this case, reg. 40046, 40047 (FP) is the load cell end scale [mg, g, kg, etc…]			10000 [mg, g, kg, etc…]	
Known weight MSW		FP32bit_MSW	R/W		40048
Known weight LSW		FP32bit_LSW	R/W		40049
	If load cell end scale is unknown, switch Dip-Switches SW2-4 to OFF and SW2-5 to ON. In this case, reg. 40048, 40049 (FP) is the known weight [mg, g, kg, etc…]			10000 [mg, g, kg, etc…]	

Net-weight parameters are shown in the following table.

Tech net-weight measure MSW		FP32bit_MSW	R		40064
Tech net-weight measure LSW		FP32bit_LSW	R		40065
	Technical net weight measure [mg, g, kg, etc…]			/	
Norm net-weight measure	Depending on the ADC polarity	Word	R		40063
	Normalized net weight measure. If bipolar, the value is from –30000 to +30000 If unipolar, the value is from 0 to +60000 (see the ADC polarity)			/	
Min tech net-weight MSW		FP32bit_MSW	R/W		40052
Min tech net-weight LSW		FP32bit_LSW	R/W		40053
	Min technical net weight. It corresponds to the analog output start scale (settable by Dip-Switches: 0V, 0mA,			0 [mg, g, kg, etc…]	

	4mA)				
Max tech net-weight MSW		FP32bit_MSW	R/W		40050
Max tech net-weight LSW		FP32bit_LSW	R/W		40051
	Max technical net weight. It corresponds to the analog output end scale (settable by Dip-Switches: 5V, 10V, 20mA)			10000 [mg, g, kg, etc…]	

ADC value is shown in the following table.

ADC value		Word	R		40062
	ADC value (it refers to gross weight)				

Stable-weight parameters are shown in the following table.

Delta weight MSW		FP32bit_MSW	R/W		40056
Delta weight LSW		FP32bit_LSW	R/W		40057
	Weight interval [mg, g, kg, etc…] to define if a weight measure is stable, with reference to the net weight			1 [mg, g, kg, etc…]	
Delta time		Word	R/W		40058
	Time interval to define if a weight measure is stable, with reference to the net weight			1 (=100 [msec])	

A weight measure is stable if the weight variation of net weight (reg.40064, 40065), in a given time interval (“delta time”, reg.40058), is less than weight interval (“delta weight”, reg.40056, 40057 floating point); time interval (“delta time”) and weight interval (“delta weight”) are settable by “stable weight condition” window.

Digital output parameters are shown in the following table.

Digital output		Bit	R/W		40059
	Digital output behavior if the selected condition of digital output occurs (see bit[6:0]). 0=if the selected condition of digital output occurs, digital output (open normally) switches from open to closed (no-zero current through external load) 1=if the selected condition of digital output occurs, digital output (closed normally) switches from closed to open (no current through external load)			0	Bit 7
	Condition of digital output. It is possible to select one of the following setting: 0=gross weight is greater than load cell end scale 1=weight is stable and net weight is greater than Threshold 2=weight is stable			0	Bit [6:0]
Threshold MSW		FP32bit_MSW	R/W		40054
Threshold		FP32bit_LSW	R/W		40055

LSW					
	Threshold of net weight (see bit40059.[6:0])			0	

5. Z-SG / Z-SG-L tarature using Modbus registers

There are two alternative modalities to configure the module using the Modbus registers:

CALIBRATION WITH KNOWN WEIGHT

WARNING

Gross weight (tare + known weight) must not to exceed load cell end scale, to avoid serious damage to the cell.

1) Power off the module before configuring it by Dip-Switches to avoid serious damage due to electrostatic discharges.

2) Switch Dip-Switch SW2-1 as desired: “OFF”=digital input enabled, digital output disabled; “ON”=digital input disabled, digital output enabled

3) Switch Dip-Switches SW2-2 and SW2-3 as desired: see Dip-Switches table

4) Switch Dip-Switches SW2-4 to “OFF” and SW2-5 to “ON”

5) Switch Dip-Switches SW2-6 to “ON”, SW2-7 to “ON”, SW2-8 to “ON”

6) Power on the module

7) Write sensitivity value in reg. 40044, 40045 (FP)

8) Write known weight value in reg. 40048, 40049 (FP)

9) Reset the module (write 0xABAC=43948 in reg.40068)

New sensitivity and known weight are saved in Z-SG/Z-SG-L module.

10) Put the tare on the balance

11) Save the tare value in EEPROM memory (write 0xC2FA=49914 in reg.40068)

12) Put the known weight on the tare

13) Save the known weight in EEPROM memory (write 0xC60C=50700 in reg.40068)

FACTORY CALIBRATION

1) Power off the module before configuring it by Dip-Switches to avoid serious damage due to electrostatic discharges.

2) Switch Dip-Switch SW2-1 as desired: “OFF”=digital input enabled, digital output disabled; “ON”=digital input disabled, digital output enabled

3) Switch Dip-Switches SW2-2 and SW2-3 as desired: see Dip-Switches table

4) Switch Dip-Switches SW2-4 to “OFF” and SW2-5 to “OFF”

5) Switch Dip-Switches SW2-6 to “ON”, SW2-7 to “ON”, SW2-8 to “ON”

6) Power on the module

7) Write sensitivity value in reg. 40044, 40045 (FP)

8) Write load cell end scale in reg. 40046, 40047 (FP)

 New sensitivity and load cell end scale are saved in Z-SG / Z-SG-L module.

10) Put the tare on the balance

11) Save the tare value in EEPROM memory (write 0xC2FA=49914 in reg.40068

6. Setting by calibration button

There are two alternative modalities to configure the Z-SG / Z-SG-L module by calibration button (if the user has not a Personal Computer and has a known weight that corresponds to the analog output end scale).

CALIBRATION WITH KNOWN WEIGHT USING CALIBRATION BUTTON (DIGITAL INPUT CAN ALSO BE USED FOR Z-SG MODEL)

WARNING

Gross weight (tare + known weight) must not to exceed load cell end scale, to avoid serious damage to the cell.

1) Power off the module before configuring it by Dip-Switches to avoid serious damage due to electrostatic discharges.

2) Switch the Dip-Switches SW2-4 to “ON” and SW2-5 to “ON”. In this way, setting by calibration button is possible.

3) Switch the Dip-Switch SW2-1 to “OFF”. In this way, calibration with known weight using calibration button (or digital input) is possible.

4) Switch the Dip-Switches SW2-2 and SW2-3 as shown in Dip-Switches table, to select one of the possible modalities of analog output.

5) Switch the Dip-Switches SW2-6, SW2-7, SW2-8 to choose the load cell sensitivity (see Dip-Switch table)

6) Power on the module

7) Keep pushed the calibration button (or in alternative use digital input signal) until LED ERR is “ON”

8) Release the calibration button

9) Control that the LED ERR is flashing

10) Put the tare on the load cell

11) Keep pushed the calibration button (or in alternative use digital input signal for Z-SG model) until LED ERR switches from flashing to “OFF”

 The module has acquired the tare value.

12) Keep pushed the calibration button (or in alternative use digital input signal) until LED ERR is “ON”

13) Release the calibration button

14) Control that the LED ERR is flashing

15) Put the known weight on the tare

16) Keep pushed the calibration button (or in alternative use digital input signal) until LED ERR switches from flashing to “OFF”

 The module has acquired the known weight value.

17) Power off the module

18) Switch the Dip-Switches SW2-4 to “OFF” and SW2-5 to “ON”. In this way, the module is calibrated.

19) Power on the module

 When calibration procedure is ended, it is possible to calibrate by the digital input (only Z-SG model) or by calibration button (after switching SW2-1 to “OFF”: digital input is enabled). If a digital signal commutation (from “0” to “1”) occurs (through screw terminals 1-6), a tare value is saved in RAM memory. This value is erased if the module is power off or when a new digital signal commutation (from “0” to “1”) occurs (through screw terminals 1-6).

 If the module is power off during this procedure, calibration setting is lost. Restart the calibration procedure from the first point.

7. FACTORY CALIBRATION USING CALIBRATION BUTTON

 **WARNING**

Gross weight (tare + known weight) must not to exceed load cell end scale, to avoid serious damage to the cell.

1) Power off the module before configuring it by Dip-Switches to avoid serious damage due to electrostatic discharges.

2) Switch the Dip-Switches SW2-4 to "ON" and SW2-5 to "OFF". In this way, factory calibration using calibration button (or digital input). It is possible to acquire tare value by digital input or calibration button.

3) Switch the Dip-Switch SW2-1 to "OFF". In this way, calibration button for digital input (used during calibration procedure) is enabled and it is possible to acquire tare value.

4) Switch the Dip-Switches SW2-2 and SW2-3 as shown in Dip-Switches table, to select one of the possible modalities of analog output.

5) Switch the Dip-Switches SW2-6, SW2-7, SW2-8 to choose the load cell sensitivity (see Dip-Switch table)

6) Power on the module

7) Put the tare on the load cell

8) Keep pushed the calibration button (or in alternative use digital input signal) until LED ERR is "ON"

 The Z-SG / Z-SG-L module has acquired tare value: this value is saved in EEPROM (keep saved when the module is power off).

9) Power off the module

10) Switch the Dip-Switches SW2-4 to "OFF" and SW2-5 to "OFF". In this way, Z-SG / Z-SG-L module is calibrated.

11) Power on the module

 When calibration procedure is ended, it is possible to calibrate the module by the digital input (only Z-SG model) or by calibration button (after switching SW2-1 to "OFF": digital input is enabled). If a digital signal commutation (from "0" to "1") occurs (through screw terminals 1-6), a tare value is saved in RAM memory. This value is erased if the module is power off or when a new digital signal commutation (from "0" to "1") occurs (through screw terminals 1-6).

 If the module is power off during this procedure, calibration setting is lost. Restart the calibration procedure from the first point.

 Analog output end scale is related to load cell end scale, with the following equation:

Real end scale = Load cell end scale – tare

Example:

If load cell end scale is equal to 50kg, tare is equal to 10kg and analog output scale range is 0..10V, real end scale is

Real end scale = 50 – 10 = 40kg

If technical net weight is equal to real end scale, analog output will result

$$\frac{50kg - 10kg}{50kg} X\ 100=80\%$$

and 80% corresponds to an analog output equal to 8V.

8. Remote Memorizing of the Tare

The memorizing of the tare may be perfomed in the following ways:

Action	Memorizing in Volatile Memory	Memorizing in Non-Volatile Memory	Notes
Digital Input with ON 4 5	●		-
Digital Input with ON 4 5		●	Only for Modes 2 or 4. Once the tare has been saved, restart the module in these modes.
Digital Input with ON 4 5	●		-
Bit in reg. STATUS or Command 49594 with ON 4 5	●		-
Bit in reg. STATUS or Command 49594 with ON 4 5	●		-
Command: 49914 with ON 4 5	●	●	-
Command: 49914 with ON 4 5	●	●	-

9. LEDs for signalling

In the front-side panel there are 4 LEDs and their state refers to important operating conditions of the module.

LED	LED status	Meaning
PWR	Constant light	The power is on
ERR	Blinking light	See “Setting by calibration button”
	Turn off after 3 seconds	See “Setting by calibration button”
RX	Constant light	Verify if the bus connection is corrected
	Blinking light	The module received a data packet

TX	Blinking light	The module sent a data packet

10. Easy-SETUP

To configure the Seneca Z-PC Line modules, it is possible to use Easy-SETUP software,

Free-downloadable from the www.seneca.it; the configuration can be performed by RS232 or RS485 bus communication.