Z-SG Strain Gauge Converter Calibration and Function Addendum

MODE 1 - USE IF:

- THE USER DOES NOT HAVE A COMPUTER

- THE USER HAS A WEIGHT OF KNOWN VALUE TO ASSOCIATE WITH THE MAXIMUM VALUE OF THE ANALOG OUTPUT.

= FS analog output

PREPARATION FOR CALIBRATION

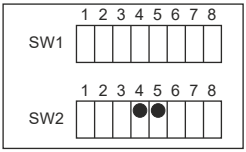
ATTENTION:

a - the gross weight (tare + known_weight) must not exceed the maximum capacity of the strain gauge to avoid damaging it.

b - do not consider the values provided by the analog output during the calibration phase.

1 - Disconnect the module's power supply.

2 - Set the **dip-switch SW2**:
4 ON and 5 ON as in the figure:

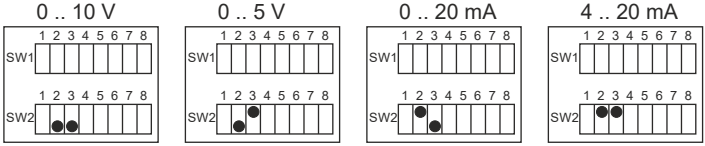


3 -Set SW2 dip-switches 6, 7 and 8 according to the following table:

STRAIN GAUGE SENSITIVITY	DIP 6 of SW2	DIP 7 of SW2	DIP 8 of SW2
> 0 mV/V & ≤ 1 mV/V	OFF	OFF	OFF
> 1 mV/V & ≤ 2 mV/V	OFF	OFF	ON
> 2 mV/V & ≤ 4 mV/V	OFF	ON	OFF
> 4 mV/V & ≤ 8 mV/V	OFF	ON	ON
> 8 mV/V & ≤ 16 mV/V	ON	OFF	OFF
> 16 mV/V & ≤ 32 mV/V	ON	OFF	ON
> 32 mV/V & ≤ 64 mV/V	ON	ON	OFF

4 - Set the SW2 DIP 1 OFF; this position is necessary to use the button on the side of the module or the logic input, for the acquisition of values during calibration.

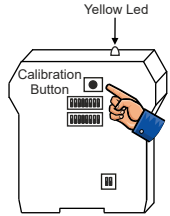
5 - Set the DIP 2 and 3 of SW2 to select the type of the analog output as in the following figure:



6 - Power the Z-SG module.

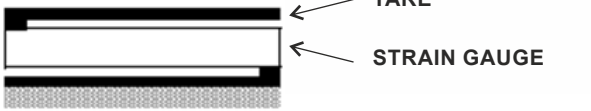
The module is now in manual calibration mode.

CALIBRATION OF ZERO or START OF SCALE



7 - Press the calibration button (or give the command to the logic input) until the yellow LED is on; then release the button. After a few seconds the LED begins flashing.

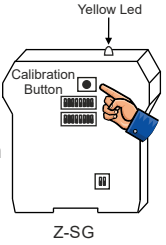
8 - Place the tare in the weighing system (see figure):



9 - Press the calibration button again (or give the command via the digital input) until the yellow LED turns off.

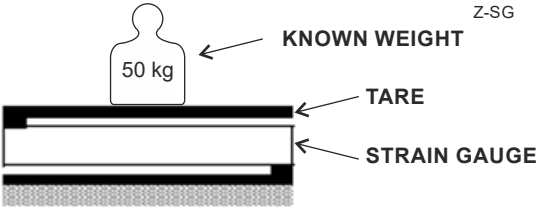
At this point the module has acquired the tare of the system.

CALIBRATION OF FULL SCALE



10 - Press the calibration button (or give the command to the logic input) until the yellow LED lights; then release the button. After a few seconds the LED begins flashing.

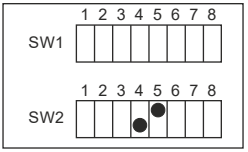
11 - Place the known weight + the tare in the weighing system (see figure):



12 - Press the side button again (or give the command via the logic input) until the yellow LED switches off.
At this point the module has acquired the known weight.

13 - Disconnect the module's power supply.

14 - Set SW2 **DIP-switch 4 OFF and 5 ON** (see figure):



The system is ready for use.

NOTES:

1 - Once the calibration procedure has been completed, it is still possible to perform the system TARE by using the external command (after configuring the logic I/O, terminals 1 and 6, as logic input).
However this tare value will be lost at the next command of TARE given by the logic input or if module is powered off.
At module restart, the tare value acquired during the initial calibration will be restored.

2 - If during the calibration procedure, the module is powered down, the calibration is lost. At power-on, it will be necessary to start calibration from the beginning.

MODE 2 - USE IF:

- THE USER DOES NOT HAVE A COMPUTER

- THE USER HAS A STRAIN GAUGE CELL WITH KNOWN SENSITIVITY.

PREPARATION FOR CALIBRATION

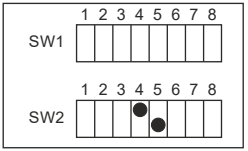
ATTENTION:

a - the gross weight (tare + known_weight) must not exceed the maximum capacity of the strain gauge to avoid damaging it;

b - do not consider the values provided by the analog output during calibration.

1 - Disconnect the module's power supply.

2 - Set the **DIP-switch SW2**:
4 ON and **5 OFF** as in the figure below:

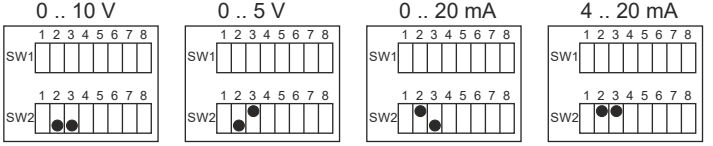


3 -Set **SW2** dip-switches **6**, **7** and **8** according to the following table:

STRAIN GAUGE SENSITIVITY	DIP 6 of SW2	DIP 7 of SW2	DIP 8 of SW2
> 0 mV/V & ≤ 1 mV/V	OFF	OFF	OFF
> 1 mV/V & ≤ 2 mV/V	OFF	OFF	ON
> 2 mV/V & ≤ 4 mV/V	OFF	ON	OFF
> 4 mV/V & ≤ 8 mV/V	OFF	ON	ON
> 8 mV/V & ≤ 16 mV/V	ON	OFF	OFF
> 16 mV/V & ≤ 32 mV/V	ON	OFF	ON
> 32 mV/V & ≤ 64 mV/V	ON	ON	OFF

4 - Set **SW2-1 OFF**; this is necessary to use the module side button or the logic input for the acquisition of the values during calibration.

5 - Set **2** and **3** of **SW2** to select the type of analog output as shown below.

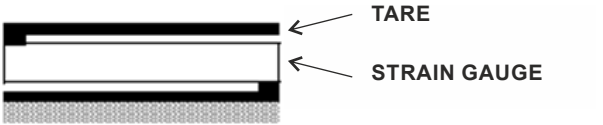


6 - Power the Z-SG module.

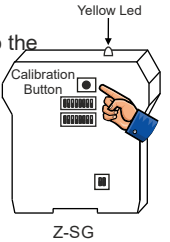
With DIP switches 4 and 5 of SW2 set as in step 2, it is possible to save the value of the system tare in EEPROM by performing the following steps.

CALIBRATION OF ZERO or START SCALE (= SYSTEM TARE)

7 - Place the tare in the weighing system (see figure):



8 - Press the calibration button (or give the command to the logic input) until the yellow LED lights.

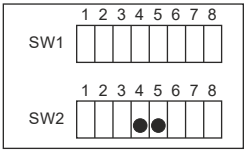


At this point the module has acquired the tare which will be used until the next calibration procedure.

The module stops waiting for a power-off.

9 - Disconnect the module's power supply.

10 - Set SW2 **switch 4 and 5 OFF** as in figure:



The system is ready for use.

NOTES:

1 - Once the calibration procedure has been completed, it will be still possible to perform the system TARE by using the external command (after configuring the I/O terminals 1 and 6, as logic input).
However this tare value will be lost at the next command of TARE given by the logic input or if the module is powered off.
At module restart, the tare value acquired during the initial calibration will be restored.

2 - If during the calibration procedure, the module is powered-down, the calibration is lost. At the power-on, it will be necessary to start calibration from the beginning.

3 - In this mode, the FS of the analog output is associated with the FS of the strain gauge; however this will be possible only if the tare of the system is null, otherwise the allowed FS will be:

$$FS_{SYSTEM} = FS\_STRAIN\_GAUGE - TARE$$

Example: If the strain gauge has a FS equal to 50 Kg, the tare is 10 Kg and the analog output is set as 0-10 V, the maximum FS of the system will be:

$$FS_{SYSTEM} = 50 - 10 = 40 \text{ Kg}$$

Corresponding to this weight, the analog output is in percentage of FS:

$$\frac{50 \text{ Kg} - 10 \text{ Kg}}{50 \text{ Kg}} \times 100 = 80 \%$$

This results in a voltage output value of 8 Volts.

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