

GC-DESK-BR/BL GC-TAB-BR/BL

Weighbridge



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User Manual

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SYMBOLS

Here are the symbols used in the manual to draw the reader's attention:



Caution! Risk of electric shock.



Caution! This operation must be performed by skilled personnel.



Pay particular attention to the following instructions.



Further information.

WARRANTY

24 months from the date of the delivery note. Warranty covers only failures of defective components (due to construction defects or defects in materials) and includes replacement or repair of the components and related labor costs.

Warranty is automatically forfeited in the event of:

- tampering, deletion, removal of the identification label and/or serial number of the product
- misuse, transformation, alteration, repair of products not carried out by Laumas personnel

Laumas provides a 1-year warranty from the date of the delivery note on defects in material or manufacture of the battery.

GUIDELINES FOR PROPER DISPOSAL



**Sealed Lead Acid
Battery
Must be recycled
Properly**

This symbol on the product or packaging indicates that:

- This is electrical/electronic equipment and cannot be disposed of as municipal solid waste, but must be delivered to a recycling center
- Improper use or disposal can pollute the environment or damage human health
- Non-compliance with these guidelines will be penalized in accordance with the regulations in force in the country of destination
- It is recommended to dispose of the packing and packaging as required by local regulations

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USER WARNINGS

RECOMMENDATIONS FOR THE PROPER USE OF WEIGHING INSTRUMENT

- Keep away from heat sources and direct sunlight
- Repair the instrument from rain (except special IP versions)
- Do not wash with water jets (except special IP versions)
- Do not dip in water
- Do not spill liquid on the instrument
- Do not use solvents to clean the instrument
- Do not install in areas subject to explosion hazard (except special Atex versions)

RECOMMENDATIONS FOR CORRECT INSTALLATION OF WEIGHING INSTRUMENTS

The terminals indicated on the instrument's wiring diagram to be connected to earth must have the same potential as the weighed structure (same earthing pit or earthing system). If you are unable to ensure this condition, connect with an earthing wire the terminals of the instrument (including the terminal –SUPPLY) to the weighed structure.

The cell cable must be individually led to its panel input and not share a conduit with other cables; connect it directly to the instrument terminal strip without breaking its route with support terminal strips. Use "RC" filters on the instrument-driven solenoid valve and remote control switch coils.

Avoid inverters in the instrument panel; if inevitable, use special filters for the inverters and separate them with sheet metal partitions.

The panel installer must provide electric protections for the instruments (fuses, door lock switch etc.). It is advisable to leave the equipment always switched on to prevent the formation of condensation.

MAXIMUM CABLE LENGTHS

- RS485: 1000 metres with AWG24, shielded and twisted cables
- RS232: 15 metres for baud rates up to 19200
- Analog current output: up to 500 metres with 0.5 mm² cable
- Analog voltage output: up to 300 metres with 0.5 mm² cable

RECOMMENDATIONS FOR CORRECT INSTALLATION OF THE LOAD CELLS

SIZING OF LOAD CELLS CAPACITY

For safety reasons, in case of static weighing, it is advisable to use the load cells at a maximum of 70-80% of its nominal capacity (assuming that the load is uniformly distributed over the entire weighed structure); depending on the handling mode of the load to weigh, consider to further reduce the % of load with respect to the nominal capacity (ex.: forklifts handling, bridge cranes, etc.).

In case of weighing with dynamic loads, the installer has to estimate the thrust speed, the acceleration, the frequency, etc.

INSTALLING LOAD CELLS

The load cells must be placed on rigid, stable in-line structures; it is important to use the mounting modules for load cells to compensate for misalignment of the support surfaces.

PROTECTION OF THE CELL CABLE

Use water-proof sheaths and joints in order to protect the cables of the cells.

MECHANICAL RESTRAINTS (pipes, etc.)

When pipes are present, we recommend the use of hoses and flexible couplings with open mouthpieces with rubber protection; in case of hard pipes, place the pipe support or anchor bracket as far as possible from the weighed structure (at a distance at least 40 times the diameter of the pipe).

WELDING

Avoid welding with the load cells already installed. If this cannot be avoided, place the welder ground clamp close to the required welding point to prevent sending current through the load cell body.

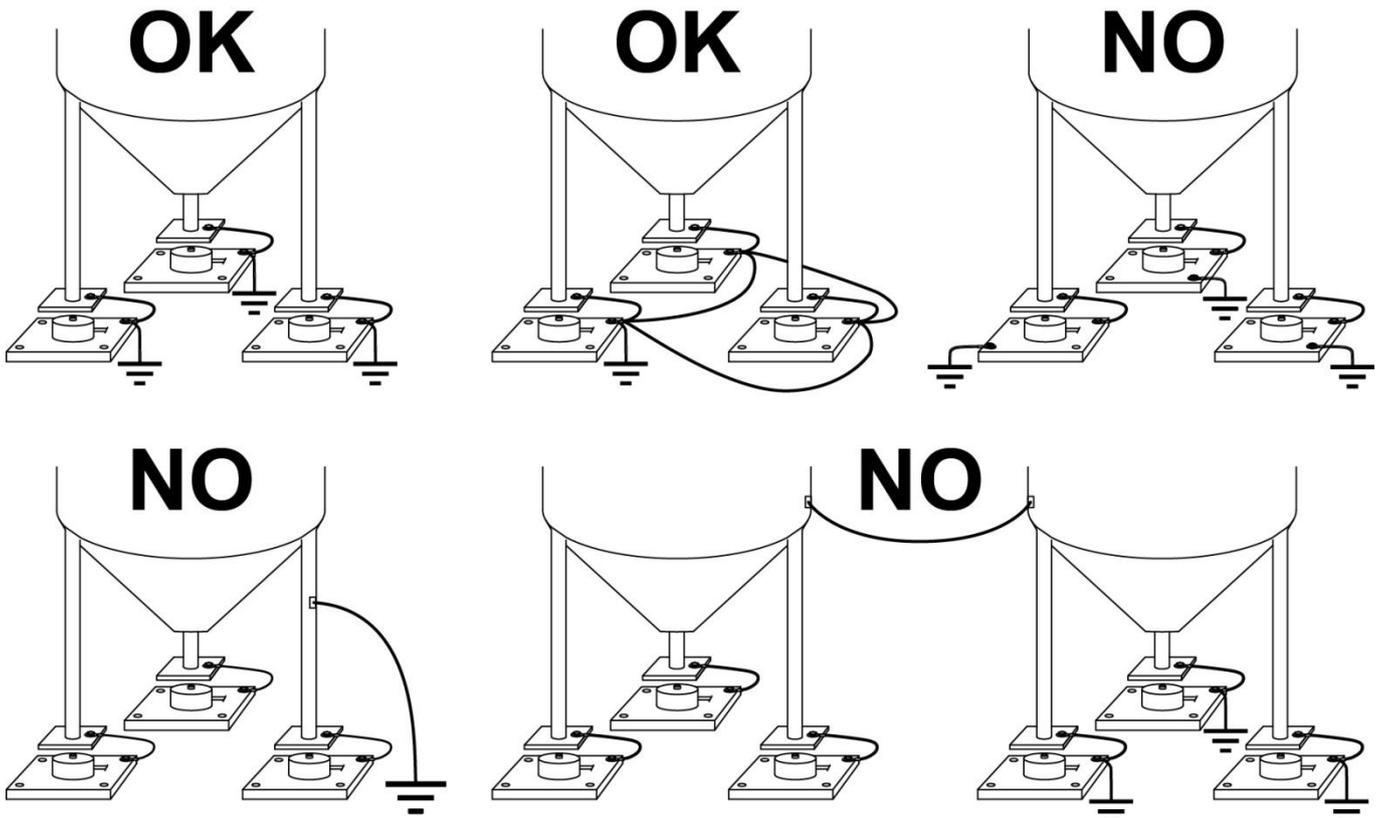
WINDY CONDITIONS - KNOCKS – VIBRATIONS

The use of weigh modules is strongly recommended for all load cells to compensate for misalignment of the support surfaces. The system designer must ensure that the plant is protected against lateral shifting and tipping relating to: shocks and vibration; windy conditions; seismic conditions in the installation setting; stability of the support structure.

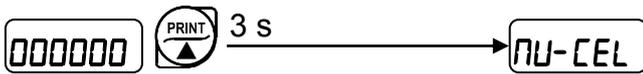
EARTHING THE WEIGHED STRUCTURE

By means of a copper wire with suitable cross-section, connect the cell upper support plate with the lower support plate, then connect all the lower plates to a single earthing system. Electrostatic charges accumulated because of the product rubbing against the pipes and the weighed container walls are discharged to the ground without going through or damaging the load cells. Failure to implement a proper earthing system might not affect the operation of the weighing system; this, however, does not rule out the possibility that the cells and connected instrument may become damaged in the future. It is forbidden to ensure earthing system continuity by using metal parts contained in the weighed structure.

FAILURE TO FOLLOW THE INSTALLATION RECOMMENDATIONS WILL BE CONSIDERED A MISUSE OF THE EQUIPMENT



LOAD CELL INPUT TEST (QUICK ACCESS)



From the weight display, press  for 3 seconds; the response signal of the load cells is displayed, expressed in mV with four decimals.

LOAD CELL TESTING

Load cell resistance measurement (use a digital multimeter):

- Disconnect the load cells from the instrument and check that there is no moisture in the cell junction box caused by condensation or water infiltration. If so, drain the system or replace it if necessary.
- The value between the positive signal wire and the negative signal wire must be equal or similar to the one indicated in the load cell data sheet (output resistance).
- The value between the positive excitation wire and the negative excitation wire must be equal or similar to the one indicated in the load cell data sheet (input resistance).
- The insulation value between the shield and any other cell wire and between any other cell wire and the body of the load cell must be higher than 20 Mohm.

Load cell voltage measurement (use a digital multimeter):

- Take out the load cell to be tested from underneath the container, or alternatively, lift the container support.
- Make sure that the excitation of two wires of the load cell connected to the instrument (or amplifier) is 5 VDC \pm 3%.
- Measure the response signal between the positive and the negative signal wires by directly connecting them to the tester, and make sure that it is comprised between 0 and \pm 0.5 mV.
- Apply load to the cell and make sure that there is a signal increment.

IF ONE OF THE ABOVE CONDITIONS IS NOT MET, PLEASE CONTACT THE TECHNICAL ASSISTANCE SERVICE.

MAIN SPECIFICATIONS OF THE INSTRUMENT

Indicator with 6-wire load cell input installable on table (WDESK model: panel front, wall or column mounting); 19-key membrane keypad, with buzzer, real-time clock/calendar with buffer battery.

Three serial ports (one RS232 and two RS485) for connection to: PC/PLC up to 32 instruments (max 99 with line repeaters) by ASCII Laumas or ModBus R.T.U. protocol, remote display, printer.

The instrument may manage:

- up to 254 simultaneous lorries.
- up to 10000 weighings that can be saved in alibi memory (optional);
- up to 999 Preset Tares retrievable via a numeric code.

The instrument can be connected to a CLM serie intelligent junction box or to a multi-channel weight transmitter.

Display:

Model	Display	Digit height	LED or signalling symbols
WDESK-BR WINOX-BR WTAB-BR	Red LED, 6 digits, 7 segments, semi-alphanumeric	20 mm	16
WDESK-BL WINOX-BL WTAB-BL	Backlit LCD, 6 digits, 7 segments, semi-alphanumeric	20 mm	max 46

Dimensions:

WDESK	Version	Max. encumbrance	Drilling
	D – D-Sub connector IP40 protection rating Front panel IP67 protection rating Power supply included	122x226x189 mm (connectors included)	96x186 mm
	Wall installation with bracket (can also be installed on table)	122x230x250 mm approx. (bracket included)	

WINOX	Type of connectors	Max. encumbrance
	D – D-Sub connector (table) IP40 protection rating Front panel IP68 protection rating Power supply included	206x286x85 mm (connectors included)

WTAB	Version	Max. encumbrance
	IP40 protection rating Power supply included	315X315X180 mm (connectors included)

BUFFER BATTERY

The instrument is equipped with an internal battery that allows to keep active the internal clock even in the event of power failure.

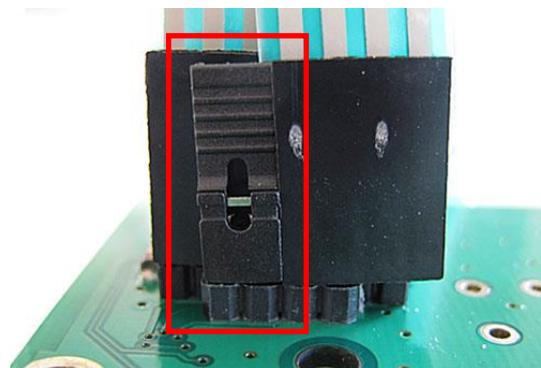
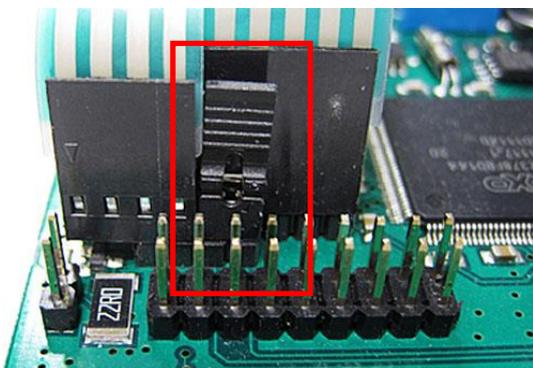


At the first start and after long periods of inactivity, leave the instrument on for at least 12 hours to fully charge the battery.

AFTER A BLACKOUT

After a blackout the instrument DOES NOT come on again automatically, you have to press ON. To guarantee an automatic restart after a blackout, disable the ON key as follows:

- disconnect power supply and open the instrument;
- identify flat connectors coming from the keypad on the main board;
- extract the 4-pole connector;
- short-circuit the following pins using the unused jumper inside the instrument:
 - WDESK: the two pins further in compared to the main board (see picture to the left);
 - WTAB/WINOX: the two outer pins compared to the main board (see picture to the right);
- connect the 4-pole flat to the two pins still free complying with initial orientation.



TECHNICAL SPECIFICATIONS

115/230 VAC power supplier included in the supply.

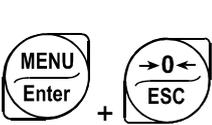
POWER SUPPLY and CONSUMPTION	12/24 VDC $\pm 10\%$; 6 W
NO. OF LOAD CELLS IN PARALLEL and SUPPLY	max 8 (350 ohm); 5 VDC / 120 mA
LINEARITY	< 0.01% F.S.
THERMAL DRIFT	< 0.0005% F.S./ $^{\circ}\text{C}$
A/D CONVERTER	24 bit (16000000 points)
MAX DIVISIONS (with measurement range: ± 10 mV = sens. 2 mV/V)	± 999999
MEASUREMENT RANGE	± 39 mV
MAX SENSITIVITY OF USABLE LOAD CELLS	± 7 mV/V
MAX CONVERSIONS PER SECOND	300 conversions/second
DISPLAY RANGE	± 999999
NO. OF DECIMALS / DISPLAY INCREMENTS	0÷4 / x 1 x 2 x 5 x 10 x 20 x 50 x 100
DIGITAL FILTER / READINGS PER SECOND	10 levels / 5÷300 Hz
RELAY OUTPUTS	N.4 - max 115 VAC; 150 mA
DIGITAL INPUTS	N.2 - optoisolated 5 - 24 VDC PNP
SERIAL PORTS	2x RS485, RS232
BAUD RATE	2400, 4800, 9600, 19200, 38400, 115200
HUMIDITY (non condensing)	85%
STORAGE TEMPERATURE	-30 $^{\circ}\text{C}$ +80 $^{\circ}\text{C}$
WORKING TEMPERATURE	-20 $^{\circ}\text{C}$ +60 $^{\circ}\text{C}$

METROLOGICAL SPECIFICATIONS OF TYPE-APPROVED INSTRUMENTS

APPLIED STANDARDS	2014/31/EU; OIML R76:2006; EN45501:2015
OPERATION MODE	single interval, multi-interval, multiple range
ACCURACY CLASS	III or IIII
MAX NUMBER OF SCALE VERIFICATION DIVISIONS	10000 (class III); 1000 (class IIII)
MINIMUM INPUT SIGNAL FOR SCALE VERIFICATION DIVISION	0.2 μV
WORKING TEMPERATURE	-10 $^{\circ}\text{C}$ +40 $^{\circ}\text{C}$

KEY, LED AND SYMBOLS FUNCTIONS

KEYS

KEY	Short press	Long press (3 s)	Into menus
	Power-on	Power-off	
	Semi-automatic zero		Cancel or return to previous menu
	Gross → Net	Net → Gross	Select figure to be modified
	Setting preset tare		Select figure to be modified
	Print menu	mV load cell test	Modify selected figure or go to previous menu item
	Database menu		Modify selected figure or go to next menu item
	Progressive menu printouts, totals, open weighings		Confirm or enter in submenu
	Setting general parameters (press  immediately followed by )		
	Lorry entrance		
	Lorry exit		

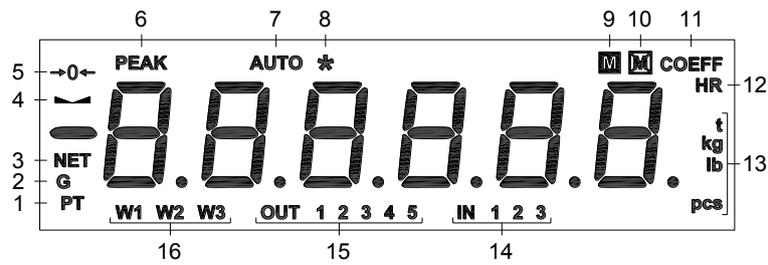
LED: WDESK-BR / WINOX-BR / WTAB-BR

LED	Function
POWER	power supply available
NET	net weight (semi-automatic tare or preset tare)
→0←	zero (deviation from zero not more than ± 0.25 divisions)
▾	stability
kg	unit of measure: kg
g	unit of measure: g
W1	current range in multiple range or multi-interval instruments
W2	
W3	
INPUT 1	LED lit: input 1 closed
INPUT 2	LED lit: input 2 closed
INPUT 3	
R1/P1	LED lit: output 1 closed
R2/P2	LED lit: output 2 closed
R3/P4	LED lit: output 3 closed
R4/P8	LED lit: output 4 closed
R5	



Into menus LEDs light up in sequence to indicate that it is not displaying a weight.

SYMBOLS: WDESK-BL / WINOX-BL / WTAB-BL



Symbol	Function
LED POWER	power supply available
1	preset tare enabled
2	gross weight
3	net weight (semi-automatic tare or preset tare)
4	stability
5	zero (deviation from zero not more than +/-0.25 divisions)
6	not used
7	not used
8	value displayed is not a weight
9	weight displayed is valid legally
10	weight displayed is NOT valid legally
11	not used
12	display in e/10
13	unit of measure reading
14	the number displayed indicates that the corresponding input is closed
15	the number displayed indicates that the corresponding output is closed
16	current range in multiple range or multi-interval instruments

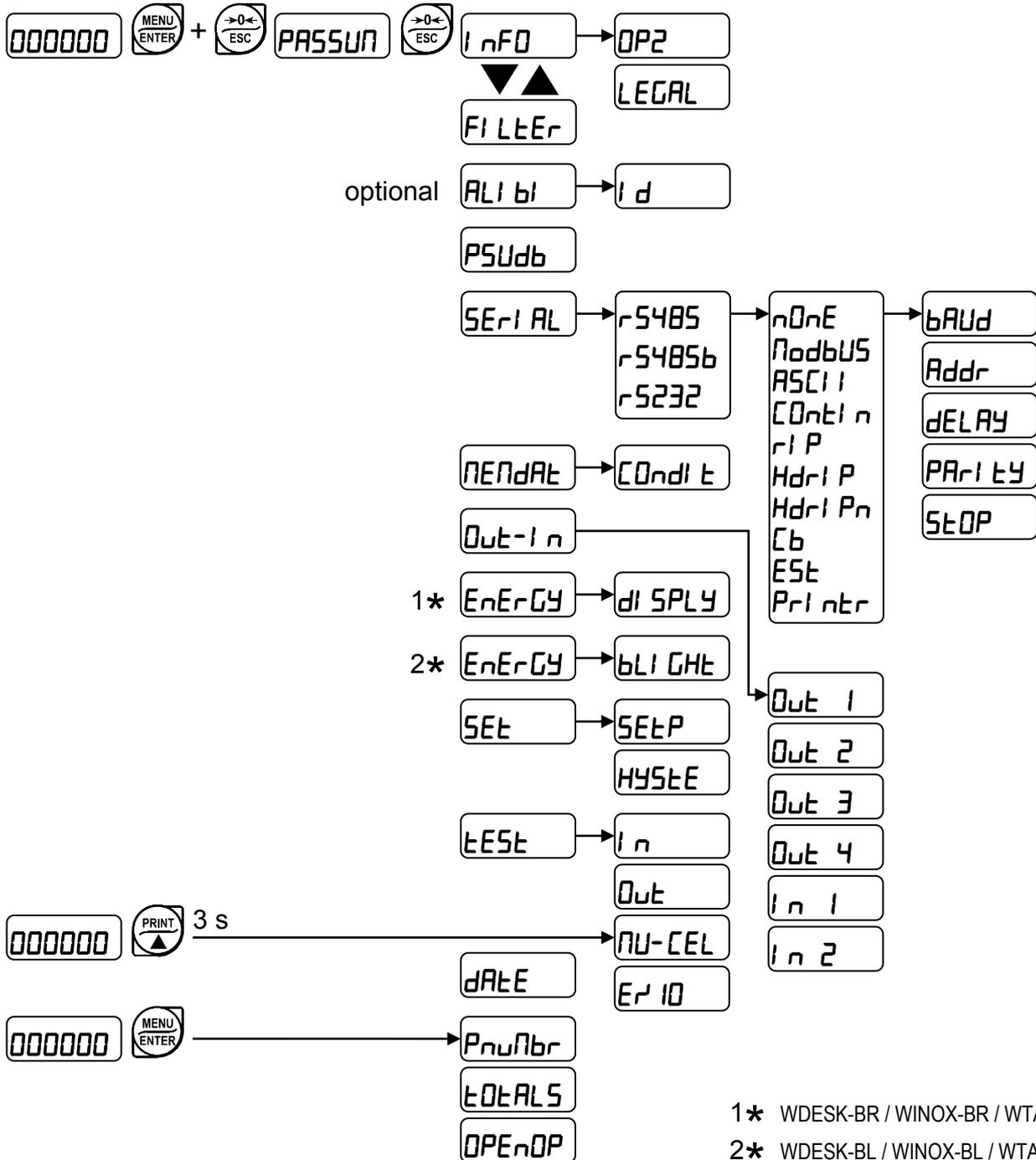


Info menu symbol 8 is on to indicate that it is not displaying a weight.

MENU MAP

Into menus changes are applied right after pressing the **ENTER** key (no further confirmation is required).

SYSTEM PARAMETERS



DISPLAY VISUALIZATIONS UPON INSTRUMENT SWITCH-ON

To turn on the instrument press **ON**. To turn it off press **OFF** for about 3 seconds: when **OFF** appears release the key.

After a blackout the instrument DOES NOT come on again automatically, you have to press **ON**.

To guarantee an automatic restart after a blackout, disable the ON key (see section **AFTER A BLACKOUT**).

Upon switch-on, the display shows in sequence:

- **111111** → **999999** (ONLY in case of approved program);
- instrument model (e.g.: **Ud5H** or **U1 nH** or **UeAb**);
- **SU** followed by the software code (e.g.: **SU 5**);
- program type: **brl d9E** (bridge);
- **r** followed by the software version (e.g.: **r 1.04.00**);
- **HU** followed by the hardware code (e.g.: **HU 238**);
- serial number (e.g.: **13000 1**);

PROGRAMMING OF SYSTEM PARAMETERS

From the weight display, press simultaneously keys **MENU** and **ESC** to access the parameter setting.

MENU/ENTER: to enter a menu/confirm the data entry.

▲ ▼: to modify the displayed figure or menu item.

◀ ▶: to select a new figure.

ESC: to cancel and return to the previous menu.

FILTER ON THE WEIGHT



Setting this parameter allows a stable weight display to be obtained.

To increase the effect (weight more stable) increase the value (from 0 to 9, default 4).

As seen in the diagram:

- By confirming the **FILTER** message, the currently programmed filter value is displayed.
- By changing and confirming the value, the weight is displayed and it will be possible to experimentally verify its stability.
- If stability is not satisfactory, confirming brings back the message **FILTER** and the filter may be modified again until an optimum result is achieved.

The filter enables to stabilise a weight as long as its variations are smaller than the corresponding “response time”. It is necessary to set this filter according to the type of application and to the full scale value set.

FILTER VALUE	Response times [ms]	Display and serial port refresh frequency [Hz]
0	12	300
1	150	100
2	260	50
3	425	25
4 (default)	850	12.5
5	1700	12.5
6	2500	12.5
7	4000	10
8	6000	10
9	7000	5

ANTI PEAK

When the weight is stable, the anti peak filter removes any sudden disturbances with a maximum duration of 1 second. Confirm the filter on the weight with **ENTER** and select one of the following options:

- *AntPOn*: anti peak filter enabled (default);
- *AntPOF*: anti peak filter disabled.

ALIBI MEMORY (ONLY FOR INSTRUMENTS WHERE THIS OPTION IS AVAILABLE)



The instrument automatically saves the weight in the alibi memory during the lorry entry or exit operations. If the net function is active, the net weight is stored; otherwise, the gross weight is stored.

Saving to the alibi memory is only possible if:

- the alibi memory is enabled;
- the weight is stable;
- the weight is above the minimum weight (20 e);
- the weight is below the max capacity;
- the weight has changed since the latest storage to alibi (see section **WEIGHINGS STORAGE AND PRINTING CONDITIONS**);

An identifying number is automatically assigned to each record stored in the memory, it increases for stored records from 1 to 999999, and is automatically reset to 1 after reaching 999999.

The alibi memory is used in a “circular” manner: when the memory end is reached, the system will restart from the memory beginning by overwriting the first record; an alarm message is displayed (**ALI FUL**).

ALIBI MEMORY READING

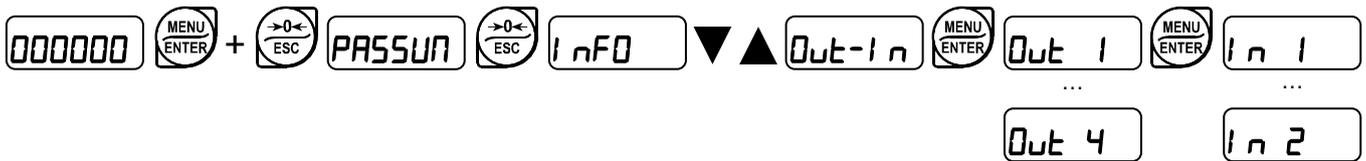
I d (identification): enter the ID number of your required record and confirm, the display will show:

- Gross weight (**GROSS**) or net weight (**NET**); confirm with **ENTER**;
- Tara weight (**TARE**) or preset tare (**PTARE**), only if the recalled weight is a net weight; confirm with **ENTER**;

The parameter provides the ID of the last record stored in Alibi Memory by default.

If the entered identifier does not match any record, the message **ERROR** is displayed.

OUTPUTS AND INPUTS CONFIGURATION



OUTPUTS

The outputs are set by default as follows:

- OUT1: *OPEN / GREEN*.
- OUT2: *OPEN / rEd*.
- OUT3, 4: *OPEN / SET / GROSS / POSNEG / OFF*.

Possible operation modes:

- **OPEN (normally open)**: the relay is de-energised and the contact is open when the weight is lower than the programmed setpoint value; it closes when the weight is higher than or equal to the programmed setpoint value.
- **CLOSE (normally closed)**: the relay is energised and the contact is closed when the weight is lower than the programmed setpoint value; it opens when the weight is higher than or equal to the programmed setpoint value.
- **SET**: the contact will switch on the basis of weight, according to setpoint (see section **SETPOINT PROGRAMMING**).
- **PLC**: the contact will not switch on the basis of weight, but is controlled by remote protocol commands.
- **STABLE**: relay switching occurs when the weight is stable.
- **GREEN**: (OUT 1 only): connect to the green light of the signal station.
- **rEd**: (OUT2 only): connect to the red light of the signal station.

If the operation mode **SET** is selected and the net functions are enabled, the following options are also active:

- **GROSS**: the contact will switch on the basis of gross weight.
- **NET**: the contact will switch on the basis of net weight (If the net function is not active, the contact will switch on the basis of gross weight).



If net functions are disabled (see parameter **NETEN** in section **INFO MENU**), by selecting **SET** the operating mode **GROSS** will be activated.

- **POSNEG**: relay switching occurs for both positive and negative weight values.
- **POS**: relay switching occurs for positive weight values only.
- **NEG**: relay switching occurs for negative weight values only.

By confirming with **ENTER** the setpoint operation can be set to the value 0:

- **OFF**: relay switching will not occur if the setpoint value is 0.
- **On**:
 - setpoint = 0 and switching = **POSNEG**: relay switching occurs when the weight is 0; the relay will switch again when the weight is different from zero, taking hysteresis into account (both for positive and for negative weights).
 - setpoint = 0 and switching = **POS**: relay switching occurs for a weight higher than or equal to 0, the relay will switch again for values below 0, taking hysteresis into account.
 - setpoint = 0 and switching = **NEG**: relay switching occurs for a weight lower than or equal to 0, the relay will switch again for values above 0, taking hysteresis into account.

INPUTS

Default: input 1 = **HEY I n** input 2 = **HEYDUt**

Possible operation modes:

- **NE-LD** (NET/GROSS): by closing this input for no more than one second, it's making an operation of SEMI-AUTOMATIC TARE and the display will show the net weight. To display the gross weight again, hold the NET/GROSS input closed for 3 seconds.



Function not available if net functions are disabled (see parameter **NEEEn** in section **INFO MENU**).

- **ZERD**: by closing the input for no more than one second, the weight is set to zero (see section **WEIGHT ZERO-SETTING FOR SMALL VARIATIONS (SEMI-AUTOMATIC ZERO)**).
- **PLC**: closing the input no operation is performed, the input status may however be read remotely by way of the communication protocol.
- **COntI n**: closing the input for max one second the weight is transmitted over the serial connection according to the fast continuous transmission protocol only once (**only if COntI n is set in the item SErI AL**).
- **PrI nEr**: when the input is closed the data are sent for printing if in the communication protocol of either serial port the parameter **PrI nEr** is set. If the alibi memory is active, data storage is carried out too.
- **HEY I n**: replicates the function of **IN**.
- **HEYDUt**: replicates the function of **OUT**.

SEMI-AUTOMATIC TARE (NET/GROSS)



THE SEMI-AUTOMATIC TARE OPERATION IS LOST UPON INSTRUMENT POWER-OFF.

To perform a net operation (SEMI-AUTOMATIC TARE), close the NET/GROSS input or press the **TARE** key for less than 3 seconds. The instrument displays the net weight (just set to zero) and the NET LED lights up. To display the gross weight again, keep the NET/GROSS input closed or press **TARE** for 3 seconds.

This operation can be repeated many times by the operator to allow the loading of several products.

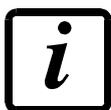
Example:

Put the box on the scale, the display shows the box weight; press **TARE**, the display shows the net weight to zero; introduce the product in the box, the display shows the product weight. This operation can be repeated several times.



While the net weight is displayed, keep  pressed to display gross weight. When the key is released the net weight will be displayed again.

The semi-automatic tare operation is not allowed if the gross weight is zero or negative or unstable or above the maximum capacity.



Function not available if net functions are disabled (see parameter $nE\bar{E}E\bar{n}$ in section INFO MENU).

PRESET TARE (SUBTRACTIVE TARE DEVICE)



It is possible to manually set a preset tare value to be subtracted from the display value provided that the $P\text{-}T\text{A}\text{R}\text{E} \leq \text{max capacity}$ condition is verified. In multi-interval instruments, the max permitted value is Max1 (max capacity of range 1).

By default the instrument shows the last programmed preset tare value: to apply it press **ENTER**. After setting the tare value, going back to the remote display, the display shows the net weight (subtracting the preset tare value) and the NET LED lights up to show that a tare has been entered. To delete a preset tare and return to gross weight display, hold down **TARE** for about 3 seconds or keep the NET/GROSS input (if any) closed for the same length of time (3 seconds). The preset tare value is set to zero. The NET LED is turned off when the gross weight is displayed once again.



While the net weight is displayed, keep  pressed to display the preset tare. When the key is released the net weight will be displayed again.



- IF A SEMI-AUTOMATIC TARE (NET) IS ENTERED, IT IS NOT POSSIBLE TO ACCESS THE ENTER PRESET TARE FUNCTION.
- IF A PRESET TARE IS ENTERED, IT'S STILL POSSIBLE TO ACCESS THE SEMI-AUTOMATIC TARE (NET) FUNCTION. THE TWO DIFFERENT TYPES OF TARE ARE ADDED.



ALL THE SEMI-AUTOMATIC TARE (NET) AND PRESET TARE FUNCTIONS WILL BE LOST WHEN THE INSTRUMENT IS TURNED OFF.



Function not available if net functions are disabled (see parameter $nEtEn$ in section INFO MENU).

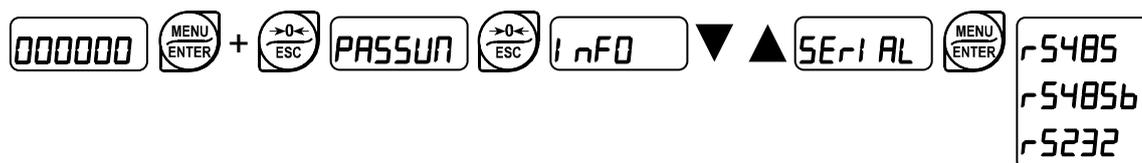
SEMI-AUTOMATIC ZERO (WEIGHT ZERO-SETTING FOR SMALL VARIATIONS)

By closing the SEMI-AUTOMATIC ZERO input, the weight is set to zero; alternatively, by pressing the  key for less than 3 seconds, the $SEtEP$ message is displayed for 3 seconds, by pressing  the weight is set to zero. The zero-setting will be lost upon instrument power-off.

This function is only allowed when:

- the weight is stable; otherwise the $unStBL$ alarm appears;
- the combined effect of the semi-automatic zero and zero tracking does not exceed 2% of the maximum capacity, otherwise the alarm $t-----$ appears.

SERIAL COMMUNICATION SETTING



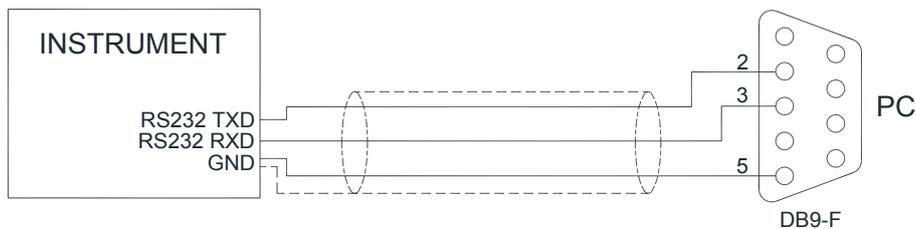
If net functions are disabled (see parameter *nEtEn* in section **INFO MENU**), protocols transmit only the gross weight, even if otherwise indicated.

- *nOnE*: it disables any type of communication (default).
- *ModBUS*: MODBUS-RTU protocol; possible addresses: from 1 to 99.
- *ASCII* : ASCII bidirectional protocol; possible addresses: from 1 to 99.
 - *ModU60*
 - *Mod t d*
- *Contl n*: continuous weight transmission protocol, at the frequency set in *HErE2* item (from 10 to 300).
 - *Mod t* (set: *PARl tY* = *nOnE*, *StOP* = 1).
 - *Mod t d* (set: *PARl tY* = *nOnE*, *StOP* = 1).
- *rIP*: continuous weight transmission protocol to RIP5/20/60, RIP50SHA, RIPLEd series remote displays; the remote display shows the net weight or gross weight according to its settings (set: *bAUd* = 9600, *PARl tY* = *nOnE*, *StOP* = 1).
- *Hdri P*: continuous weight transmission protocol to RIP6100, RIP675, RIP6125C series remote displays; the remote display shows the net weight or gross weight according to its settings (set: *bAUd* = 9600, *PARl tY* = *nOnE*, *StOP* = 1).
- *Hdri Pn*: continuous weight transmission protocol to RIP6100, RIP675, RIP6125C series remote displays (set: *bAUd* = 9600, *PARl tY* = *nOnE*, *StOP* = 1).
 When the remote display is set to gross weight:
 - if the instrument displays the gross weight, the remote display shows the gross weight.
 - if the instrument shows the net weight, the remote display shows the net weight alternated with the message *nEt*.
- *Cb*: CB transmission protocol.
- *ESt*: EXTENDED transmission protocol.
- *PrI nEt*: printer.
 - *bAUd*: transmission speed (2400, 4800, 9600, 19200, 38400, 115200; default: 9600).
 - *Addr*: instrument address (from 1 to 99; default: 1).

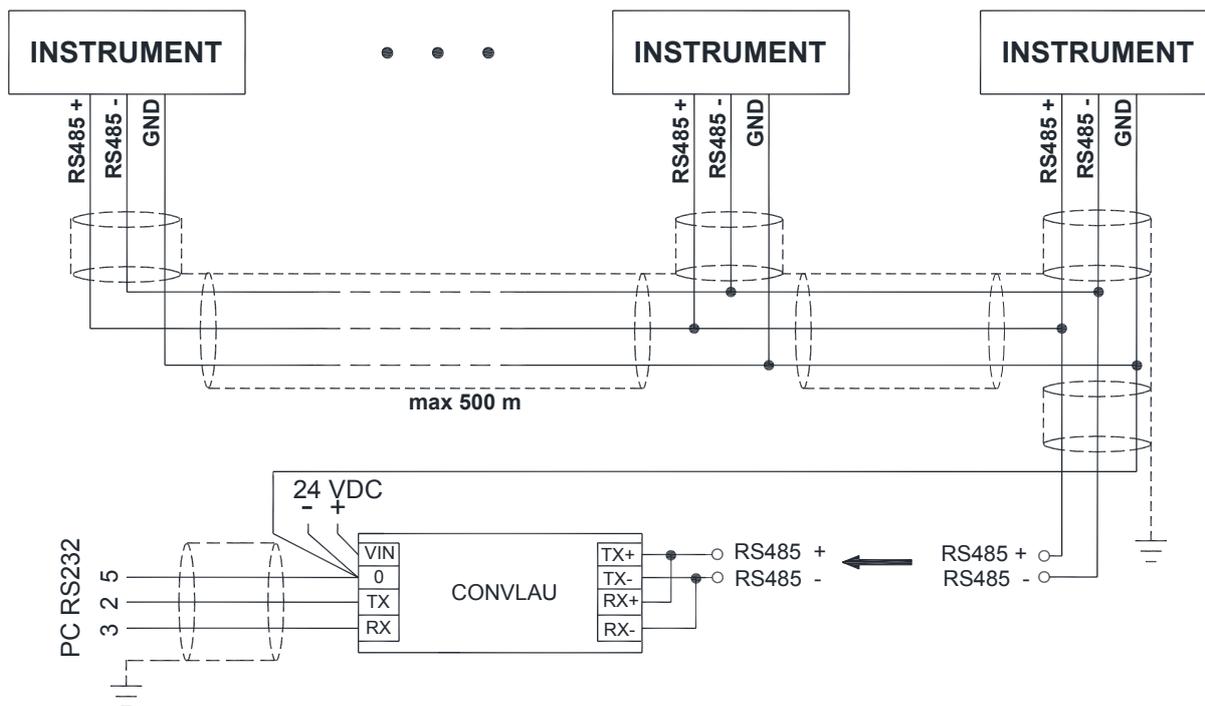
- **HErEz**: maximum transmission frequency (10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 100 – 200 – 300; default: 10); to be set when the **COntrol** transmission protocol is selected.
Maximum setting frequency (**HErEz**):
 - 20 Hz with minimum baud rate 2400 baud.
 - 40 Hz with minimum baud rate 4800 baud.
 - 80 Hz with minimum baud rate 9600 baud.
 - 100 Hz with minimum baud rate 19200 baud.
 - 200 Hz with minimum baud rate 38400 baud.
 - 300 Hz with minimum baud rate 38400 baud.
- **dELAY**: delay in milliseconds which elapses before the instrument replies (from 0 to 200 ms; default: 0).
- **PARiTY**:
 - **nOnE**: no parity (default).
 - **EVEN**: even parity.
 - **Odd**: odd parity.
- **StOP**: stop bit (1 – 2; default: 1).
- **ENPty**: number of blank lines between one printout and the next.
- **INENP** (for TMU295 or LX300 only): number of blank lines before the input weigh printout (default: 0).
- **OUTENP** (for TMU295 or LX300 only): number of blank lines before the output weigh printout (default: 15).
- **HEAdEr**: printing of custom heading from PC (**YES** – **nO**; default: **nO**).
- **LANG**: selecting the language for printouts:
 - **ItA**: Italian (default).
 - **EnG**: English.
 - **Fr**: French.
 - **ESp**: Spanish.
- **nCOpy**: number of copies for each printout; after the first printout press **ENTER** to print the next copies or press **ESC** to stop printing.
- **PrENd**: connected printer type:
 - **PLUSII**: Custom PLUSII, printer integrated in the WTAB (default).
 - **StAVT**: Laumas STAVT.
 - **TMU295**: Epson TM-U295.
 - **LX300**: Epson LX-300.
 - **KuBEII**: Custom Kubell.
 - **StAVQ**: Laumas STAVQ: printer integrated in the WTAB.
- **EJECT**: (for LX300 only): paper ejection after printing.

Epson name is the exclusive property of Seiko Epson Corporation; “Custom” name is the exclusive property of Custom Group SpA

RS232 SERIAL COMMUNICATION



RS485 SERIAL COMMUNICATION



If the RS485 network exceeds 100 metres in length or baud-rate over 9600 are used, two terminating resistors are needed at the ends of the network. Two 120 ohm resistors must be connected between the “+” and “-” terminals of the line, on the terminal strip of the furthest instruments. Should there be different instruments or converters, refer to the specific manuals to determine whether it is necessary to connect the above-mentioned resistors.

DIRECT CONNECTION BETWEEN RS485 AND RS232 WITHOUT CONVERTER

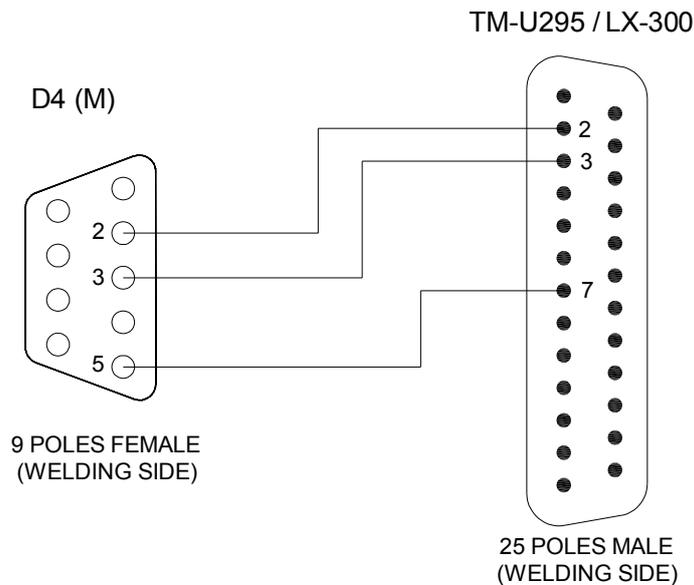
Since a two-wire RS485 output may be used directly on the RS-232 input of a PC or remote display, it is possible to implement instrument connection to an RS-232 port in the following manner:

INSTRUMENT	→	RS232
RS 485 -	→	RXD
RS 485 +	→	GND



This type of connection allows A SINGLE instrument to be used in a ONE WAY mode.

CONNECTION WITH TM-U295 / LX-300



WEIGHINGS STORAGE AND PRINTING CONDITIONS

000000
MENU
ENTER
+
←0→
ESC
PASSUN
←0→
ESC
I nFO
▼ ▲
nENdAt
MENU
ENTER
COndIt

- **DEFAULT**: factory settings restore: the weight must vary compared to the last stored weight and must be stable; confirmation is requested (*SURE?*), press ENTER to proceed or press ESC to cancel.
- **LO MIN**: the weight must fall below the minimum weight (20e) for a new storage to be carried out; select **YES** or **n0** to enable or disable the control.
- **CHANGE**: the weight must be changed compared to the previous one for a new storage to be carried out; select **YES** or **n0** to enable or disable the control.

TEST

000000
MENU
ENTER
+
←0→
ESC
PASSUN
←0→
ESC
I nFO
▼ ▲
tEst

- **Input Test:**
I n: ensure that for each open input **0** is displayed, **1** is displayed when the input is closed.
- **Output Test:**
Out: setting **0** ensure that the corresponding output opens. Setting **1** ensure that the corresponding output closes.
- **Millivolt Test:**
ML-CEL: displays the load cell response signal in mV with four decimals.
- **Weight in E/10 test:**
E/10: the current weight in tenths of **E** is displayed for testing purposes.

ENERGY SAVING

WDESK-BR, WINOX-BR, WTAB-BR



- **On** (default): display always on;
- **CHANGE**: the display enters energy saving mode after about one minute of no activity; pressing a key or a weight change turns normal operations on again.

WDESK-BL, WINOX-BL, WTAB-BL



- **On**: back-lighting on;
- **OFF**: back-lighting off;
- **CHANGE**: back-lighting goes off after about one minute of no activity; pressing a key or a weight change turns it on again.

WTAB



- **On** (default): the integrated printer is always on;
- **OnPrnt**: the integrated printer only turns on when printing

DATE AND TIME SETTING



When selecting the **DATE** item in the main menu, access is obtained to the date and time display menu.

Pressing **ENTER** several times scrolls through days - months - years, hours and - minutes; press **◀** and **▶** to select the figure to change; press **▲** and **▼** or the numerical keypad to change the figure; pressing **ENTER** you can confirm and go to the next menu.

INFO MENU

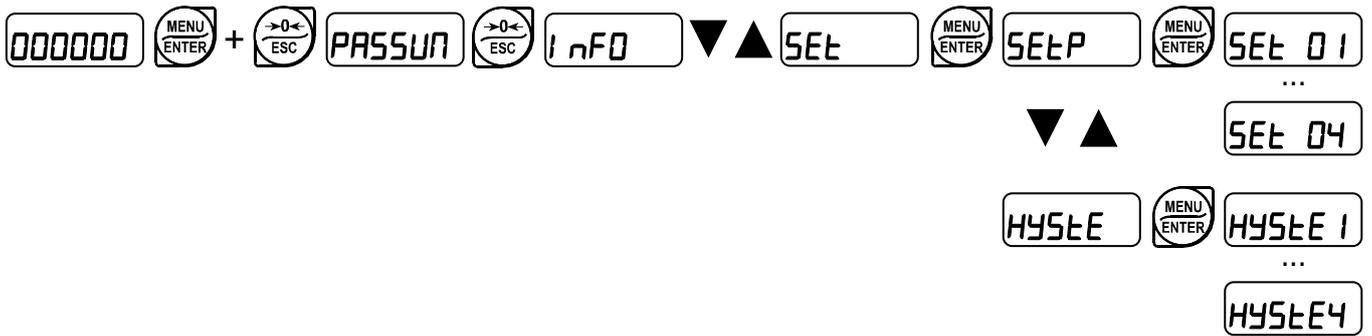


OP2: active options are displayed.

LEGAL: the main legally relevant parameters are displayed:

- **PrOG**: approval status of the instrument
- **rEFnUN**: number of qualified accesses
- **FS-tEO**: system full scale
- **SEnS**i** b**: rated sensitivity of the load cells
- **E**: scale verification division for single interval instruments
- **E 1**: scale verification division for the first range of multi-interval or multiple range instruments
- **E 2**: scale verification division for the second range of multi-interval or multiple range instruments
- **E 3**: scale verification division for the third range of multi-interval or multiple range instruments
- **MAH**: maximum capacity for single interval instruments
- **MAH 1**: maximum capacity of range 1 for multi-interval or multiple range instruments
- **MAH 2**: maximum capacity of range 2 for multi-interval or multiple range instruments
- **MAH 3**: maximum capacity of range 3 for multi-interval or multiple range instruments
- **G CAL**: gravity acceleration value in the calibration area
- **G uSE**: gravity acceleration value in the place of use
- **tErCOR**: weight correction depending on temperature
- **FI LtEr**: filter on the weight
- **EnAbLE**: alibi memory status
- **nEEEn**: enable status of the net functions

SETPOINT



- **SEt 0 1...04** (from 0 to full scale; default: 0): setpoint; relay switching occurs when the weight exceed the value set in this parameter. The type of switching is settable (see section **OUTPUTS AND INPUTS CONFIGURATION**).
- **HYSÉE 1...4** (from 0 to full scale; default: 0): hysteresis, value to be subtracted from the setpoint to obtain contact switching for decreasing weight. For example with a setpoint at 100 and hysteresis at 10, the switching occurs at 90 for decreasing weight.



These values are set to zero if the calibration is changed significantly.

PROGRESSIVE PRINTOUTS, TOTALS, OPEN WEIGHINGS

From the weight display, press **MENU** to access the menu

- MENU/ENTER**: to enter a menu/confirm the data entry.
- ▲ ▼**: to modify the displayed figure or menu item.
- ◀ ▶**: to select a new figure.
- ESC**: to cancel and return to the previous menu.

PROGRESSIVE PRINTOUTS



PrPr: adjust the progressive printouts. Press **ENTER** to display the progressive printouts and use the numeric keypad to edit the value; confirm again with **ENTER** or press **ESC** to cancel the command.

CLear: reset the progressive printouts taking it back to 1. Before performing the operation, the **SUP** deletion confirmation is requested; confirm again with **ENTER** or press **ESC** to cancel the command.

TOTALS

000000  PnuNbr ▼ ▲ tOTALS

SHOU: display the totals in the following sequence (press **ENTER** to pass to the next step):

- Message **LOAdEd**.
- Total loaded, divided by 100 to make it displayable also when it is a big number.
- Date when the total loaded was deleted last.
- Message **UnLORd**.
- Total unloaded, divided by 100 to make it displayable also when it is a big number.
- Date when the total unloaded was deleted last.

To print the totals see section **PRINTING EXAMPLES**.

CLEAR: delete the totals; before performing the operation, the **SUREP** deletion confirmation is requested; confirm again with **ENTER** or press **ESC** to cancel the command.

The totals are deleted automatically when they exceed the value 99999999.

OPEN WEIGHINGS

000000  PnuNbr ▼ ▲ OPErOP

SHOU: display in sequence the codes of the open weighings, which means the double weighing operations for which the second weighing has not been carried out yet (exit of the lorry); press **ENTER** several times to scroll them.

To print the open weighings see section **PRINTING EXAMPLES**.

CLEAR: cancel the open weighings; before performing the operation, the **SUREP** deletion confirmation is requested; confirm again with **ENTER** or press **ESC** to cancel the command.

LORRY DATABASE

The lorry database allows you to associate a preset tare value (weight of the empty lorry) to a database index. This value may be subsequently recalled rapidly and used to perform a single weighing operation (see section **SINGLE WEIGHING USING THE DATABASE**).

DATABASE MODIFICATION



Hold down the **DB** key until you see **l n d 0000**.

Enter the index to be associated to the lorry with the numerical keypad.

Press **ENTER**.

The display will show **P-TARE** (for Preset Tare).

Press **ENTER**.

With the numerical keypad enter the preset tare value to be associated to the lorry.

Confirm with **ENTER**.

PASSWORD ON THE DATABASE



A password can be set to protect the database from unauthorised changes, through a settable password.

If the password is not active when accessing the menu (factory setting), the display shows **OFF**.

Set the desired password with the numerical keypad and confirm with **ENTER**.

Upon accessing the database in change mode again (see previous section), the display will show **000000** and the user will enter the password.

If a wrong password is entered, the message **noPSU** will appear and the access to the database will be in read-only mode.

To change or disable the password after enabling it, access the **PSUdb** menu once again.

– The display shows **000000**; enter the password and confirm with **ENTER**.

– The display shows **PSU OH**; it is now possible to change the password.

– To disable the password enter 000000.

– If the password is lost enter 14556 for the emergency unlock.

OPERATION

DOUBLE WEIGHING (ENTRY/EXIT)

For this type of operation **two weighings** per lorry are required:

1. upon the lorry entering, its weight is recorded and a numeric code is automatically associated to it;
2. upon the lorry leaving, the operator enters the numeric code assigned during the first weighing (it allows the lorry identification), records the weight when leaving and calculates the difference between the two weighed values; the actual quantity of the material loaded onto or unloaded from the lorry is thus obtained.

1. FIRST WEIGHING (ENTRY)

The lorry goes onto the weighbridge.

When the weight is stable (stability LED on), press **IN**.

The instrument automatically associates a code to the lorry and displays it preceded by the letter **C**. The instrument saves the weighed value in the memory and sends it for printing.

2. SECOND WEIGHING (EXIT)

After loading or unloading, the lorry goes on the weighbridge.

When the weight is stable (stability LED on), press **OUT**.

If only one "outstanding" lorry is present, which means a lorry that made the first weighing, the instrument automatically retrieves its code; otherwise it requests **CODE?** and the operator enters the lorry code with the numerical keypad and confirms with **ENTER**.

The system retrieves the corresponding first weighed value from the memory and calculates the difference between the two weighed values: if the second weighed value is lower than the first, the material was unloaded and the instrument shows the unloaded weight preceded by the letter **U** for "Unloaded"; if the second weighed value is greater than the first, the material was loaded and the instrument shows the loaded weight preceded by the letter **L** for "Loaded".

The instrument saves the weighed value in the memory and sends it for printing.

NOTES: operation with double weighing is only possible with the gross weight. The codes range from 1 to 254. It is thus possible to have up to 254 weighings open at the same time ("outstanding" lorries that have been weighed for the first time but not the second time).

Once code 254 is used the instrument automatically searches for the first free code (not connected to an open weighing) starting back from 1.

To have the code restart from 1, delete the open weighings (see section **OPEN WEIGHINGS**), even if there are no open weighings.

To display, print or delete the open weighings, see sections **OPEN WEIGHINGS** and **PRINTING EXAMPLES**.

The totals are updated every time a second weighing is completed. To display, print or delete the totals, see sections **TOTALS** and **PRINTING EXAMPLES**.

The conditions that allow a new weighing to be carried out can be set (see section **WEIGHINGS STORAGE AND PRINTING CONDITIONS**).

SINGLE WEIGHING

In this case **the lorry is weighed once**: the weight of the empty lorry is used as preset tare; the value may be entered on the spot or retrieved from the lorry database.



Function not available if net functions are disabled (see parameter $nE\bar{t}E\bar{n}$ in section **INFO MENU**).

SINGLE WEIGHING WITHOUT USING THE DATABASE

The lorry goes onto the weighbridge.

Press **PTARE**, enter the weight of the empty lorry (preset tare) using the numerical keypad, confirm with **ENTER**.

The display shows the weight of the material loaded onto the lorry (net weight).

Press **IN** if the lorry is entering (the material will be unloaded).

Press **OUT** if the lorry is leaving (the material will be loaded).

The display shows the weight of the material preceded by the letter **U** for “Unloaded” if unloaded, letter **L** for “Loaded” if loaded.

The instrument saves the weighed value in the memory and sends it for printing.

The instrument automatically goes back to showing the gross weight.

SINGLE WEIGHING USING THE DATABASE

The lorry goes onto the weighbridge.

Press **DB** the display shows **! n0000**.

With the numerical keypad enter the database index associated to the lorry (the weight of the empty lorry must have already been entered previously as preset tare in the database, see section **LORRY DATABASE**).

Press **ENTER**.

The instrument applies the preset tare read from the database and shows the weight of the material loaded onto the lorry (net weight).

Press **IN** if the lorry is entering (the material will be unloaded).

Press **OUT** if the lorry is leaving (the material will be loaded).

The display shows the weight of the material preceded by the letter **U** for “Unloaded” if unloaded, letter **L** for “Loaded” if loaded.

The instrument saves the weighed value in the memory and sends it for printing.

The instrument automatically goes back to showing the gross weight.

NOTES: operation with single weighing is only possible with the net weight. The totals are updated every time a weighing is completed. To display, print or delete the totals, see sections **TOTALS** and **PRINTING EXAMPLES**. The conditions that allow a new weighing to be carried out can be set (see section **WEIGHINGS STORAGE AND PRINTING CONDITIONS**).

DOUBLE WEIGHING (ENTRY/EXIT) WITH TRAILER

This type of operation allows the weighing of a lorry consisting of tractor and trailer.

Four weighing operations per lorry are required:

- 1 and 2: when the lorry arrives (first weighing), the weights of the tractor and trailer are recorded and a numeric code is automatically associated to the lorry;
- 3 and 4: upon the lorry leaving (second weighing) the operator enters the numeric code assigned during the first weighing (it allows the lorry identification), records the weights of the tractor and trailer when leaving and calculates the difference between the two weighed values; the actual quantity of the material loaded onto or unloaded from the lorry is thus obtained.

The operations must be carried out by following the sequence described.

1. FIRST WEIGHING OF THE TRACTOR (ENTRY)

The tractor goes onto the weighbridge.

When the weight is stable (stability LED on), hold the **IN** key pressed until you see **TrAl Lr** (Trailer = it indicates the tractor + trailer function); press **ENTER**.

The instrument saves the weighed value in the memory and shows **StD-Ed** (printing takes place after the subsequent first weighing of the trailer).

2. FIRST WEIGHING OF THE TRAILER (ENTRY)

The trailer goes onto the weighbridge.

When the weight is stable (stability LED on), press **IN**.

The instrument automatically associates a code to the lorry (valid for both the tractor and the trailer) and shows it preceded by letter **T**.

The instrument saves the weighed value in the memory and sends the receipt of the first weighing for printing with the data of the tractor (marked with the letter A) and the trailer (marked with B).

To cancel the weighing press **ESC**.

3. SECOND WEIGHING OF THE TRACTOR (EXIT)

After loading or unloading the lorry, the tractor goes back on the weighbridge.

When the weight is stable (stability LED on), press **OUT**.

If only one "outstanding" lorry is present, which means a lorry that made the first weighing, the instrument automatically retrieves its code; otherwise it requests **Code?** and the operator enters the lorry code with the numerical keypad and confirms it with **ENTER**.

The instrument saves the weighed value in the memory and shows **StD-Ed** (printing takes place after the subsequent second weighing of the trailer).

4. SECOND WEIGHING OF THE TRAILER (EXIT)

The trailer goes onto the weighbridge.

When the weight is stable (stability LED on), press **OUT**.

The system recovers the weights regarding the first weighing from the memory (tractor and trailer).

If the second weighing (tractor + trailer) is lower than the first (tractor + trailer), the material was unloaded; the instrument shows the unloaded weight preceded by the letter **U** for "Unloaded".

If the second weighing (tractor + trailer) is greater than the first (tractor + trailer), the material was loaded; the instrument shows the loaded weight preceded by the letter **L** for "Loaded".

The instrument saves the weighed value in the memory and sends the receipt of the second weighing for printing with the data of the tractor and the trailer.

To cancel the weighing press **ESC**.

NOTES: operation with double weighing is only possible with the gross weight. The codes range from 1 to 254. It is thus possible to have up to 254 weighings open at the same time ("outstanding" lorries that have been weighed for the first time but not the second time).

Once code 254 is used the instrument automatically searches for the first free code (not connected to an open weighing) starting back from 1.

To have the code restart from 1, delete the open weighings (see section **OPEN WEIGHINGS**), even if there are no open weighings.

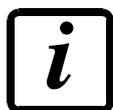
To display, print or delete the open weighings, see sections **OPEN WEIGHINGS** and **PRINTING EXAMPLES**.

The totals are updated every time a second weighing is completed. To display, print or delete the totals, see sections **TOTALS** and **PRINTING EXAMPLES**.

The conditions that allow a new weighing to be carried out can be set (see section **WEIGHINGS STORAGE AND PRINTING CONDITIONS**).

SINGLE WEIGHING WITH TRAILER

In this case only **two weighing operations are performed** (tractor and trailer): the weights of the empty tractor and trailer are used as preset tare; the value is entered on the spot or saved in the lorry database.



Function not available if net functions are disabled (see parameter *nEEN* in section **INFO MENU**).

SINGLE WEIGHING WITHOUT USING THE DATABASE

- The tractor goes onto the weighbridge.
Press **PTARE**, enter the weight of the empty tractor (preset tare) via the numerical keypad, confirm with **ENTER**.
The display shows the weight of the material loaded onto the tractor (net weight).
Hold the **IN** key pressed if the lorry is entering (the material will be unloaded), **TRAI LR** appears (Trailer = it indicates the tractor + trailer function), press **ENTER**.
Hold the **OUT** key pressed if the lorry is leaving (the material has been loaded), **TRAI LR** appears (Trailer = it indicates the tractor + trailer function), press **ENTER**.
The instrument saves the weighed value in the memory and shows **StOrEd** (printing takes place after the subsequent weighing of the trailer).
The instrument automatically goes back to showing the gross weight.
- The trailer goes onto the weighbridge.
Press **PTARE**, enter the weight value of the empty trailer (preset tare) via the numerical keypad, confirm with **ENTER**.
The display shows the weight of the material loaded onto the trailer (net weight).
Press **IN** if the lorry is entering (the material will be unloaded).
Press **OUT** if the lorry is leaving (the material will be loaded).
The display shows the total weight (tractor + trailer) of the material preceded by the letter **U** for "Unloaded" if unloaded, letter **L** for "Loaded" if loaded.
The instrument saves the weighed value in the memory and sends it for printing.
The instrument automatically goes back to showing the gross weight.
To cancel the weighing press **ESC**.

SINGLE WEIGHING USING THE DATABASE

- The tractor goes onto the weighbridge.

Press **DB**, the display shows *1 rd0000*.

With the numerical keypad enter the database index associated to the tractor (the weight of the empty tractor and trailer must have already been entered previously in the database in two separate indexes, see section **LORRY DATABASE**).

Press **ENTER**.

The instrument applies the preset tare read from the database and shows the weight of the material loaded onto the tractor (net weight).

Hold the **IN** key pressed if the lorry is entering (the material will be unloaded), *TRAI LR* appears (Trailer = it indicates the tractor + trailer function), press **ENTER**.

Hold the **OUT** key pressed if the lorry is leaving (the material has been loaded), *TRAI LR* appears (Trailer = it indicates the tractor + trailer function), press **ENTER**.

The instrument saves the weighed value in the memory and shows *StOrEd* (printing takes place after the subsequent weighing of the trailer).

- The trailer goes onto the weighbridge.

Press **DB**, the display shows *1 rd0000*.

With the numerical keypad enter the database index associated to the trailer.

The instrument applies the preset tare read from the database and shows the weight of the material loaded onto the trailer (net weight).

Press **IN** if the lorry is entering (the material will be unloaded).

Press **OUT** if the lorry is leaving (the material will be loaded).

The display shows the weight of the material preceded by the letter **U** for "Unloaded" if unloaded, letter **L** for "Loaded" if loaded.

The instrument saves the weighed value in the memory and sends it for printing.

The instrument automatically goes back to showing the gross weight.

To cancel the weighing press **ESC**.

NOTES: operation with single weighing is only possible with the net weight. The totals are updated every time a weighing is completed. To display, print or delete the totals, see sections **TOTALS** and **PRINTING EXAMPLES**.

The conditions that allow a new weighing to be carried out can be set (see section **WEIGHINGS STORAGE AND PRINTING CONDITIONS**).

MULTIPLE WEIGHING

In this mode, **up to 255 weighing operations** can be performed on the same lorry by calculating the difference with the previous weighed value each time. This function may be useful for lorries fitted with more than one compartment in case you wish to know the weight of the material in each individual compartment or if various subsequent loading and unloading operations are carried out.

1. FIRST MULTIPLE WEIGHING

The lorry goes onto the weighbridge.

When the weight is stable (stability LED on), keep the **IN** key pressed until you see **LRAL LR**; press **▲** or **▼** to display **NULL**.

Press **ENTER**.

The instrument saves the weighed value in the memory and sends it for printing.

2. SUBSEQUENT WEIGHINGS

After loading or unloading, the lorry goes on the weighbridge.

When the weight is stable (stability LED on), press **OUT**.

If only one “outstanding” lorry is present, which means a lorry that made the first weighing, the instrument automatically retrieves its code; otherwise it requests **CODEP** and the operator enters the lorry code with the numerical keypad and confirms it with **ENTER**.

The system retrieves the previous weighed value from the memory and calculates the difference between the two weighed values: if the weighed value is lower than the previous one, the material was unloaded and the instrument shows the unloaded weight preceded by the letter **U** for “Unloaded”; if the weighed value is greater than the first, the material was loaded and the instrument shows the loaded weight preceded by the letter **L** for “Loaded”.

The instrument saves the weighed value in the memory and sends it for printing.

Up to 255 weighings can be made by repeating the sequence in this section.

3. WEIGHING CLOSING

Keep the **OUT** key pressed until you see **LRAL LR**; press **▲** or **▼** to display **NULL**.

Press **ENTER**.

If only one “outstanding” lorry is present, which means a lorry that made the first weighing, the instrument automatically retrieves its code; otherwise it requests **CODEP** and the operator enters the lorry code with the numerical keypad and confirms it with **ENTER**.

The display shows **CLEAR** and the weighing is closed.

NOTES: operation is only possible with the gross weight. The totals are updated every time a weighing is completed after the first one. To display, print or delete the totals, see sections **TOTALS** and **PRINTING EXAMPLES**.

The conditions that allow a new weighing to be carried out can be set (see section **WEIGHINGS STORAGE AND PRINTING CONDITIONS**).

SIGNAL STATION

A red-and-green-light signal station may be piloted from the relay outputs of the instrument already active by default according to the factory settings. To enable it, select:

- Function **GrEEr** for OUT 1 and connect OUT 1 to the green light of the signal station.
- Function **rEd** for OUT2 and connect OUT2 to the red light of the signal station.

For more details on how to set the output functions see section **OUTPUTS AND INPUTS CONFIGURATION**.

In standby mode the signal station is off.

Enabling takes place when the lorry goes on the weighbridge, i.e. when the weight exceeds the minimum weight (20e): the red light turns on to warn the driver to halt the vehicle once on the weighbridge.

Once the weighing has been completed and saved, the red light turns off and the green light comes on and gives the go ahead.

When the weight goes below the minimum weight (20e) once again, the green light turns on and the signal station returns to the standby mode.

ALARMS

- ErCEL**: the load cell is not connected or is incorrectly connected; the load cell signal exceeds 39 mV; the conversion electronics (AD converter) is malfunctioning; the load cell is a 4-wire and there are no jumpers between EX- and REF- and between EX+ and REF+.
- Er DL**: the weight display exceeds 110% of the full scale.
- Er Ad**: internal instrument converter failure; check load cell connections, if necessary contact technical assistance.
- : the weight exceeds the maximum capacity by 9 divisions.
- Er DF**: maximum displayable value exceeded (value higher than 999999 or lower than -999999).
- t-----**: weight too high: zero setting not possible.
- PAH-PU**: this message appears in the sample weight setting, in real calibration, after the fifth sample weight value has been entered.
- Error**: the value set for the parameter is beyond the permitted values; press **ESC** to quit the setting mode leaving the previous value unchanged. Examples: a number of decimals is selected for full scale which exceeds the instrument's display potential; value above the maximum setting value; the weight value set in sample weight verification does not match the detected mV increase.
- bLDC**: lock active on menu item, keypad or display.
- n0d! SP**: It's not possible to display properly the number because is greater than 999999 or less than -999999.
- bAt-rtC**: buffer battery low, loss of date and time of Real-Time Clock. Confirm with **ENTER** to continue; leave the instrument on for at least 12 hours to charge the battery, if the alarm persists contact technical assistance.
- dAtEP**: an incorrect date has been detected: go into the related menu to check and correct it.
- : the weight is below -20e, or the power supply is insufficient.

- ALI FUL**: the alibi memory is full and will be overwritten.
- unStBL**: unstable weight: zero-setting or net weight not possible. The weight cannot be recorded.
- nEG-0**: below zero or zero weight: net weight not possible.
- n nLEG**: weight below minimum weight (20e): not possible to print, or save.
- nCHANG**: weight has not changed: not possible to print or save.
- n0 n n**: the weight did not go below the minimum weight: it is not possible to print it or save it.
- FULL**: no code available; close at least one weighing or delete the open weighings to continue
- n0C0dE**: second weighing: the operator entered a code that is not connected to a first weighed value.
- EntEr**: press **ENTER** to print the next copy of the receipt, press **ESC** to stop printing the subsequent copies.
- n0PSU**: wrong password entered to change the database.
- In**: the instrument is waiting for the **IN** key to be pressed to complete the weighing.
- OUT**: the instrument is waiting for the **OUT** key to be pressed to complete the weighing.
- P-tArE**: the instrument is waiting for a Preset Tare to continue.
- ENPLtY**: the operator recalled an empty index of the database.

Serial protocol alarms:

	<i>ErCEL</i>	<i>Er OL</i>	<i>Er Ad</i>	-----	<i>Er OF</i>	t-----	-----
MODE							
Bit LSB	76543210 xxxxxxxx1	76543210 xxxx1xxx	76543210 xxxxxxxx1x	76543210 xxxxx1xx	76543210 On gross: xxx1xxxx On net: xx1xxxxx	The response to the zero command is a 'value not valid' error (error code 3)	76543210 x1xxxxxx
Status Register MODBUS RTU							
ASCII	<u>O-F</u>	<u>O-L</u>	<u>O-F</u>	<u>O-L</u>	<u>O-F</u>	&aa#CR	<u>O-L</u>
RIP *	<u>O-F</u>	<u>O-L</u>	<u>O-F</u>	<u>O-L</u>	<u>O-F</u>	<u>O-F</u>	<u>O-L</u>
HDRIP-N	<u>ERCEL</u>	<u>ER OL</u>	<u>ER AD</u>	#####	<u>ER OF</u>	<u>O SET</u>	#####
CONTIN	<u>ERCEL</u>	<u>ER OL</u>	<u>ER AD</u>	^^^^^	<u>ER OF</u>	<u>O SET</u>	^^^^^

* For RIP remote displays, if the message exceeds 5 digits the display reads -----.

PRINTING EXAMPLES

If the printer has been set (see section **SERIAL COMMUNICATION SETTINGS**), from the weight display press the **PRINT** key for less than 3 seconds:

- **WEIGHT**: printing of the displayed weight (the totals are not updated).
- **OPENOP**: print the open weighings (Open Operations). See section **OPERATION WITH DOUBLE WEIGHING (ENTRY/EXIT)**.
- **TOTALS**: print the totals (see section **TOTALS**).
- **REPRINT**: re-print the last weighing made.

The printing examples below refer to the Custom PLUSII printer, integrated in the WTAB model; the printouts with the other supported printers show wider texts in case the number of characters per available row is higher.

WEIGHING PRINTOUTS

First weighed value (see section **FIRST WEIGHED VALUE (ENTRY)**)

```
-----  
24/01/13          09:58:01  
PRINTOUT NUMBER      7          Progressive printouts  
  
CODE                3  
ALIBI ID            5          Alibi identifier (optional)  
INCOMING:          15000 kg
```

Second weighed value (see section **SECOND WEIGHED VALUE (EXIT)**)

```
-----  
24/01/13          10:15:01  
PRINTOUT NUMBER      8          Progressive printouts  
  
CODE                3  
INCOMING:          15000 kg          Alibi identifier (optional)  
  
ALIBI ID            5  
OUTGOING:          25000 kg  
-----  
LOADED:            10000 kg
```

Single weighing (see section OPERATION WITH SINGLE WEIGHING)

```
-----  
24/01/13          10:30:01  
PRINTOUT NUMBER   19  
  
ALIBI ID          6  
UNLOADED:N       11000 kg  
G                26000 kg  
PT              15000 kg  
DB              91  
  
Progressive printouts  
Alibi identifier (optional)  
Net weight  
Gross weight  
Preset tare  
Lorry database index (if used)
```

Generic weight printout (from the **PRINT** key)

```
-----  
24/01/13          10:31:01  
  
G                26000 kg  
N                11000 kg  
PT              15000 kg  
  
Net weight  
Gross weight  
Preset tare
```

COMPLEX FUNCTIONS PRINTOUTS

First weighed value tractor + trailer (see section FIRST WEIGHED VALUE TRAILER (ENTRY))

```
-----  
24/01/13          10:35:03  
PRINTOUT NUMBER   20  
  
CODE              4  
ALIBI ID          7  
ENTRY A:         26000 kg  
ALIBI ID          8  
ENTRY B:         27000 kg  
ENTRY A+B:       53000 kg  
  
Progressive printouts  
Alibi identifier (optional)  
Tractor weight  
Alibi identifier (optional)  
Trailer weight  
Tractor + trailer weight
```

Second weighed value tractor + trailer (see section **SECOND WEIGHED VALUE TRAILER (EXIT)**)

```
-----  
24/01/13          10:37:03  
PRINTOUT NUMBER   21  
Progressive printouts  
  
CODE              4  
ENTRY A:          26000 kg    Tractor first weighed value  
ENTRY B:          27000 kg    Trailer first weighed value  
ENTRY A+B:        53000 kg    Tractor + trailer first weighed value  
  
ALIBI ID          9  
EXIT A:           15000 kg    Tractor second weighed value  
ALIBI ID          10  
EXIT B:           11000 kg    Trailer second weighed value  
EXIT A+B:         26000 kg    Tractor + trailer second weighed value  
-----  
UNLOADED:         27000 kg
```

First multiple weighed value (see section **FIRST MULTIPLE WEIGHED VALUE**)

```
-----  
24/01/13          10:40:01  
PRINTOUT NUMBER   22  
Progressive printouts  
CODE              5  
ALIBI ID          11  
Alibi identifier (optional)  
WEIGHED VALUE 1  15000 kg
```

Multiple weighed value after the first (see section **SUBSEQUENT WEIGHED VALUES**)

```
-----  
24/01/13          10:45:01  
PRINTOUT NUMBER   23  
Progressive printouts  
  
CODE              5  
WEIGHED VALUE 1  15000 kg  
  
ALIBI ID          11  
Alibi identifier (optional)  
WEIGHED VALUE    18000 kg  
-----  
LOADED:           3000 kg
```

OTHER PRINTOUTS

Open weighings (see section OPEN WEIGHINGS)

24/01/13 10:14:20

OPEN WEIGHINGS

24/01/13 09:58:01
CODE 3
INCOMING: 15000 kg

24/01/13 09:59:01
CODE 4
INCOMING: 16000 kg

24/01/13 10:10:01
CODE 7
INCOMING: 22000 kg

OPEN WEIGHING 3

Total number of open weighings

Totals (see section TOTALS)

24/01/13 10:45:01
PRINTOUT NUMBER 23

Progressive printouts

CODE 5
WEIGHED VALUE 1 15000 kg

ALIBI ID 11
WEIGHED VALUE 2 18000 kg

Alibi identifier (optional)

LOADED: 3000 kg

24/01/13 10:15:20

TOTALS
WITHOUT LEGAL VALUE

LOADED: 30000 kg
WEIGHING 3
FROM

Total number of loading weighings

24/01/13 09:00:20

Date when the loading total was deleted last

UNLOADED: 22000 kg
WEIGHINGS 2
FROM

Total number of unloading weighings

24/01/13 09:00:20

Date when the unloading total was deleted last

CONTINUOUS FAST WEIGHT TRANSMISSION PROTOCOL

This protocol allows the continuous transmission of the weight at high update frequencies. Up to 300 strings per second are transmitted with a minimum transmission rate of 38400 baud.

Following communication modes available (see section **SERIAL COMMUNICATION SETTINGS**):

- **NOd E**: communication compatible with TX RS485 instruments
- **NOd Ed**: communication compatible with TD RS485 instruments

If **NOd E** is set, the following string is transmitted to PC/PLC:

xxxxxxCRLF

where: **xxxxxx**6 characters of gross weight (48 ÷ 57 ASCII)

CR1 character return to the start (13 ASCII)

LF1 character on new line (10 ASCII)

In case of negative weight, the first character from the left of the weight characters takes on the value “-” (minus sign - ASCII 45).

In case of error or alarm, the 6 characters of the weight are substituted by the messages found in the table of the ALARMS section.

If **NOd Ed** is set, the following string is transmitted to PC/PLC:

&TzzzzzzPzzzzzz\ckckCR

where: **&**1 initial string character (38 ASCII)

T1 character of gross weight identification

P1 character of gross weight identification

zzzzzz6 characters of gross weight (48 ÷ 57 ASCII)

****1 character of separation (92 ASCII)

ckck2 ASCII control characters or calculated considering the characters included between “&” and “\” excluded. The control value is obtained executing the XOR operation (exclusive OR) for the 8 bit ASCII codes of the characters considered. Therefore, a character expressed in hexadecimal is obtained with 2 numbers that may assume values from “0” to “9” and from “A” to “F”. “**ckck**” is the ASCII code of the two hexadecimal digits

CR1 character of end string (13 ASCII)

In case of negative weight, the first character from the left of the weight characters takes on the value “-” (minus sign - ASCII 45).

In case of error or alarm, the 6 characters of the gross weight are substituted by the messages found in the table of the ALARMS section.

FAST TRANSMISSION VIA EXTERNAL CONTACT: it's possible to transmit the weight, just once, even closing an input for no more than a second (see **OUTPUTS AND INPUTS CONFIGURATION** and **SERIAL COMMUNICATION SETTINGS** sections).

CONTINUOUS WEIGHT TRANSMISSION TO REMOTE DISPLAYS PROTOCOL

This protocol allows the continuous weight transmission to remote displays. The communication string is transmitted 10 times per second.

Following communication modes available (see **SERIAL COMMUNICATION SETTINGS** section):

- *rI P*: communication with RIP5/20/60, RIP50SHA, RIPLD series remote displays; the remote display shows the net weight or gross weight according to its settings
- *Hdrl P*: communication with RIP6100, RIP675, RIP6125C series remote displays; the remote display shows the net weight or gross weight according to its settings
- *Hdrl Pn*: communication with RIP6100, RIP675, RIP6125C series remote displays

The instrument sends the following string to the remote display:

&NxxxxxxLyyyyy\ckckCR

where: &1 initial string character (38 ASCII)
N1 character of net weight identification (78 ASCII)
xxxxxx6 characters of net weight (48 ÷ 57 ASCII)
L1 character of gross weight identification (76 ASCII)
yyyyyy6 characters of gross weight (48 ÷ 57 ASCII)
\1 character of separation (92 ASCII)
ckck2 ASCII checksum characters calculated considering the characters between “&” and “\” excluded. The checksum value is obtained from the calculation of XOR (exclusive OR) of the 8-bit ASCII codes of the characters considered. This obtains a character expressed in hexadecimals with two digits that can have the values from “0” to “9” and from “A” to “F”. “ckck” is the ASCII code of the two hexadecimal digits
CR1 character of end string (13 ASCII)

In case of negative weight, the first character from the left of the weight characters takes on the value “-” (minus sign - ASCII 45).

If *Hdrl P* has been set, the decimal point at the position shown on the instrument's display can also be transmitted. In this case, if the value exceeds 5 digits, only the 5 most significant digits are transmitted, while if the value is negative, no more than the 4 most significant digits are transmitted. In both cases, however, the decimal point shifts consistently with the value to display.

If *Hdrl Pn* has been set, in addition to what stated in *Hdrl P* protocol, the instrument transmits the prompt *nEt* every 4 seconds in the gross weight field, if on the instrument, it has been carried out a net operation (see **SEMI-AUTOMATIC TARE (NET/GROSS)** section).

In case of weight value is under -99999, the minus sign “-” is sent alternated with the most significant figure.

In case of error or alarm, the 6 characters of the gross weight and net weight are substituted by the messages found in the table of the ALARMS section.

ASCII BIDIRECTIONAL PROTOCOL

The instrument replies to the requests sent from a PC/PLC.

It is possible to set a waiting time for the instrument before it transmits a response (see *dELAY* parameter in the **SERIAL COMMUNICATION SETTINGS** section).

Following communication modes available (see **SERIAL COMMUNICATION SETTINGS** section):

- *ΠDUEG*: communication compatible with instruments series W60000, WL60 Base, WT60 Base, TLA600 Base
- *ΠD Ed*: communication compatible with TD RS485 instruments

Captions:

- \$Beginning of a request string (36 ASCII)
- & or &&Beginning of a response string (38 ASCII)
- aa2 characters of instrument address (48 ÷ 57 ASCII)
- !1 character to indicate the correct reception (33 ASCII)
- ?1 character to indicate a reception error (63 ASCII)
- #1 character to indicate an error in the command execution (23 ASCII)
- ckck2 ASCII characters of Check-Sum (for further information, see section **CHECK-SUM CALCULATION**)
- CR1 character for string end (13 ASCII)
- \1 character of separation (92 ASCII)

1. SETPOINT PROGRAMMING

Warning: the new values of setpoint are active immediately.

The PC transmits the ASCII string: \$aa**xxxxxy**ckckCR

where: **xxxxxx**6 characters for the setpoint value (48 ÷ 57 ASCII)

- y** = Aset the value in the setpoint 1
- y** = Bset the value in the setpoint 2
- y** = Cset the value in the setpoint 3
- y** = Dset the value in the setpoint 4
- y** = Eset the value in the setpoint 5

Possible instrument responses:

- correct reception: **&&aa!** \ckckCR
- incorrect reception: **&&aa?** \ckckCR
- **ff** parameter exceeds the maximum allowable: **&aa#** \ckckCR

Example: to set 500 in the setpoint no. 4, the PC must transmit the following command:
\$01000500D40 (Cr)

1.1. SETPOINT STORAGE IN EEPROM MEMORY

The setpoint are stored in the RAM memory and lost upon instrument power off. It is necessary to send a special command to save them permanently in the EEPROM memory. Please note that the writing number allowed in the EEPROM memory is limited (about 100000).

The PC transmits the ASCII string: **\$aaMEMckckCR**

Possible instrument responses:

- correct reception: **&&aa!\ckckCR**
- incorrect reception: **&&aa?\ckckCR**

2. READING WEIGHT OR SETPOINT FROM PC

The PC transmits the ASCII string: **\$aajckckCR**

where: j = ato read setpoint 1
j = bto read setpoint 2
j = cto read setpoint 3
j = dto read setpoint 4
j = eto read setpoint 5
j = tto read gross weight
j = nto read net weight

Possible instrument responses:

- correct reception: **&aaxxxxxxj\ckckCR**
- incorrect reception: **&&aa?\ckckCR**

where: **xxxxxx**.....6 characters of the required weight value

Notes: in case of negative weight, the first character from the left of the weight characters takes on the value “-” (minus sign - ASCII 45). In case of weight value is under -99999, the minus sign “-” is sent alternated with the most significant figure.

Error messages:

in case of an instrument alarm for exceeding 110% of the full scale or 9 divisions above the value of the parameter *PA55*, the instrument sends the string:

&aassO-lst\ckck

in case of faulty connection of the load cells or of another alarm, the instrument sends:

&aassO-Fst\ckck

where: **s**1 separator character (32 ASCII – space)

Generally refer to the **ALARMS** section.

3. SEMI-AUTOMATIC ZERO (WEIGHT ZERO-SETTING FOR SMALL VARIATIONS)

The PC transmits the ASCII string: $\$aa\underline{ZERO}ckckCR$

Possible instrument responses:

- correct reception: $\&\&aa!\backslashckckCR$
- incorrect reception: $\&\&aa?\backslashckckCR$
- the current weight is over the maximum resettable value: $\&\&aa\#CR$

4. SWITCHING FROM GROSS TO NET WEIGHT

The PC transmits the ASCII string: $\$aa\underline{NET}ckckCR$

Possible instrument responses:

- correct reception: $\&\&aa!\backslashckckCR$
- incorrect reception: $\&\&aa?\backslashckckCR$



Function not available if net functions are disabled (see parameter $nEEEn$ in section INFO MENU).

5. SWITCHING FROM NET TO GROSS WEIGHT

The PC transmits the ASCII string: $\$aa\underline{GROSS}ckckCR$

Possible instrument responses:

- correct reception: $\&\&aa!\backslashckckCR$
- incorrect reception: $\&\&aa?\backslashckckCR$

6. READING OF DECIMALS AND DIVISION NUMBER

The PC transmits the ASCII string: \$aaDckckCR

Possible instrument responses:

- correct reception: &aaxy\ckckCR
- incorrect reception: &&aa?\ckckCR

where: **x**number of decimals

y = 3for division value = 1

y = 4for division value = 2

y = 5for division value = 5

y = 6for division value = 10

y = 7for division value = 20

y = 8for division value = 50

y = 9for division value = 100

7. KEYPAD LOCK (BLOCK THE ACCESS TO THE INSTRUMENT)

The PC transmits the ASCII string: \$aaKEYckckCR

Possible instrument responses:

- correct reception: &&aa!\ckckCR
- incorrect reception: &&aa?\ckckCR

8. KEYPAD UNLOCK

The PC transmits the ASCII string: \$aaFREckckCR

Possible instrument responses:

- correct reception: &&aa!\ckckCR
- incorrect reception: &&aa?\ckckCR

9. DISPLAY AND KEYPAD LOCK

The PC transmits the ASCII string: \$aaKDISckckCR

Possible instrument responses:

- correct reception: &&aa!\ckckCR
- incorrect reception: &&aa?\ckckCR

10. CHECK-SUM CALCULATION

The two ASCII characters (ckck) are the representation of a hexadecimal digit in ASCII characters. The check digit is calculated by executing the operation of XOR (exclusive OR) of 8-bit ASCII codes of only the string underlined.

The procedure to perform the calculation of check-sum is the following:

- Consider only the string characters highlighted with underlining
- Calculate the exclusive OR (XOR) of 8-bit ASCII codes of the characters

Example:

character	decimal ASCII code	hexadecimal ASCII code	binary ASCII code
0	48	30	00110000
1	49	31	00110001
t	116	74	01110100
XOR =	117	75	01110101

- The result of the XOR operation expressed in hexadecimal notation is made up of 2 hexadecimal digit (that is, numbers from 0 to 9 and/or letters from A to F). In this case the hexadecimal code is 0x75.
- The checksum is made up of the 2 characters that represent the result of the XOR operation in hexadecimal notation (in our example the character "7" and the character "5").

MODBUS-RTU PROTOCOL

The MODBUS-RTU protocol allows the management of the reading and writing of the following registries according to the specifications found on the reference document for this **Modicon PI-MBUS-300** standard.

To select the MODBUS-RTU communication see **SERIAL COMMUNICATION SETTINGS** section.

Check if the *master* MODBUS-RTU in use (or the development tool) requires the disclosure of registers based on 40001 or 0. In the first case the registers numbering corresponds to the one in the table; in the second case the register must be determined as the value in the table minus 40001. E.g.: the register 40028 shall be reported as 27 (= 40028-40001).

Certain data, when specifically indicated, will be written directly in the EEPROM type memory. This memory has a limited number of writing operations (100000), therefore it is necessary to pay particular attention to not execute useless operations on said locations. The instrument in any case makes sure that no writing occurs if the value to be memorised is equal to the value in memory.

The numerical data found below are expressed in decimal notation; if the prefix 0x is entered the notation will be hexadecimal.

MODBUS-RTU DATA FORMAT

The data received and transmitted by way of the MODBUS-RTU protocol have the following characteristics:

- 1 start bit
- 8 bit of data, *least significant bit* sent first
- Settable parity bit
- Settable stop bit

FUNCTIONS SUPPORTED IN MODBUS

Among the commands available in the MODBUS-RTU protocol, only the following are utilised for management of communication with the instruments; other commands could be incorrectly interpreted and generate errors or blocks of the system:

FUNCTIONS	DESCRIPTION
03 (0x03)	READ HOLDING REGISTER (READ PROGRAMMABLE REGISTERS)
16 (0x10)	PRESET MULTIPLE REGISTERS (WRITE MULTIPLE REGISTERS)

Interrogation frequency is linked to the communication speed set (the instrument stands by for at least 3 bytes before starting calculations and an eventual response to the interrogation query). The *dELAY* parameter present in the **SERIAL COMMUNICATION SETTING** section, allows the instrument to respond with a further delay and this directly influences the number of interrogations possible in the unit of time.

For additional information on this protocol refer to the general technical specifications PI_MBUS_300.

In general queries and answers toward and from one slave instrument are composed as follows:

FUNCTION 3: Read holding registers (READ PROGRAMMABLE REGISTERS)

QUERY

Address	Function	1st register address	No. registers	2 byte
A	0x03	0x0000	0x0002	CRC

Tot. byte = 8

RESPONSE

Address	Function	No. bytes	1st register	2nd register	2 byte
A	0x03	0x04	0x0064	0x00C8	CRC

Tot. byte = 3+2*No. registers+2

where: No. registers...number of Modbus registers to write beginning from the address no. 1

No. bytenumber of bytes of the following data

FUNCTION 16: Preset multiple registers (WRITE MULTIPLE REGISTERS)

QUERY

Address	Function	1st reg. add.	No. reg.	No. bytes	Val.reg.1	Val.reg.2	2 byte
A	0x10	0x0000	0x0002	0x04	0x0000	0x0000	CRC

Tot. byte = 7+2*No. registers+2

RESPONSE

Address	Function	1st reg. address	No. reg.	2 byte
A	0x10	0x0000	0x0002	CRC

Tot. byte = 8

where: No. registers...number of Modbus registers to read beginning from the address no. 1

No. bytenumber of bytes of the following data

Val.reg.1contents of the register beginning from the first

The response contains the number of registers modified beginning from the address no. 1.

COMMUNICATION ERROR MANAGEMENT

The communication strings are controlled by way of the CRC (Cyclical Redundancy Check). In case of communication error the slave will not respond with any string. The master must consider a time-out for reception of the answer. If it does not receive an answer it deduces that there has been a communication error.

In the case of the string received correctly but not executable, the slave responds with an EXCEPTIONAL RESPONSE. The "Function" field is transmitted with the msb at 1.

EXCEPTIONAL RESPONSE

Address	Function	Code	2 byte
A	Funct + 0x80		CRC

CODE	DESCRIPTION
1	ILLEGAL FUNCTION (the function is not valid or is not supported)
2	ILLEGAL DATA ADDRESS (the specified data address is not available)
3	ILLEGAL DATA VALUE (the data received has an invalid value)

LIST OF AVAILABLE REGISTERS

The MODBUS-RTU protocol implemented on this instrument can manage a maximum of 32 registers read and written in a single query or response.

- R.....the register may only be read
- W.....the register may only be written
- R/W.....the register may be both read and written
- H.....high half of the DOUBLE WORD containing the number
- L.....low half of the DOUBLE WORD containing the number

Register	Description	Saving in EEPROM	Access
40001	Firmware version	-	R
40002	Instrument type	-	R
40003	Year of manufacture	-	R
40004	Serial number	-	R
40005	Program type	-	R
40006	COMMAND REGISTER	NO	R/W
40007	STATUS REGISTER	-	R
40008	GROSS WEIGHT H	-	R
40009	GROSS WEIGHT L	-	R
40010	NET WEIGHT H	-	R
40011	NET WEIGHT L	-	R
40014	Divisions and Units of measure	-	R

40017	INPUTS	-	R
40018	OUTPUTS	NO	R/W
40019	SETPOINT 1 H	Only after command 99 of the Command Register	R/W
40020	SETPOINT 1 L		R/W
40021	SETPOINT 2 H		R/W
40022	SETPOINT 2 L		R/W
40023	SETPOINT 3 H		R/W
40024	SETPOINT 3 L		R/W
40025	SETPOINT 4 H		R/W
40026	SETPOINT 4 L		R/W
40027	SETPOINT 5 H		R/W
40028	SETPOINT 5 L		R/W
40039	HYSTERESIS 1 H	YES	R/W
40040	HYSTERESIS 1 L		R/W
40041	HYSTERESIS 2 H		R/W
40042	HYSTERESIS 2 L		R/W
40043	HYSTERESIS 3 H		R/W
40044	HYSTERESIS 3 L		R/W
40045	HYSTERESIS 4 H		R/W
40046	HYSTERESIS 4 L		R/W
40047	HYSTERESIS 5 H		R/W
40048	HYSTERESIS 5 L		R/W
40050	INSTRUMENT STATUS	-	R
40051	REGISTER 1	NO	R/W
40052	REGISTER 2		R/W
40053	REGISTER 3		R/W
40054	REGISTER 4		R/W
40055	REGISTER 5		R/W
40056	REGISTER 6		R/W
40057	REGISTER 7		R/W
40058	REGISTER 8		R/W
40059	REGISTER 9		R/W
40060	REGISTER 10		R/W
40065	Sample weight for instrument calibration H	Use with command 101 of the Command Register	R/W
40066	Sample weight for instrument calibration L		R/W
40073	Preset tare H	Use with command 130 of the Command Register	R/W
40074	Preset tare L		R/W
40082	Alibi memory identification number H	NO	R/W
40083	Alibi memory identification number L	NO	R/W
40084	Weight read from the alibi memory H	-	R
40085	Weight read from the alibi memory L	-	R

40086	Tare read from the alibi memory H	-	R
40087	Tare read from the alibi memory L	-	R
40088	Decimals read from the alibi memory	-	R
40089	Unit of measure read from the alibi memory	-	R
40090	Type of data read from the alibi memory	-	R

WARNING: at the time of writing the setpoint values are saved to RAM (they will be lost upon the next power-off); to store them permanently to EEPROM so that they are maintained at power-on, the 99 command of the Command Register must be sent.

STATUS REGISTER (40007)

Bit 0	Load cell error
Bit 1	AD convertor malfunction
Bit 2	Maximum weight exceeded by 9 divisions
Bit 3	Gross weight higher than 110% of full scale
Bit 4	Gross weight beyond 999999 or less than -999999
Bit 5	Net weight beyond 999999 or less than -999999
Bit 6	Weight below -20e
Bit 7	Gross weight negative sign
Bit 8	Net weight negative sign
Bit 9	
Bit 10	Net display mode
Bit 11	Weight stability
Bit 12	Weight within $\pm\frac{1}{4}$ of a division around ZERO
Bit 13	Research in progress (alibi)
Bit 14	Alibi memory overwrite
Bit 15	

INPUTS REGISTER (40017)
(reading only)

Bit 0	INPUT 1 status
Bit 1	INPUT 2 status
Bit 2	INPUT 3 status
Bit 3	
Bit 4	
Bit 5	
Bit 6	
Bit 7	
Bit 8	
Bit 9	
Bit 10	
Bit 11	
Bit 12	
Bit 13	
Bit 14	
Bit 15	

OUTPUTS REGISTER (40018)
(reading and writing)

Bit 0	OUTPUT 1 status
Bit 1	OUTPUT 2 status
Bit 2	OUTPUT 3 status
Bit 3	OUTPUT 4 status
Bit 4	OUTPUT 5 status
Bit 5	
Bit 6	
Bit 7	
Bit 8	
Bit 9	
Bit 10	
Bit 11	
Bit 12	
Bit 13	
Bit 14	
Bit 15	



The output status can be read at any time but can be set (written) only if the output has been set as *PLC* (see section **OUTPUTS AND INPUTS CONFIGURATION**); otherwise, the outputs will be managed according to the current weight status with respect to the relevant setpoint.

DIVISIONS AND UNITS OF MEASURE REGISTER (40014)

This register contains the current setting of the scale verification division (parameter *E* or *E I* for multi-interval or multiple range instruments) and of the units of measure (parameter *Un tE*).

H Byte	L Byte
Unit of measure	Scale verification division

Use this register to calculate the value displayed by the instrument.

Least significant byte (L Byte)

Scale verification division value	Divisor	Decimals
0	100	0
1	50	0
2	20	0
3	10	0
4	5	0
5	2	0
6	1	0
7	0.5	1
8	0.2	1
9	0.1	1
10	0.05	2
11	0.02	2
12	0.01	2
13	0.005	3
14	0.002	3
15	0.001	3
16	0.0005	4
17	0.0002	4
18	0.0001	4

Most significant byte (H Byte)

Unit of measure value	Unit of measure description
0	Kilograms
1	Grams
2	Tons

POSSIBLE COMMANDS TO BE SENT TO THE COMMAND REGISTER (40006)

0	No command	1	
6		7[^]	SEMI-AUTOMATIC TARE enabling (net weight displaying)
8	SEMI-AUTOMATIC ZERO	9	SEMI-AUTOMATIC TARE disabling (gross weight displaying)
20		21	Keypad lock
22	Keypad and display unlock	23	Keypad and display lock
98		99	Save data in EEPROM
110	Weight storage in alibi memory	111	Alibi memory value reading
130[^]	Preset tare enabling	131	

[^]) Command not available if net functions are disabled (see parameter $nEEEn$ in section **INFO MENU**).



If it is necessary to execute the same command twice consecutively, send command 0 between the first command and the following one.

ALIBI MEMORY OPERATION CONTROLS

SAVING A WEIGHT IN ALIBI MEMORY

To save a weight in alibi memory send the command 110 to the Command Register. If the operation is successfully completed, the “Alibi memory identification number” register (40082 - 40083) increases and the stored values can be read in the 40084 ÷ 40090 registers; see the next section for more information about these registers. If printing is enabled, the stored weight value will be printed.

The alibi memory is used in a circular mode: once reached the memory end, the system starts from the beginning by overwriting the first record; the “Alibi memory overwrite” bit of the Status Register is enabled until the following saving in the alibi memory.

READING OF VALUES STORED IN ALIBI MEMORY

To recall a stored value from the alibi memory:

- write the identification number of the value to recall in the “Alibi memory identification number” register;
- send the command 111 to the Command Register;
- read the data from the 40084 ÷ 40090 registers:
 - “Weight read from the alibi memory” register (40084 - 40085): gross weight or net weight (check the “Net weight” bit in the table **TYPE OF DATA READ FROM THE ALIBI MEMORY REGISTER** to determine whether it is net or gross);
 - “Tare read from the alibi memory” register (40086 - 40087): when the value is equal to zero, it means that you are reading a gross weight, otherwise you are reading a net weight;
 - “Decimals read from the alibi memory” register (40088): number of decimals to apply to weight values;
 - “Unit of measure read from the alibi memory” register (40089): unit of measure code (see table in **DIVISIONS AND UNITS OF MEASURE REGISTER** section for the codes legend);
 - see the table **TYPE OF DATA READ FROM THE ALIBI MEMORY REGISTER** (40090) for a description of the same-named register; use this register to check if the weight reading refers to a net weight and if the tare reading is a preset tare;
- if the requested value does not exist, all the registers from 40084 to 40090 will be set to zero.

TYPE OF DATA READ FROM THE ALIBI MEMORY REGISTER (40090)

Bit 0	The read weight is a net weight	Bit 8	
Bit 1	The read tare is a preset tare	Bit 9	
Bit 2		Bit 10	
Bit 3		Bit 11	
Bit 4		Bit 12	
Bit 5		Bit 13	
Bit 6		Bit 14	
Bit 7		Bit 15	

COMMUNICATION EXAMPLES

The numerical data below are expressed in hexadecimal notation with prefix h.

EXAMPLE 1

Command for multiple writing of registers (command 16, h10 hexadecimal):

Assuming that we wish to write the value 0 to the register 40019 and the value 2000 to the register 40020, the string to generate must be:

h01 h10 h00 h12 h00 h02 h04 h00 h00 h07 hD0 h70 hD6

The instrument will respond with the string:

h01 h10 h00 h10 h00 h02 h40 h0D

Query field name	hex	Response field name	hex
Instrument address	h01	Instrument address	h01
Function	h10	Function	h10
Address of the first register H	h00	Address of the first register H	h00
Address of the first register L	h12	Address of the first register L	h12
Number of registers H	h00	Number of registers H	h00
Number of registers L	h02	Number of registers L	h02
Byte count	h04	CRC16 L	hE1
Datum 1 H	h00	CRC16 H	hCD
Datum 1 L	h00		
Datum 2 H	h07		
Datum 2 L	hD0		
CRC16 L	h70		
CRC16 H	hD6		

EXAMPLE 2

Command for multiple writing of registers (command 16, h10 hexadecimal):

Assuming that we wish to write two setpoint values on the instrument, at 2000 (setpoint 1: 40019-40020) and 3000 (setpoint 2: 40021-40022) respectively, the string must be sent:

h01 h10 h00 h12 h00 h04 h08 h00 h00 h07 hD0 h00 h00 h0B hB8
h49 h65

The instrument will respond with the string:

h01 h10 h00 h12 h00 h04 h61 hCF

Query field name	hex	Response field name	hex
Instrument address	h01	Instrument address	h01
Function	h10	Function	h10
Address of the first register H	h00	Address of the first register H	h00
Address of the first register L	h12	Address of the first register L	h12
Number of registers H	h00	Number of registers H	h00
Number of registers L	h04	Number of registers L	h04
Byte count	h08	CRC16 L	h61
Datum 1 H	h00	CRC16 H	hCF
Datum 1 L	h00		
Datum 2 H	h07		
Datum 2 L	hD0		
Datum 3 H	h00		
Datum 3 L	h00		
Datum 4 H	h0B		
Datum 4 L	hB8		
CRC16 L	h49		
CRC16 H	h65		

EXAMPLE 3

Multiple commands reading for registers (command 3, h03 hexadecimal):

Assuming that we wish to read the gross weight value (in the example 4000) and net weight value (in the example 3000), reading from address 40008 to address 40011 must be performed by sending the following string:

h01 h03 h00 h07 h00 h04 hF5 hC8

The instrument will respond with the string:

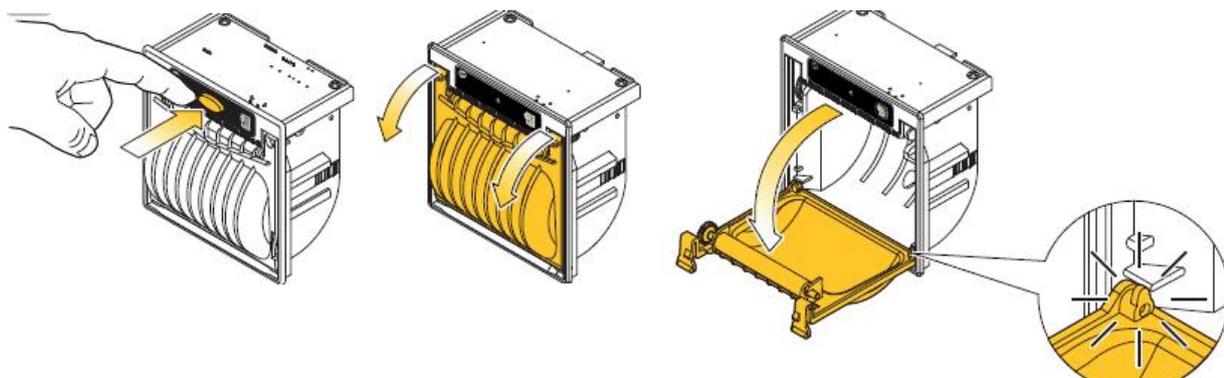
h01 h03 h08 h00 h00 h0F hA0 h00 h00 h0B hB8 h12 h73

Query field name	hex	Response field name	hex
Instrument address	h01	Instrument address	h01
Function	h03	Function	h03
Address of the first register H	h00	Byte count	h08
Address of the first register L	h07	Datum 1 H	h00
Number of registers H	h00	Datum 1 L	h00
Number of registers L	h04	Datum 2 H	h0F
CRC16 L	hF5	Datum 2 L	hA0
CRC16 H	hC8	Datum 3 H	h00
		Datum 3 L	h00
		Datum 4 H	h0B
		Datum 4 L	hB8
		CRC16 L	h12
		CRC16 H	h73

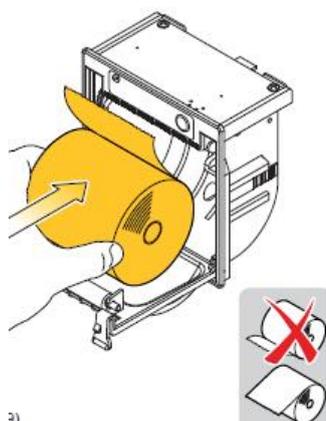
For additional examples regarding the generation of correct control characters (CRC16) refer to the manual **Modicon PI-MBUS-300**.

PAPER ROLL REPLACEMENT

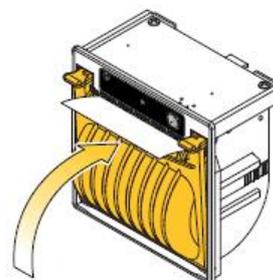
1. Open the paper roll compartment by keeping pressed the OPEN key and using the two opening notches.



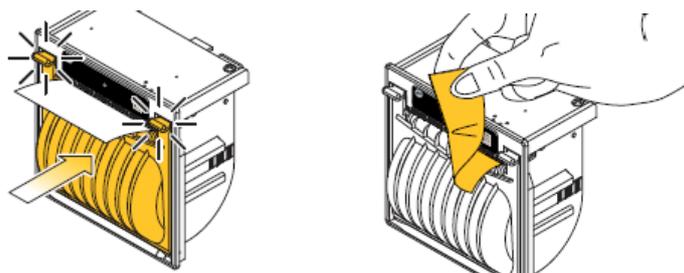
2. Place the paper roll making sure that it unrolls in the proper direction as shown.



3. Take out the paper and close the cover.



4. Push on the plastic cover to lock it and tear off the exceeding paper using the jagged edge.

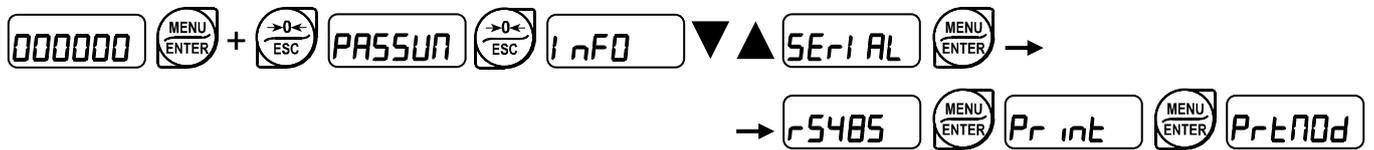


OPZWABSTAVQ: STAVQ INTEGRATED PRINTER

Instrument

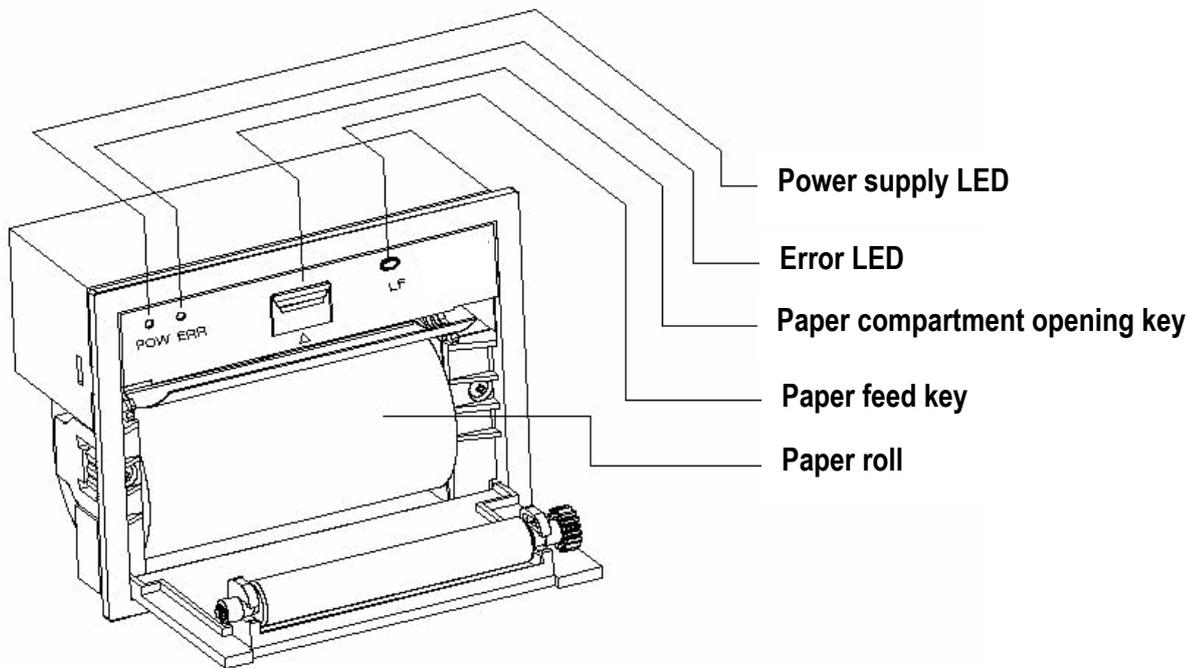
WTAB

From the weight display press the **MENU** and **ESC** buttons at the same time and select the printer on RS485 port:



select **SEAU9**;

LED/KEY FUNCTION



PAPER ROLL REPLACEMENT

Open the paper compartment with the special key and insert the roll as shows in the figure above, with a small strip of paper sticking out.

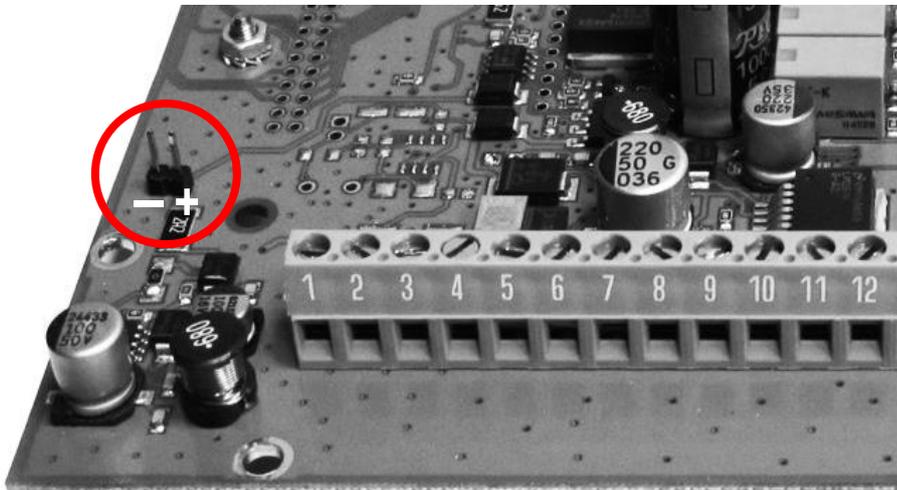
OPZWBATTWTAB

Instrument

WINOX / WTAB

- 12.2 V rechargeable lead battery with 2.8 Ah capacity, which is supplied already installed in the instrument.
- Use the functions of the **ENERGY** menu to optimize battery lifetime (see section **ENERGY SAVING**).
- The battery is recharged automatically every time the instrument is powered from an external power source (Power LED is on). A full charge takes about 20 hours.
- The instrument may be left connected to the external power source and this will not damage the battery.
- The battery will not charge if the instrument is powered by 12 VDC.

CONNECTING THE BATTERY TO THE INSTRUMENT



- : black cable
+ : red cable

WINOX-BR, WTAB-BR

- The instrument indicates that the battery is low by displaying the **LOWBAT** message alternated with the weight display.
- When the battery is too low, the instrument displays **LOWBAT** for 2 seconds and then turns off automatically.

Mode	Maximum operating time (hours)
no. 8 load cell (350 ohm), energy saving disabled	12
no. 8 load cell (350 ohm), energy saving enabled	13

WINOX-BL, WTAB-BL

The battery charge level is displayed by means of the following icon:



- 3 marks: battery charge level between 70% and 100%.
- 2 marks: battery charge level between 30% and 70%.
- 1 mark: battery charge level between 20% and 30%.
- 1 blinking mark: battery charge level below 20%.
- The instrument indicates that the battery is low by displaying the **LOWBAT** message alternated with the weight display.
- When the battery is too low, the instrument displays **LOWBAT** for 2 seconds and then turns off automatically.

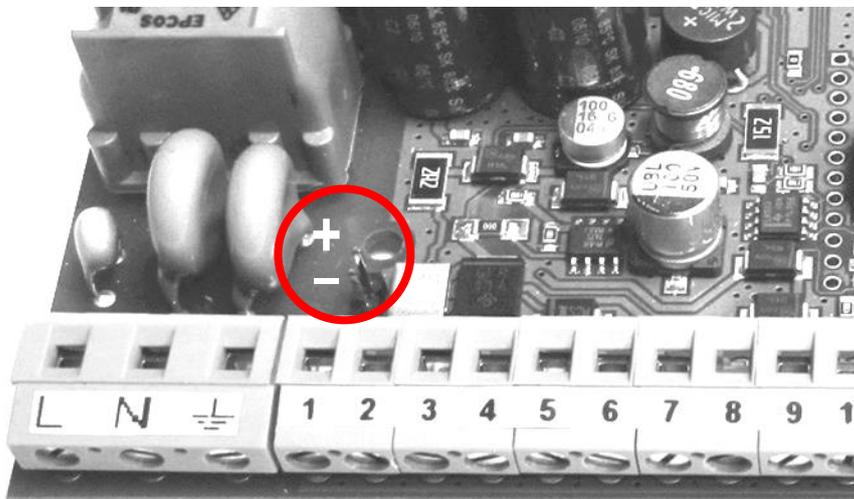
Mode	Maximum operating time (hours)
no. 8 load cell (350 ohm), energy saving disabled	12
no. 8 load cell (350 ohm), energy saving enabled	13

Instrument

WDESK

- Battery pack made up of 8 1.2 V NiMh rechargeable elements, type AA, 2.5 Ah capacity, which is supplied already installed in the instrument.
- Use the functions of the *EnErgY* menu to optimize battery lifetime (see section **ENERGY SAVING**).
- The battery is recharged automatically every time the instrument is powered from an external power source (Power LED is on). A full charge takes about 20 hours.
- The instrument may be left connected to the external power source and this will not damage the battery.
- The battery will not charge if the instrument is powered by 12 VDC.

CONNECTING THE BATTERY TO THE INSTRUMENT



- : black cable
- + : red cable

WDESK-BR

- The instrument indicates that the battery is low by displaying the **LOWBAT** message alternated with the weight display.
- When the battery is too low, the instrument displays **LOWBAT** for 2 seconds and then turns off automatically.

Mode	Maximum operating time (hours)
no. 8 load cell (350 ohm), energy saving disabled	10
no. 8 load cell (350 ohm), energy saving enabled	11

WDESK-BL

The battery charge level is displayed by means of the following icon:



- 3 marks: battery charge level between 70% and 100%.
- 2 marks: battery charge level between 30% and 70%.
- 1 mark: battery charge level between 20% and 30%.
- 1 blinking mark: battery charge level below 20%.
- The instrument indicates that the battery is low by displaying the **LOWBAT** message alternated with the weight display.
- When the battery is too low, the instrument displays **LOWBAT** for 2 seconds and then turns off automatically.

Mode	Maximum operating time (hours)
no. 8 load cell (350 ohm), energy saving disabled	10
no. 8 load cell (350 ohm), energy saving enabled	11

INFORMATION ON TYPE-APPROVED INSTRUMENTS IN THE EUROPEAN UNION

Instruments first assessed by the manufacturer: they must bear an “M” sticker and can be immediately commissioned in accordance with the Directive 2014/31/EU, art.1

Instruments assessed in two stages: they do not bear an “M” sticker. The first assessment phase has been completed by the manufacturer and includes all the tests listed by EN45501:2015, 8.2.2. The second assessment phase must be completed by the authorities in charge in the Country in which the weighing scale is installed; contact your dealer in case of any doubt as to the procedure to follow.

Metrical users will be responsible for observing the time schedule relating to the required periodical assessments after the first assessment (if provided for by law in the Country of installation of the scale).