



**BERMAN**  
WEIGHING  
TECHNOLOGY

# Weighing Indicator WT1000-LED



## Technical Manual

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Before using for the first time your **Weighting Indicator WT1000-LED**, you should read this manual carefully. You can also get additional information about this one and all others products of WeigtechUSA® catalog on the website [www.WeigtechUSA.com](http://www.WeigtechUSA.com)

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# 1 TECHNICAL FEATURES

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Table 1

Accuracy	Class III, 5000 divisions
Aquisition rate	10 times/second
Internal resolution	1/300.000
Cell sensitivity	1,5 at 3mV/V
Max number of cells	4 350 $\Omega$ cell
Programmable divisions	1,2,5,10,20 and 50
Remote display (optional)	Current loop for connection at a distance up to 50M.
Communication interfaces	RS232 (Baud Rate 1200, 2400,4800, 9600), (8 data bits, 1 start bit, 1 stop bit).
Power supply	90 to 240V AC automatic (Internal rechargeable battery 6V/4AH).
Autonomy	Up to 15h (Using a load cell)
Operating temperature	0 to 40°C
Storage temperatura	-20 to 50°C

## 2 GENERAL ADVICES

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- The display should not be directly exposed to intense sunlight.
- It must be used in a plan location and properly leveled.
- The power supply must be grounded.
- It cannot be used in potentially explosive hazardous areas.
- Do not clean the display with corrosive products.
- The device shall not be exposed to moisture.
- Turn off the display when connecting to other devices.
- Turn off the display when connecting the load cell.

### 3 KEY FUNCTIONS

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Activates the counting function;

By keeping this key pressed for 5 seconds, the indicator enters the user settings mode.

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Accumulate the weighing values.

When P5=6 work as print key (the accumulation function will be disabled).

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Discount of tare value.

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Scale reset.

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Manual tare input.

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### 4 OPERATION

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- To turn on the indicator, set the key “1/0”, located at the rear of the indicator, to the position “1”. When turned on, the display makes it self-test, indicating from “000000” to “999999”. Then goes to weighing mode.
- If the indicator is in the range of deadweight, it will reset automatically. Otherwise, it shows “ERRO 3”, which means that there was some object on the weighing platform before turning on the indicator. In this case, just remove the object to zero the indicator and return to normal weighing.

#### 4.1 CHARGING THE BATTERY

To charge the battery connect the WT-1000 to electric power supply, observing the display supply voltage value (90V ~ 240V with automatic changeover). The charging period is eight hours and the autonomy is at about up to 15 hours.

## 4.2 MANUAL ZERO

Use the key “**ZERO**” to reset the indicator.

## 4.3 TARE FUNCTION

By pressing the “**TARA**” key, the indicator discounts the weight value shown on the display. The tare function is used to discount the weight of the recipients in general. The tare operation is cumulative, this means, can be carried out more than once. To activate the **TARA**, the display must indicate a stable weight.

To cancel the tare just press the “**TARA**” key, with empty platform, or pressing the “**#**” key to insert a null tare value.

## 4.4 MANUAL TARE

By pressing the “**#**” key, the display will show “**t00.000**”. Enter the tare value using the keys “**TARA**” to select the digit to be changed and “**ZERO**” to change the selected digit. After typing the tare value, just press again the “**#**” key to confirm. To clear the manual tare value, press “**TARA**” with empty platform or pressing the “**#**” key twice to insert a null tare.

The manual tare is very useful to discount the recipients’ weight, for which the tare value is already known, without the need to weigh the empty container.

The manually typed tare value, cancels the other previously existing tare value.

## 4.5 WEIGHT ACCUMULATION

Place a weight on the platform and press the “**ACUM.**” key. The display will accumulate the indicated weight and will indicate the total accumulated value.

- Press again the “**ACUM.**” key to return the indicator to weighing mode. The next accumulation operation may only be performed after the indicator returns to zero.

- At any time is possible to check the accumulated value. To do this, remove the load from the platform and press the “**ACUM.**” key.
- To clear the accumulated value of the memory, press the “**ACUM.**” key and then “**FUNC**” key.

**Important:** To use the accumulation function the parameter P5 should be different from 6 (to change this parameter, see the item “Configuration” of this manual).

## 4.6 PARTS COUNTING

The function parts counting can be used when it is necessary to know the quantity instead the weight of several pieces with the same unitary weight. To make the counting it is necessary make a sample with a known quantity of pieces to be weight. If a container will be used to count pieces, first of all tare the container using the tare function.

- Press the “**FUNC**” key, the display shows “count”. Press the “**ACUM.**” key the display shows “**C00000**”.
- For typing the number of pieces on the platform, use the “**TARA**” key to select the correspondent digit and the “**ZERO**” key to increase the selected digit.
- After typing the sample value press the “**ACUM.**” key to start the counting.

Notes:

- The unitary weight of each piece must be greater than  $\frac{1}{4}$  of the indicator division. Example: For a scale with 150kg maximum capacity and division of the 50g, the unitary weight of the piece has to be greater than 12.5 g.
- The total sample weight must be higher than the indicator minimum load.
- As higher the quantity of pieces used as sample, as higher will be the counting accuracy.

To return to the weighing mode, press “**FUNC**” key.

**Important:** To use the accumulation function the parameter P5 should be different from 6 (to change this parameter, see the item “Configuration” of this manual).



## 5 USER SETTINGS

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To enter the user settings mode press the “**FUNC**” key and keep it pressed for five seconds. The display goes to user settings parameters mode and shows “**P1 1**”. Press “**ACUM.**” to select the parameter and “**TARA**” to change the parameter value. See table 1, below:

Table 2

P1	Weighing unit (kg or lb)	1. kg 2. lb
P2	Parameter not used.	Parameter not used.
P3	Baudrate configuration (8 data bits, no parity and stopbits 1)	1. 9600 2. 4800 3. 2400 4. 1200
P4	Serial transmission (Net or Gross)	1. Transmits the net weight 2. Transmits the gross weight
P5	Serial transmission mode (It is necessary restart the display after changing this parameter)	1. Without transmission 2. Remote display 3. Continuous transmission, when stable 4. Control mode (Z-zero, T-tare, R- requests weight value) 5. Continuous transmission complete mode with gross, tare and net (disables counting function) 6. Zebra TLP2844 Printer (Disables accumulation)
P6	Setting the stand-by mode	1. Stand-by mode disabled. 2. Stand-by mode enable
P7	Auto-zero	1. 0,5 d 2. 1,0 d 3. 1,5 d 4. 2,0 d 5. 2,5 d 6. 3,0 d 7. 5,0 d 8. Disables the auto-zero
P8	Zero manual range (zero key)	1. 2% 2. 4% 3. 10% 4. 20% of full scale
P9	Zero range to start	1. 2% 2. 4% 3. 10% 4. 20% of full scale
P10	Digital filter	1. Low (more longer) 2. Medium 3. High
P11	Time for signal stabilization	1. Low (more longer) 2. Medium 3. High (faster)
P12	Range for signal stabilization	1. Low 2. Medium 3. High

## 6 SERIAL COMMUNICATION

### 6.1 CONTINUOUS TRANSMISSION FORMAT IN COMPLETE MODE

WITH GROSS, TARE AND NET (P5=5):

The gross weight, tare and net as well stability indicative are transmitted according the table below:

S	,	B	B	B	.	B	B	B	,	T	T	T	.	T	T	T	,	L	L	L	.	L	L	L	CR	LF
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

S: Stability flag and can assume the following values:

- 0: Stable weight;
- 1: Unstable weight.

B: 7 bytes of gross weight including decimal point and negative sign of weight;

T: 7 bytes of tare weight including decimal point and negative sign of weight;

L: 7 bytes of net weight including decimal point and negative sign of weight;

CR Carriage return (0X0D)

LF Line feed (0x0A)

Total: 27 bytes

Transmission examples:

Gross=10,000kg, tare=0,200kg and net=9,800kg

1	,	0	1	0	.	0	0	0	,	0	0	0	.	2	0	0	,	0	0	9	.	8	0	0	CR	LF
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

Gross=0,000kg, tare=0,200kg and net=-0,200kg

0	0	0	.	0	0	0	,	0	0	0	.	2	0	0	,	-	0	0	.	2	0	0	CR	LF
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

Overload or under load

0	,							o	I	,							o	I	,						o	I	CR	LF
---	---	--	--	--	--	--	--	---	---	---	--	--	--	--	--	--	---	---	---	--	--	--	--	--	---	---	----	----

0	,	-						o	I	,	-						o	I	,	-						o	I	CR	LF
---	---	---	--	--	--	--	--	---	---	---	---	--	--	--	--	--	---	---	---	---	--	--	--	--	--	---	---	----	----

**Note:** The point position depends on the indicator configuration.

## 6.2 PROTOCOL

The data are passed on in

- data bits: 8
- Parity: none
- Start bit: 1
- Stop bit: 1

## 6.3 TRANSMISSION FORMAT IN CONTROL MODE

Table 3

P4=1 (Net weight transmission)											
Gross (kg)	w	w	0	0	0	.	0	0	0	k	g LF
Gross (lb)	w	w	0	0	0	.	0	0	0	l	b LF
Overload	Null	Null	Null	Null	Null	Null	Null	Null	Null	O	L LF
P4=2 (Gross weight transmission)											
Net (kg)	W	n	0	0	0	.	0	0	0	k	g LF
Net (lb)	W	n	0	0	0	.	0	0	0	l	b LF
Overload	Null	Null	Null	Null	Null	Null	Null	Null	Null	O	L LF

The display performs the operation according to the command transmitted to the indicator

According to the table:

Table 4

Command	Operation
R	Indicator sends the weight
T	Function "TARA" key
Z	Function "Zero" key

## 6.4 SERIAL OUTPUT CONNECTIONS

The serial output is connected by circular connector located at the rear of the indicator according to the table below:

Table 5

Circular connector (indicator)	DB-9 Female (computer)
Pin 1 (GND)	Pin 5
Pin 5 (TX)	Pin 2
Pin 4 (RX)	Pin 3

## 7 PRINT

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### 7.1 PRINTING ON TLP 2844 ZEBRA

Printing on the *TLP2844 Zebra* allows printing of gross, tare and net as well barcode. The print format is fully customizable and even allows the insertion of company logo.

### 7.2 PRINTER SETUP

The printer setup is done by “Zebra Designer” software, which can be freely acquired, downloading it by the Zebra website. In ZebraDesigner software, open the file “WT1000.LBL” and then export it to the printer by menu “File” > “Export to printer”.

*Additionally, the download of the label-model WT1000.LBL should be done*

Example of label format:



### 7.3 SETTING THE INDICATOR:

P3 = 1; P5 = 6.

**Important:** *In this mode the accumulation function does not work.*

### 7.4 PRINT KEY

Printing is done by pressing “Acum” key.

## 7.5 CONNECTION WITH ZEBRA PRINTER

Table 6

Circular connector (indicator)	DB-9 Male (Zebra)
Pin 1 (GND)	Pin 5
Pin 5 (TX)	Pin 3

## 8 REMOTE DISPLAY

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### 8.1 BERMAN DR-WT125 AND DR-WT75 REMOTE DISPLAY

The remote display has the function to repeat the weight value which appears in the indicator.



### 8.2 SETTING THE INDICATOR

P3 = 4; P5 = 2

## 8.3 CONNECTIONS WITH REMOTE DISPLAY WT – 125/75

The serial output is connected by circular connector on the rear of the indicator, according to the table below:

**Table 7**

Circular connector (indicator)	Circular connector (Display)
Pin 1 (GND)	Pin 5
Pin 5 (TX)	Pin 3
*Eliminate the short (bridge) between the pin 1 and 4 of the display which are delivered so as factory standard.	

## 9 CONNECTING THE LOAD CELL

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### 9.1 CONNECTING THE LOAD CELL (6 WIRES)

The load cell connection is made by DB-9 male connector as shown below. The cell connection cable must have ground wire.

Table 8

DB-9 Male	Function
1	Excitation -
2	Sense -
5	Ground
6	Excitation +
7	Sense +
8	Signal -
9	Signal +

### 9.2 LOAD CELL CONNECTION (4 WIRES)

For four-wire load cell, a short circuit should be made between the pins 1 2 and another one between the pins 6 and 7, according to the table below:

Table 9

DB-9 Male	Function
1 and 2	Excitation -
5	Ground
6 and 7	Excitation +
8	Signal -
9	Signal +



## 10 SETUP AND CALIBRATION

Turn on the on/off switch (1/0), located on rear side of the indicator, to position “1” and keep the “#” key pressed. As soon the display shows “999999”, release the “#” key. The display shows “d x “. In programming mode, use the “#” key **to advance** the parameter and the “TARA” key **to change** the parameter.

Table 10

Parameter	Function
d x	Selects the division (1,2,5,10,20 or 50)
P x	Decimal point
FULL	Maximal capacity  Press “TARA” key to select the digit, and “ZERO” key to change the selected digit value. Follow this step until to have finished typing the capacity value.
nOLOAD	Zero setting.  Empty the scale platform, wait the stability sign appear and press “#” key to adjust the zero.
AdLOAD	Weight Adjustment  Press the “TARA” key for typing the calibration weight value. The display shows “000000” with one led lit bellow the second “0” (0 <u>0</u> 0000).  Note: The display will show “ERRO 5”, if the weight value is not typed. The display will show “ERRO 1”, if the cell signal is too low. If the indicator is calibrated with the load cell signal inverted it will be stuck to “0” after the calibration. If this happens, the signal must be connected accordingly and a new calibration should be performed. Press “TARA” key to select the digit, and “ZERO” key to change the selected digit value. Follow this step until typing of the weight applied to the platform is finished. Put a known weight over the platform and wait for the stabilization signal to appear and then press “#” to adjust the weight.
End	End of Programming  To save the calibration, press the calibration button located on the indicator rear, behind the sealing screw.

## 11 ERROR MESSAGES

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A12	<p><b>The indicator shows “A12”, makes the initialization counting and is unable to show the weight and keeps rebooting successively.</b></p> <p>This can happen when the indicator battery is low. It is necessary recharge the indicator and wait a few hours to return to normal behavior.</p>
ERR 1	<p><b>Low signal from the load cell.</b></p> <p>Check if the cell signal is inverted or if the cell is damaged or even not correctly dimensioned.</p>
ERR 2	<p><b>Deadweight is too high or too low during the calibration</b></p> <p>Check if the cell signal is inverted, with bad connections or if the cell is damaged or even not correctly dimensioned.</p> <p>If it is connected on a 4-wire cell, check if the pin 2 is connected to pin 1 and if the pin 7 is connected to pin 6.</p> <p>If it is connected on a 6-wires cell, check if the pin 2 is connected to sense- and if the pin 7 is connected to sense+.</p>
ERR 3	<p><b>The deadweight is out of range on turn on the indicator</b></p> <p>This error message appears when the indicator is turned on with some object on the platform. To fix it, just remove the object and the indicator will return to weigh normally.</p>
ERR 4	<p><b>Calibration weight not typed</b></p> <p>Type the calibration weight value according to item 2 (Calibration).</p>
ERR 5	<p><b>The deadweight is out of range on turn on the indicator</b></p> <p>This error message appears when the indicator is turned on with some object on the platform. To fix it, just remove the object and the indicator will return to weigh normally.</p>
ERR 6	<p><b>The unitary weight value of the parts is less than ¼ of the indicator division.</b></p>
ERR 7	<p><b>An invalid manual tare value was inserted.</b></p>
ERR 8	<p><b>Load cell signal inverted during the calibration.</b></p> <p>Check if the cell signal is inverted, with bad connections or if the cell is damaged or even not correctly dimensioned.</p>
BAt-Lo	<p><b>Low battery.</b></p> <p>The indicator only will return to weigh after has been connected to electric power or when the battery is charged.</p>

## 12 **WEIGHTECHUSA** ADDRESS

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