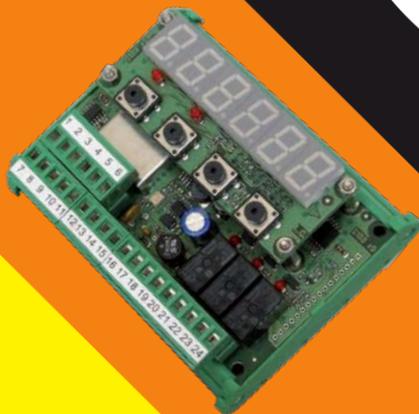




**GICAM** s.r.l.



**WIN6**

Software PW0501

Versione 1.0

**Manuale  
Manual  
Handbuch**

Manuale d'installazione e d'uso

Installation and user manual

Installations- und Bedienungsanleitung



LIMITATORE di carico

load LIMITER

LASTBEGRENZER

**WIN6**

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## Installation manual



### Technical specification

Board power supply	12 – 24 V ac $\pm$ 15 %
Power consumption	4 W
Insulation	Class III
Storage temperature	- 20 °C / + 60 °C (-4 °F / 140 °F)
Operating temperature	- 10 °C / + 50 °C (14 °F / 122 °F)
Humidity	Max. 85% non-condensing
Weight display	Numeric 6-digit, 7-segment LED (h 14mm)
LED	5 3 mm indicator LEDs of which 3 indicate the relay outputs status
Keyboard	4 mechanical keys
Overall dimensions	115 x 93 x 65 mm (4.53 x 3.66 x 2.56 in)
Installation	Support DIN or OMEGA rail
Support material	Polyamide 6.6 UL 94V-0, self-extinguishing
Wire connections	Removable screw terminals
Pitch screws terminal blocks	5,08 mm
Input sensivity load cella (max. 4)	$\geq$ 0,02 $\mu$ V
Linearity	< 0,01 % of full scale
Temperature deviation	<0,001 % of full scale/ °C
Internal resolution	24 bit
Measuring range	From -3.9 mV/V to +3.9 mV/V
Output rate	10 Hz
Digital filter	0.1 Hz – 10 Hz, selectable
Weight decimals	From 0 to 3 decimals
Calibration Zero and full scale	Executable through buttons
Logic alarm outputs	2 relay out (24 V DC/AC, one NO contact), 1 relay out (24 V DC/AC, one changeover contact), relay contact capacity 0.5 A
Logical inputs	1 optically isolated dry contact
Analogue output (option) tension	0 – 10 V / 0 – 5 V
Analogue output (option) current	0 – 20 A / 4 – 20 mA
Impedance tension	$\geq$ 10 k $\Omega$
Impedance current	$\leq$ 300 $\Omega$
Resolution	16 bit
Calibration	Digital through keyboard
Linearity	< 0,03 % of full scale
Serial ports	RS 232 / RS485 (alternatively)
Baud rate	Up to 115 kb/s (default 9600 b/s)
Maximum cable length	15 m (RS323), 1000 m (RS485)
Program code memory	32 kbyte
Data memory	2 kbyte
Compliance to EMC norms	EN61000-6-2, EN61000-6-3
Compliance electric safety	EN61010-1

## Symbology



Attention! This operation has to be carried out by specialized personnel.



Pay particular attention to the following indications!



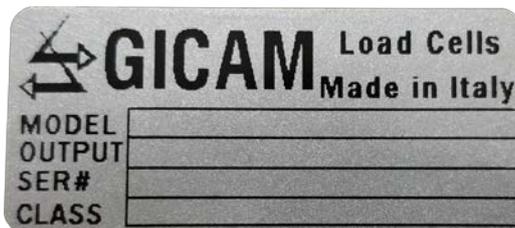
Further information

## Warnings



- The procedures listed below have to be executed by specialized operators!
- All connections have to be executed with the instrument shut off!

## Identification plate of the instrument



It is important to communicate this data in case of request for information or indications concerning the instrument together with the program number and the version which are shown on the cover of the manual and are displayed when the instrument is switched on.

## Power supply of the instrument

- i**
- The instrument is powered via terminals 14 and 15.
  - The power cable must be routed separately from other power cables with different voltages, load cell cables and logic inputs / outputs.

Supply voltage: 12 – 24 V ca  $\pm$  15%, 4 VA

Terminal board connection:    14 – Power supply +  
    15 – Zero

## Connection of the load cells

- !**
- The cell (or cells) cable(s) must not be channeled with other cables (for example outputs connected to contactors or power cables), but must follow its own path.
  - Any cable extension connections must be carefully shielded, respecting the color code and using the cable of the type supplied by the manufacturer. The extension connections must be made by welding, or through support terminal blocks or through the junction box supplied separately.
  - The cell cable must have a number of conductors not higher than those used (4 or 6). In the case of a multi-conductor cable, connect the remaining wires to the cell power supply (terminal 2)

Up to a maximum of 4 350 ohm cells in parallel can be connected to the instrument. The supply voltage of the cells is 5 V direct current and is protected against a temporary short circuit. The measuring range of the instrument involves the use of load cells with sensitivity from 1 mV / V to 3 mV / V. The cable of the load cells must be connected to terminals 1 ... 6 of the removable terminal board. In the case of a 4-conductor cell cable, connect the cell power terminals to the respective polarity of the reference terminals (1-4 2-3).



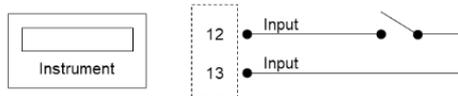
Connect the shield of the cell cable to terminal 1!

## Connection logical input

The logic input is isolated from the instrument through an optocoupler.



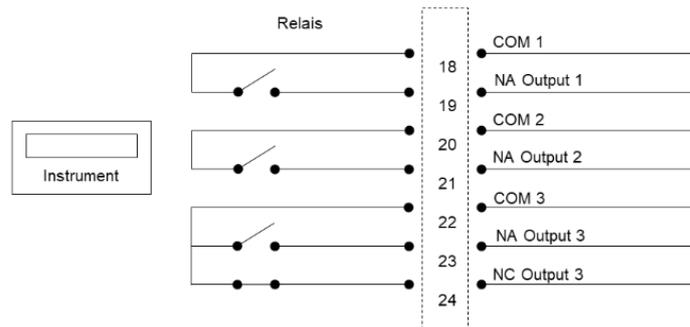
- The connection cable of the logic input must not be channeled with power or power cables
- Use a connection cable as short as possible (no longer than 5 meters). If a longer length is required, use a relay relay.



In the case of DC power supply (e.g. 24 V dc) and a long or disturbed input connection cable, we recommend connecting pin 13 (input) and 14 (+ power supply) instead of 12 and 13

## Relay output connection

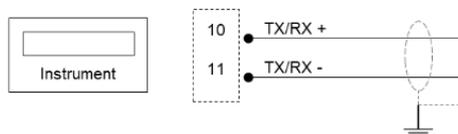
The three outputs are relayed with three commons. The capacity of each contact is 24 V DC / VAC 0.5 A.



## Serial RS485 connection



The cable must not be channeled with other cables (e.g. outputs connected to remote control switches or power supply cables), it must possibly follow its own path.

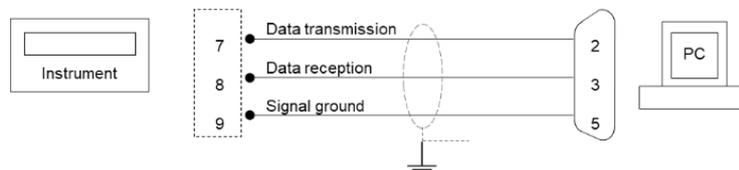


## Serial RS232 connection



- To make the serial connection, use a shielded cable, taking care to connect the screen to ground at only one of the two ends. If the cable has more conductors than those used, connect the free wires to the screen.
- The serial connection cable must have a maximum length of 15 meters (EIA RS-232-C standards), beyond which it is necessary to adopt the RS422 interface with which the instrument is equipped.
- The cable must not be channeled with other cables (e. g. outputs connected to remote control switches or power cables), but it must possibly follow its own path.
- The PC used for the connection must comply with the EN 60950 standard.

The connection diagram with a 9-pole PC connector is shown below:



## Connection of analog output (optional)

The instrument, when it is in this hardware configuration, provides an analogue output in current or in voltage.

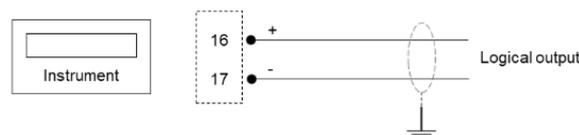
### Characteristics

- Analogue voltage output: range from 0 to 10 volts or from 0 to 5 Volts, minimum load 10 k $\Omega$
- Analogue current output: range from 0 to 20mA or from 4 to 20mA, maximum load 300 $\Omega$

The settings for the type of analog output supplied (voltage or current) are determined at the factory and must be specified at the time of purchase.

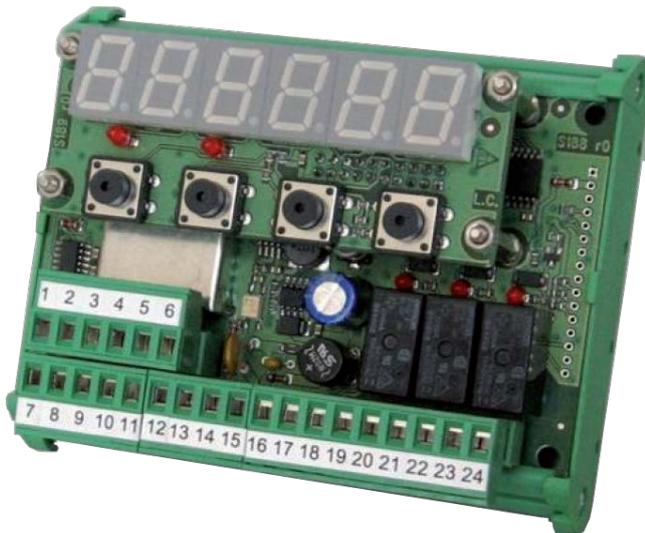


- To make the connection use a shielded cable, taking care to connect the screen to ground at only one of the two ends.
- Analogue transmission is particularly sensitive to electromagnetic disturbances; it is therefore suggested that the cables are as short as possible and that they follow their own path.



## Connection summary

Number	6-point terminal block	Number	18-point terminal block
1	Power supply cells -	7	RS232 TX
2	Power supply cells +	8	RS232 RX
3	Reference +	9	RS232 ground
4	Reference -	10	RS485 TX/RX +
5	Signal -	11	RS485 TX/RX -
6	Signal +	12	Input dry contact
		13	Input dry contact
		14	+ Power supply
		15	- Power supply
		16	+ analog output V or mA
		17	ground analog output V or mA
		18	Common relay 1
		19	NO relay 1
		20	Common relay 2
		21	NO relay 2
		22	Common relay 3
		23	NO relay 3
		24	NC relay 3



The cell cable shield must be connected to the - cell power supply (terminal 1);

The shield of the serial cables or analogue output must be connected to ground at one of the two ends

## Termination resistance RS485 and RS422

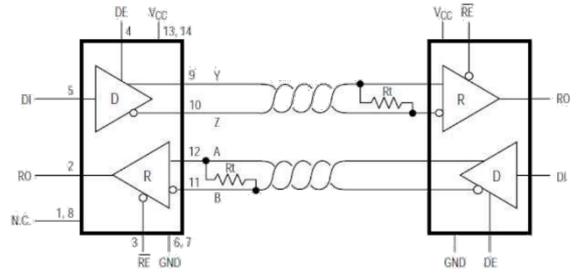
The transmission of the RS485 / RS422 link bus is of the differential type, i. e. the signal is the result of the difference between the voltages of the two wires that make up the bus.

The RS485 / RS422 transmitters provide (under load) an output level of  $\pm 2-3V$  between outputs A and B; the receivers recognize levels up to  $\pm 200$  mV as a valid signal.

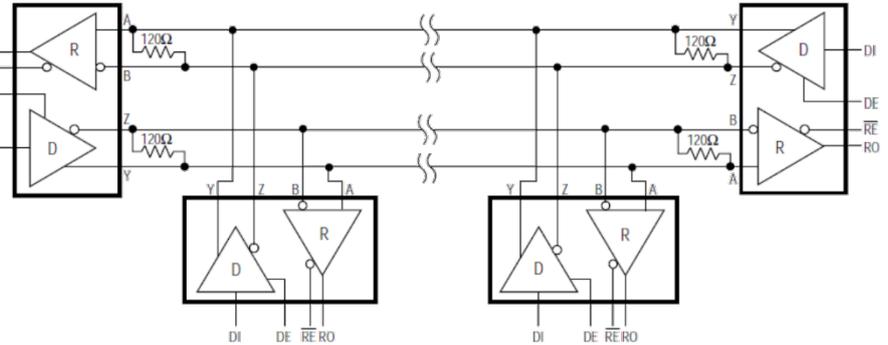
This technique allows an excellent noise immunity even on very long cable runs. To make the line more immune to noise, the first and last device on the network should have a termination resistance connected in parallel with the line.

Typically, it is necessary to use termination resistors whose value ranges from 120 to 560 ohms. When the terminating resistors are present, there must also be the polarization resistors of the two lines, which are normally present in the master (PLC) or connectors, so that at rest the difference in potential between the two lines is greater than 200 mV, as required by the RS485 specification.

In the case of connection to two RS422 pairs and two nodes, the resistors are placed near the farthest receiver and the value can go down to 120 Ohm (figure on the side).

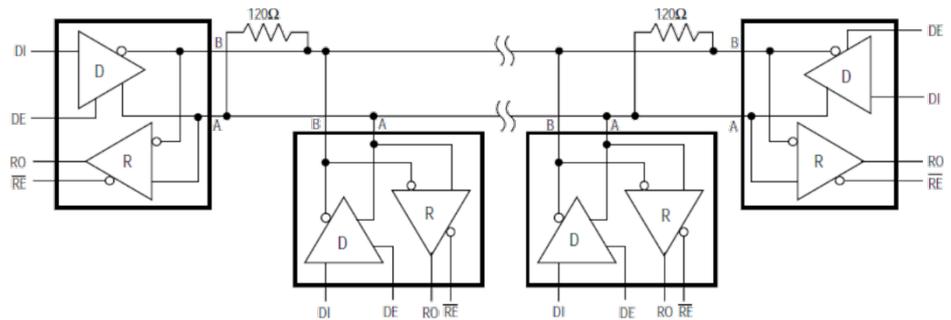


In the case of connection to two RS422 but multi-node pairs, the same 120 Ohm value is indicated in the figure opposite, but this applies to very long lines (hundreds of meters). In the case of shorter lines the resistances must be increased



because the total impedance with the 120 Ohms would be a little too low, 60 Ohm without counting the load of the receivers, so it would be better to use resistors of about ~ 250 Ohm.

The same goes for the RS485 connection. Use 250 Ohm resistance for non-excessively long lines.





## User manual



### Main characteristics of use

The main operating characteristics are:

- Weight control detected by alarm and pre-alarm thresholds
- Alarm due to cell failure or power failure

### Display signals

The weight of the scale is normally displayed on the 6-digit display. According to the various programming procedures, the display is used for programming the parameters to be inserted in the memory, ie messages indicating the type of operation being carried out and therefore helping the operator in the management and programming of the instrument.



When the instrument is switched on, the display is tested, and then a code identifying the software and its version appears. It is important to communicate these codes in case of request for assistance.

When a programming procedure is not in progress, the display shows the measured weight expressed in kg. Under certain conditions, the following messages are reported:



#### Signal weight not detectable

Weight signal not detectable.



#### Signal of underweight

Indication of weight outside the negative reading range.

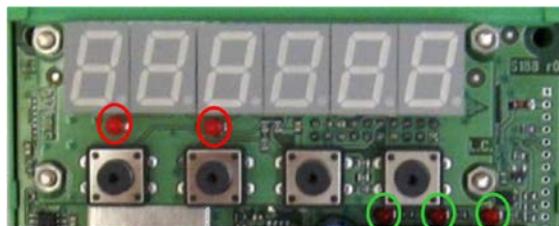


#### Overload signal

When the gross weight in the scale exceeds the maximum load capacity of the weighing system by more than 9 divisions, the display shows this message (see page 36).

### LED indicators (red)

Near the display, there are 2 LEDs that indicate respectively if there is a tare (the LED on the left is lit) and if the weight is stable (the LED on the right is on).

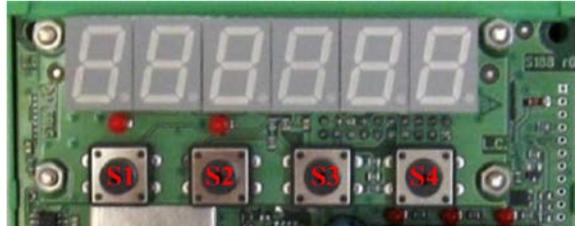


### Other LED indicators (green)

Near the relays there are three indicator LEDs that are on when the relative relay is energized.

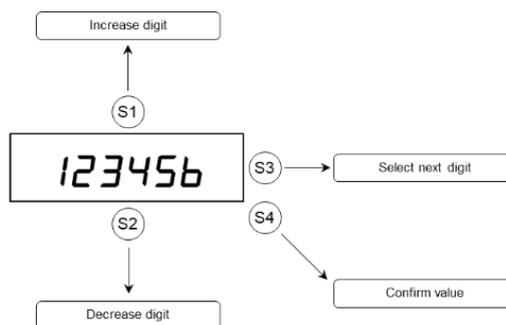
## Use of the keyboard

The instrument is programmed and controlled through the keypad consisting of 4 keys, all with multiple functions. The instrument, according to the operation in progress, automatically stabilizes the selection of one of the key functions.



Key	Function
S4 + S1	(Long press) Access to the set points programming menu
S4 + S2	(Long press) Access to the setup menu
S3	(Long press) Restores zero balance
S4	When switching on insert the password for memory reset

## Data setting



## Restore zero (semi-automatic zero)

This operation is performed to correct small shifts of the zero of the instrument.



The gross weight reset command is not executed under the following conditions:

- Weight instable (the weight does not stabilize within 3 seconds of the reset command)
- When the gross weight, compared to the original zero calibration, is greater (positive or negative) than 200 divisions

The operation to reset the gross weight is maintained when the instrument is switched off.

## Self weighing tare (autotare)



The auto tare command is **not** executed under the following conditions:

- Unstable weight (the weight does not stabilize within 3 seconds of the auto tare command).
- Gross weight negative



## Input and output

### Input

- 1 Reset displayed value (auto tare)

### Output

- 1 Set-point output 1 positive intervention
- 2 Set-point output 2 positive intervention
- 3 Set-point output 2 positive or negative intervention

The relays are normally energized.

When a set point is exceeded, the relative relay de-energizes.

When a set point has a value of zero, its output is always de-energized.

All relays de-energize (alarm condition), when the following conditions occur: cell cable breakages or weight outside the nominal range (NO CON) or exceeding the maximum weight (upper dashes).

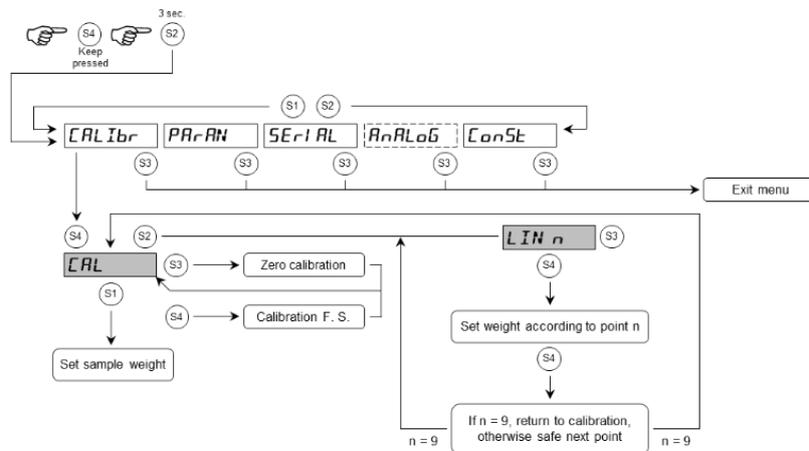
## Commissioning the instrument

To put the instrument into operation, after installation and wiring of the connections, the following operations must be carried out:

- Set the weight calibration data
- Perform the weight calibration
- Set the parameters and set-points according to your needs



## Weight calibration and linearization



During the calibration phase, the display shows the weight intermittently with the word "CAL".

During the linearization phase the display shows the weight intermittently with the wording "LIN n" where instead of n there is the number of the point to be set (from 1 to 9).

### Zero calibration

Carry out the operation with the scales unloaded but complete with the tare weight, with stabilized weight. The displayed weight must be reset. This operation can be repeated several times.

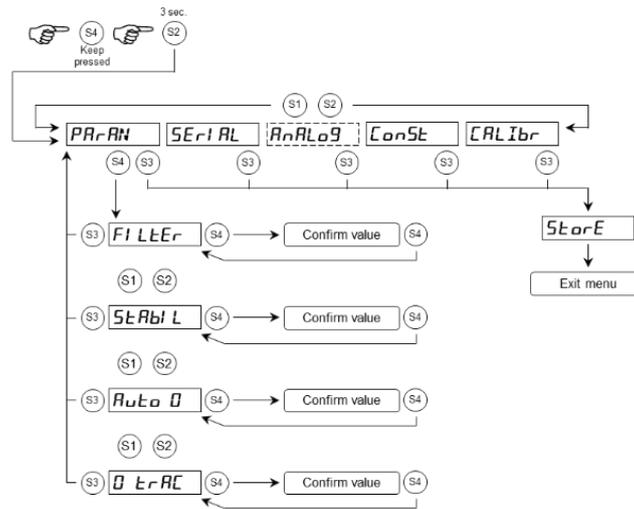
### Full scale calibration

Before carrying out the operation, load the sample weight on the scale and wait for it to stabilize; the display shows the measured value to be calibrated. If the set value is higher than the resolution offered by the instrument, it is not accepted and the display shows an error message for a few seconds. It is always possible to repeat the calibration operations.



If the instrument is switched off without leaving the set-up menu, the programmed settings will not be memorized.

## Weighing parameters setting menu



### Weight filter

# FILtEr

This parameter adjusts the action of the digital filter applied to the detected weight. If a low value is programmed the filter action is lower, by programming a high value the weight is more filtered (minimum value 0, standard value 5, max value 9).

In the first case, a faster response of weight variations is obtained.

In the second one, we get a slowing of the weight response on the display, which allows to absorb oscillations or vibrations of the weighing system.

### Weight stability

# StAbiL

The weight is considered stable when it is kept within a certain range for a certain period of time.

#### Value Variation

- |   |   |
|---|---|
| 0 | Stability determined very quickly.            |
| 1 | Stability determined quickly.                 |
| 2 | Stability determined with average parameters. |
| 3 | Stability determined accurately.              |
| 4 | Stability determined very accurately.         |

## Weighing parameters setting menu

### Autozero at power up

**Auto 0**

This parameter is the maximum weight zeroed at power up. The auto-zero function consists in carrying out an automatic zero calibration when the instrument is switched on, only if the detected weight stabilizes within the set threshold. To disable the function, set the value 0.

### Tracking of zero

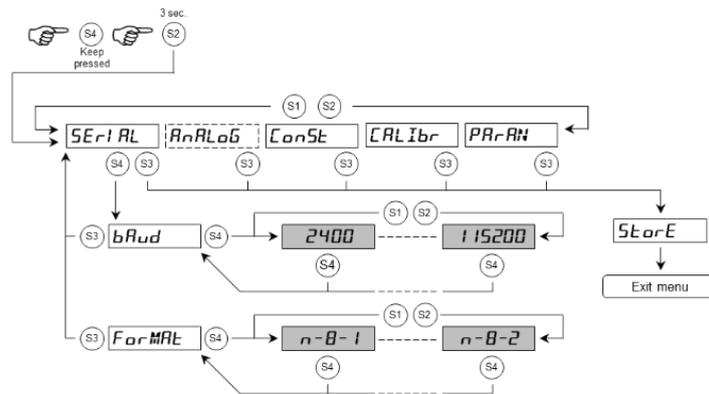
**0 tRAC**

When the scales are discharged, the instrument automatically corrects small and slow weight variations (positive or negative) compared to the zero scale.

Value	Variation
0	Tracking function of zero excluded.
1	Minimum zero tracking intervention
2	Medium zero tracking intervention. (standard)
3	High zero tracking intervention.
4	Maximum zero tracking intervention.

## Serial menu

In this menu it is possible to select the baud rate and the format of the continuous serial transmission.



### Select baud rate

**bAUD**

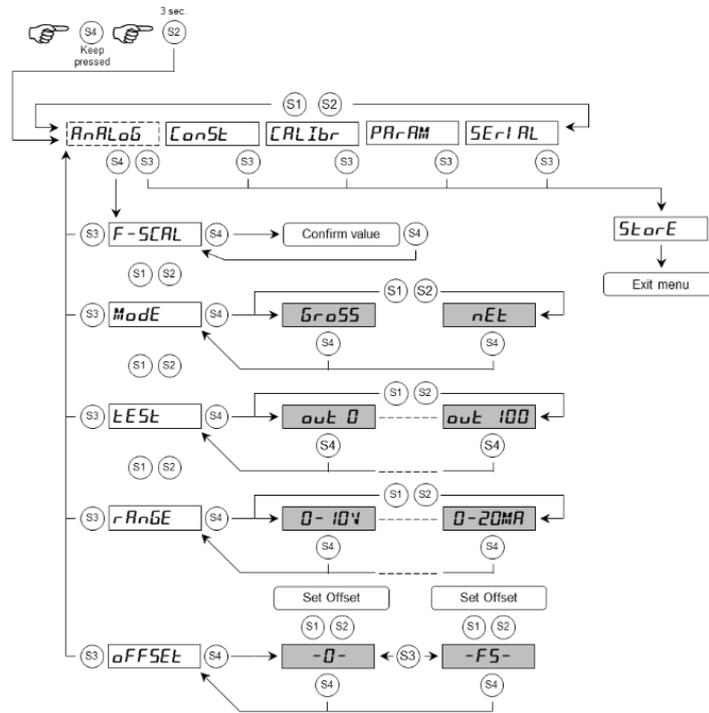
Select the baud rate to be used for continuous transmission on COM1 in RS232 or RS485 (selections: 2400, 9600, 19200, 38400, 57600, 115200)

### Select data format

**FORMAT**

Select the data format to be used for continuous transmission on COM1 in RS232 or RS485 (selections: N-8-1, O-8-1, O-7-1, E-8-1, E-7-1, N -8-2)

## Analog output set-up and test menu (optional)



### Full scale analog output

# *F-SCALE*

The weight corresponding to the full scale of the analogue output, which may be different from the weight of the weighing system.

### Analog output operation mode

# *MODE*

Selection of the transmitted value by the analogue output.

*NET GROSS* (The analogue output assumes the value corresponding to the net weight / gross weight)

### Test analogue output

# *TEST*

With this procedure, it is possible to check the functioning of the analogue output, determining the output value with the keyboard. The figure on the right indicates the percentage of the output value with respect to full scale.

### Range analogue output

# *RANGE*

*0-20mA 4-20mA 0-10V 0-5V*

(The output range of the output can be 0-20 mA, 4-20mA, 0-10 V, 0-5 V).

### Offset adjustment (calibration)

# *OFFSET*

Measure the analog output value with a tester to perform zero (0) and full scale (FS) calibration. Use the arrow keys to adjust the analogue output. Press and hold the key for a quick change.

### Limit values

- When the weight exceeds the programmed full scale, the output assumes a value higher than the full scale of the analog output up to a limit value (saturation).
- When the weight is negative the output assumes a value lower than the minimum value up to a limit value (saturation).
- When the weight is not detectable when the instrument is switched on, the analogue output takes a minimum value lower than the nominal minimum value.

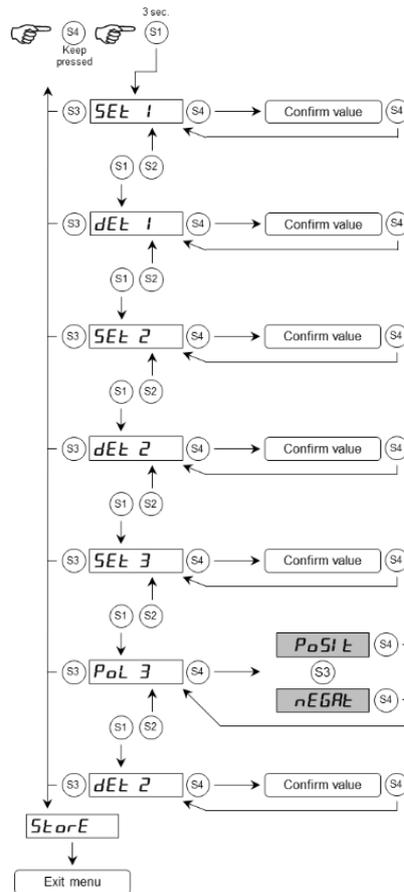


If the instrument is switched off without leaving the set-up menu, the programmed settings will not be memorized.

The frequency of updating the signal is that of updating the display (10 Hz). The filter applied to the analogue output (being a reversion of the digital value) are those applied to the weight display.

When the weight is not valid (weight outside the measuring range, weight not yet detected at power-up), the output signal assumes the minimum value.

## Output configuration



### Set point programming

**SEt 1**

The set threshold values are compared with the weight to drive the relative relay.

**SEt 2**

- If the value of the threshold in memory is 0, the relative relay is always de-energized. In this way the instrument can only be used with a weight lower than a set threshold.

**SEt 3**

- When the weight is not detectable or out of scale, the relays are all de-energized (open contact).

### Excitation delay

**dEL 1**

Output excitation delay with respect to the occurrence of the condition (in 1/10 sec.).

**dEL 2**

**dEL 3**

### Programming polarity of intervention of the logic output 3

**Pol 3**

The intervention can be in positive or negative.

## Serial protocol

### Continuous transmission protocol

This protocol is used for continuous transmission, usually towards the repeater panel.

COMMUNICATION PARAMETERS ARE SELECTABLE (see serial menu on page 39)

STRING TRANSMITTED AT A FREQUENCY OF 10 Hz:

**STX <state> <net> ETX <csum> EOT**

**<state>** = character coded as in the following table (bit = 1 if condition TRUE)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	1	1	Tare in- sertet	Minimum weighing	Weight stable	Center zero

**<netto>** = fields consisting of 8 ASCII characters with the weight value justified on the right.

In overweight conditions, the field assumes the value: "^^^^^^".

In underweight conditions, the field assumes the value: "\_\_\_\_\_".

Under weight reading error conditions, the field assumes the value: " O-L ".

**<csum>** = checksum of string data. It is calculated by executing the exclusive OR (XOR) of all the characters from STX (or from <Ind>) to ETX excluding the latter; the result of the XOR is decomposed into 2 characters considering separately the 4 upper bits (first character) and the lower 4 bits (second character); the 2 characters obtained are then ASCII coded; (example: XOR = 5Dh; <csum> = "5Dh" that is 35h and 44h).

## Troubleshooting Guide

<b>Problem</b>	<b>Possible cause</b>	<b>Solution</b>
The threshold control does not work	The thresholds have not been set	Set the threshold values by following the relevant instructions
The instrument checks the thresholds incorrectly	Parameters for the threshold control have not been set	Make sure that they are set according to the desired modes
The semi-automatic zero-function does not work	The gross weight exceeds the action limit of semiautomatic zero The weight does not stabilize	To restore zero the weight must be calibrated Wait for the weight to stabilize or adjust the weight filter parameter
The autotara function does not work	The gross weight is negative or has reached the maximum capacity The weight does not stabilize	Check the gross weight Wait for the weight to stabilize or adjust the weight filter parameter
Serial communication does not work properly	The connection was not correctly executed Baud rate and data format have not been set correctly	Check the connection as described in the installation manual Check the settings in the serial menu





La versione più aggiornata di questo materiale è disponibile sul nostro sito: [www.gricamgra.com](http://www.gricamgra.com)

The latest version of this manual can be downloaded from our website: [www.gicamloadcells.com](http://www.gicamloadcells.com)

Die neueste Version dieses Handbuchs finden Sie auf: [www.gicamwaegesystemwiegezellen.com](http://www.gicamwaegesystemwiegezellen.com)



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