OPERATING MANUAL

Electronic table scales

Control scale - Model ZW60-45

ZW60-210531-Rev006-UM-en

Table of Contents

This symbol means: "Consult operating instructions". To achieve accurate results, read the instructions for use carefully before use and follow all instructions provided therein. Keep the instructions for use for future reference.

1. Applications

The ZW60 series digital checkweighing scale provides accurate, fast and versatile checkweighing and simple counting options and is designed for checkweighing in applications not regulated by law.

- The ZW60-45 scale has a rated capacity of 45 kg with a digit interval of 1 g.
- All scales are equipped with stainless steel weighing platforms and ABS plastic housings.
- All scales have sealed keypads with colour-coded membrane switches.
- The display is a highly readable liquid crystal display (LCD) with extra large digits (digit height is 52 mm). The LCD display is equipped with a backlight that can optionally be enabled or disabled.
- All scales have an auto zero function, an audible alarm for preset weights, an automatic taring, a preset taring and a totaliser that allows to save and recall the number of pieces as a total sum.
- The scale can be switched between such units as kg, g, lbs and oz.
- Power is supplied via a 230 V mains connection or a 6 V 4 Ah rechargeable battery.

2. Delivery contents

Included in the delivery are:

- Scales
- Rechargeable battery (integrated into the scale)
- Weighing platform
- Power adapter
- User manual incl. declaration of conformity

3. Safety instructions

It is essential that you read, understand and follow all instructions in these instructions for use as well as the country-specific installation standards, the applicable safety regulations and accident prevention regulations.

- Handle the scale with care and always keep in mind that it is a precision measuring instrument.
- Protect the weighing platform from impacts and vibrations and do not overload the scale.
- The scale may only be operated and maintained by trained and authorised skilled personnel. Handling errors can lead to injuries or damage the scale.
- Before first use, make sure that the mains voltage and current type stated on the name plate match the mains voltage and current type at the place of use.
- Lay the cables so that they cannot lead to a trip hazard.
- Lay the cables so that they cannot pose a risk of strangulation.
- Operate the device only within the permissible ambient conditions.
- Do not expose the scale to high temperatures, whether from neighbouring devices or direct sunlight.

- Use the scale at constant ambient temperatures and avoid using in draughts, otherwise the measurement results could be falsified.
- Place the scale as far as possible from other devices or sources that generate electromagnetic field or other interferences (e.g. strong motors and portable and mobile HF communication devices) as these can falsify the measurement results.
- Use only approved accessories and peripherals.
- Before cleaning the device, pull the mains adapter/plug out of the socket.
- Never clean the scale with abrasive or aggressive cleaning agents.
- Do not immerse the device in water or other liquids.
- If you have problems with this device, e.g. when setting up, maintaining or using, please contact the authorised customer service. Do not open or repair the device yourself.
- Please notify the authorised customer service if unexpected operations or events occur.
- If the weighing system is not used for a longer period of time, it should be cleaned and stored in a protective film. The addition of a drying agent is desirable.

DO NOT use the scale:

- If the mains adapter is damaged;
- If the mains adapter is not working;
- If the battery compartment has an unnatural bulge;
- After long storage in a humid environment.

In such cases, please contact authorised customer support.

4. Set up of the scales

1. Carefully remove the delivery contents from the packaging.
2. If necessary, remove the transport lock before operating the scale. The transport lock (if any) is located on the underside of the scale.
3. Place the scale on a stable, horizontal surface. Do not place the scale on a shaky or vibrating table as this will cause distortion of measurement results.
4. Do not place the scale near vibrating machines.
5. To align the scale, adjust the four feet of the scale so that the air bubble is exactly in the centre of the spirit level.
6. Remove the weighing platform from the separate packaging and insert it carefully into the holes on the top of the scale.
7. Connect the power adapter to the socket on the underside of the scale. Switch on the scale. The on/off switch is located on the right-hand side under the housing. When switching on the scale, the weighing platform must be unloaded. The software version number appears on the display, followed by the maximum capacity shortly thereafter. Then the scale runs a test programme and confirms the end of the testing routine with a sound signal.

   

   If the weighing platform is loaded when switching on the scale, the scale will not be properly calibrated and ready for use.

   With the weighing platform unloaded, switch off the scale and then switch it on again.
8. The scale is now ready for use.
9. For accurate measurement results, the item to be weighed must be placed in the middle of the weighing platform. The item to be weighed should not protrude beyond the weighing platform.

5. Operating and display elements

5.1 Operating Controls

5.2 Button terms and functions

Symbol	Description	Function
ZERO	**Zeroing**	Sets the zero point for all next weighing operations. Zero is displayed. **Secondary function**: Confirms (“Enter”) adjustable parameters or other functions.
TARE	**Tare**	Tares the scales. Saves the current weight as a tare value, subtracts the tare value from the weight and displays the results. That is the net weight. **Secondary function**: Increments the active digit when entering values of adjustable parameters or other functions.
%	**Percent weighing function**	Percent function. Displays weight, unit weight and counted quantity in counting mode. **Secondary function**: Skips the active digit one place to the right when entering values of adjustable parameters or other functions.
MODE	**Mode button**	Changes the units in weighing mode. Changes display between unit weight, counted quantity and total weight in **counting mode**. Displays weight in **percent mode**. The scale automatically returns to percent mode in three seconds. **Secondary function**: Skips the active digit one place to the left when entering values of adjustable parameters or other functions.
PRINT	**Printing**	Triggers data transfer to a connected printer or PC (only for models with RS interface - special version). Otherwise without function.
G/N	**Switch between gross and net weight**	Switches between gross and net weight. **Secondary function**: Returns (“ESC”) to operating mode while setting adjustable parameters.
M+	**Summarizing**	Summarizing. Saves the current weight in memory. Adds the value (weight or quantity) to the totaliser.

MR	**Memory recall**	Memory recall button. Displays the summed total weight from the memory.
MC	**Clear memory**	Memory clear button. Clears the summed total weight from the memory.
SMPL	**Piece counting mode**	If the scale is in **weighing mode**, this button switches it to counting mode. If the scale is in **counting mode**, this button switches it back to weighing mode
U.WT.	**Manual weight entry**	Manual entry of a known weight value.
HI LIMIT	**Maximum value check**	Recalls the stored maximum weight value in weighing mode or the maximum quantity in counting mode. If the applied weight or the applied quantity exceeds the maximum value, you will hear an audible signal. To enter the value, press and hold down this button for 3 seconds.
LOW LIMIT	**Minimum value check**	Recalls the stored minimum weight value in weighing mode or the minimum quantity in counting mode. If the applied weight or the applied quantity is smaller than the minimum value, you will hear an audible signal. To enter the value, press and hold down this button for 3 seconds.
0…9 / •	**Manual entry of values**	Numeric buttons from 0 to 9 are used to manually enter values such as unit weight or reference quantity.
C	**Clear manually entered values**	Clears manually entered values.

5.3 Display symbols

The LCD display shows a value and the unit.

In addition, the display shows symbols for tare (TARE), gross weight (GROSS), zero position (ZERO) and low bat-tery charge.

Symbol	Meaning
Battery	Battery charging required.
STABLE	The weight shown on the display is stable.
ZERO	The scale is in zero position.
GROSS	The weight shown on the display is the gross weight.
NET	The weight shown on the display is the net weight.
PCS	The scale is in piece counting mode.
%	The scale is in percent weighing mode.
M+	The display shows the result from the totaliser.

5.4 Battery status indicator

The scales are intended for rechargeable battery and/or mains operation. The rechargeable battery life is up to 100 hours depending on the set parameters.

When the rechargeable battery needs to be recharged, the battery symbol appears on the display. The scale will operate for about 30 minutes. After this time, the scale will switch off automatically to protect the rechargeable battery from damage. If the scale is switched on when the battery charge is low, “bAt Lo” will appear on the display every 5 minutes.

To recharge the rechargeable battery, simply plug the power adapter into the scale and switch on the mains voltage. The scale does not need to be switched on. The rechargeable battery must be charged for 12 hours to its full capacity.

The scales are delivered with partially charged rechargeable batteries. Since a rechargeable battery may get discharged in storage, it must be fully charged before the first use.

LED display

Green	Battery is fully charged.
Yellow	The yellow light indicates that the rechargeable battery should be charged longer (preferably overnight). Battery is charging.
red	Battery almost discharged. Please charge immediately. Charging can take up to twelve hours.

In case of improper use of the rechargeable battery or if the rechargeable battery is used for several years without replacement, it is possible that the rechargeable battery will no longer be fully charged. If the rechargeable battery life becomes unacceptable, contact your customer service representative or the manufacturer.

6. Operation

6.1 Zeroing the scale

When the gross weight is within ±2% of zero, a new zero point is set as when the scale is switched on. When the gross weight exceeds ±2%, the tare function is performed.

You can set the zero point at any time by pressing the ZERO button. All weighing and counting operations are performed from this point. Normally, it is only necessary if the weighing platform is unloaded. When the zero point is reached, the display shows “**Zero**”.

Notice: The scale has an auto zero function to account for small deviations or accumulation of items on the weighing platform. However, it is possible that you will need to press ZERO to reset the scale to zero if small weight quantities are displayed while the weighing platform is unloaded.

6.2 Taring

Press the TARE button to tare the scale. The displayed weight will be saved as a tare weight and the value will be subtracted from the display. Zero remains on the display. The display will show “**NET**”.

When a product is added, only its weight is shown on the display. The scale can be tared for a second time if another product is to be added to the first one. This process can be repeated until the upper limit of the tare range is reached.

When the container is removed, a negative value is shown on the display. If the scale has been tared before removing the container, this value will be the gross weight of the container plus all products that have been removed. “**ZERO**” appears on the display.

6.3 Determining the weight

To determine the weight, first possibly tare the container as described above.

Then place the items to be weighed on the weighing surface. The display will show the applied weight including the selected unit of weight.

6.4 Weighing in percent

The scale provides for weighing in percent. The reference quantity is given as 100%. Any additional weight placed on the scale will be displayed as a percentage of the reference quantity.

Place the reference weight on the weighing surface and press the % button as soon as **STABLE** appears on the display.

The reference weight is now displayed as 100.00%.

Now place additional weight on the weighing surface or remove some items from it: the display will show the applied weight in % of the reference weight.

Press the % button to return to the weighing mode.

6.5 Piece counting

6.5.1 Method 1: Unknown reference weight

First possibly tare the empty container as described above and leave it on the weighing surface.

Press the **SMPL** button to start counting pieces.

Place a certain number of items to be weighed on the weighing surface. You must know the exact number. Enter this number using the numeric keypad.

Press the **SMPL** button again.

If additional weight is now placed on the weighing surface, the display will show the quantity corrected accord-ingly.

Press the **MODE** button to switch the display between the counted quantity, unit weight, total weight and again the counted quantity.

Press the **SMPL** button to switch the scale back to weighing mode.

6.5.2 Method 2: Known reference weight

First tare the empty container as described above and leave it on the weighing surface.

You can enter a known reference weight using the numeric keypad by pressing the **U.WT.** button.

Confirm the value by pressing the **U.WT.** button again.

Now place the weight to be counted on the weighing surface and the display will show the number of applied pieces.

Press the **MODE** button to switch the display between the counted quantity, unit weight and total weight.

Press the **SMPL** button to switch the scale back to weighing mode.

6.6 Presetting the maximum and minimum values for audible alarm

The ZW60 checkweighing scale has a programming function that emits an audible signal when a user-defined number of pieces or weight is either reached (minimum) or exceeded (maximum).

More information about the audible signal setting can be found in chapter “Parameters”.

- In weighing mode, press the **HI LIMIT** or **LOW LIMIT** button to recall the currently stored maximum or mini-mum weight.
- In counting mode, press the **HI LIMIT** or **LOW LIMIT** button to recall the currently stored maximum or mini-mum quantity.
- To change the values, keep the button pressed in the respective mode until the current value flashes on the display.
- To reset the value to zero, press the **C** button.
- Now enter the maximum or minimum value using the numeric keypad and confirm the selection with **HI LIMIT** or **LOW LIMIT**.
- The scale will return to weighing mode.
- When the weighing surface is loaded, arrows on the display indicate whether the weight is below or above the values and an audible signal is emitted based on the settings made (see chapter PARAMETERS).

Both values are set:	When the weight is within the set values, the display shows OK.
The minimum value is set and the maximum value is zero:	The display shows OK as long as the weight is lower than the set minimum value. When the applied weight exceeds the minimum value, the display shows HIGH.
The minimum value is zero and the maximum value is set:	The display shows LOW as long as the applied weight is lower than the set maximum value. When the applied weight exceeds the maximum value, the display shows OK.
Both values are set, but the minimum value exceeds the maximum value:	The audible signal is not emitted. The display shows LOW as long as the applied weight is lower than the set minimum value and HIGH if the weight is greater than the set minimum value.

Please note that to be able to use this control function, the weight must be 20 times the dividing incre-ment of the scale.

- To disable the control function, enter zero for the minimum and maximum values as described above and save your entry with **ZERO**.

6.7 Totaliser

The ZW60 series scale can be set so that successively applied weights are added to the scale’s totaliser either automatically or by pressing the **M+** button. The selection of manual or automatic totalisers can be changed using the parameter settings.

The totaliser is enabled only in weighing mode. This function is disabled in counting or percent weighing mode.

When the totaliser is enabled, M+ appears flashing on the display.

6.7.1 Manual totaliser

The scale can be set so that the weight valueson the display are added to the values in the totaliser by pressing the **M+** button.

The display shows “AC 1” first and then the currently stored total weight for approx. 2 seconds before returning to the normal weighing mode.

If a printer or PC is connected via the RS232 interface (optional, not upgradeable), the result will be output ac-cordingly.

Remove the applied weight.

As soon as the scale returns to zero position, a second weight can be applied.

Press the **M+** button to add the value to the totaliser.

The display now shows “AC 2” first and then the currently stored total weight for approx. 2 seconds before re-turning to the normal weighing mode.

This process can be repeated until all weights have been added.

A total of 99 operations can be performed or until the rated capacity of the scale has been reached.

When the weighing surface is unloaded and the display shows zero, press the **MR** button to recall the stored value. Now the scale display shows the number of weights as “AC xx” and the total weight before returning to zero.

The total weight may also be output to a connected printer or PC via the RS232 interface (optional, not upgrade-able).

To clear the totaliser, press the **MC** button..

The M+ sum function is enabled only if the display shows “STABLE”.

6.7.2 Automatic totaliser

The scale can be set so that the weight values on the display are automatically added to the values in the totalis-er. For this purpose, parameter P6 “Ato” must be enabled (setting = Au on). For more details, see parameter settings.

When the automatic totaliser is enabled, the display shows **AUTO**.

Put a weight on the weighing surface. As soon as the scale is stable, it will automatically add the weight to the totaliser. This is confirmed by an audible signal.

Remove the weight from the weighing surface.

The display now shows “AC 1” and then the stored total weight before the scale returns to the normal weighing mode.

As soon as the scale returns to zero position, a second weight can be applied, and the weight will automatically be added to the totaliser.

A total of 99 operations can be performed or until the rated capacity of the scale has been reached.

The total weight can be recalled as described above.

When the weighing surface is unloaded and the display shows zero, press the **MR** button to recall the stored value. Now the scale display shows the number of weights as “AC xx” and the total weight before returning to zero.

The total weight may also be output to a connected printer or PC via the RS232 interface (optional, not upgrade-able).

To clear the totaliser, press the **MC** button.

7. Parameters

To set the parameters, go to a saved menu. The parameters are divided into two sections: one section for the user and the other one for the authorised technician.

To set the parameter menus, press the **TARE** button during the test run of the display after switching it on.

The display now shows "**P0 CAL**" for external calibration.

This function is only reserved for use by authorised technicians!

To navigate through these functions, press the **%** button to move to the next parameter or the **MODE** button to access the previous parameter.

To make changes to the parameter settings, enter the menu by pressing the **ZERO** button.

To make changes to individual parameter settings, press the % button (moves to the next higher setting) or the **MODE** button (moves to the next lower setting).

Press the **ZERO** button again to save your entries.

Press the **G/N** button to exit the menu without saving.

Please note that some functions are only reserved for use by authorised technicians according to the overview below!

PARA-METER	SUB-PARA-METER	DISPLAY	SETTING
P0 CAL			External calibration. Reserved for use by authorised technicians only.
P1 LCA			Linearity calibration. Reserved for use by authorised technicians only.
P2 CAP			Capacity setting. Reserved for use by authorised technicians only.
P3 Fdn			Division setting. Reserved for use by authorised technicians only.
P4 Unt	UNIT		Unit setting: kg, g, lb, oz.
		on	Selected units enabled.
		of	Selected units disabled.
P5 ACC	Accumulation		Sum function setting.
		on	Sum function enabled.
		of	Sum function disabled.
P6 Ato	Auto Accum.		Automatic sum function setting. Options: Au on / Au off / P Cont / ASK
		Au on	Auto on: automatic sum function enabled.
		Au of	Auto off: automatic sum function disabled.
		P cont	

PARA-METER	SUB-PARA-METER	DISPLAY	SETTING
		ASK	Question mode, bi-directional. Command R: Read data, Command T: Tare, Command Z: Zero.
P7 Prt			Printer settings.
P8 LP			Printer language selection setting.
P9 bUd	Baud Rate	b 600 b 1200 b 2400 b 4800 b 9600	Setting the required baud rate for communication speed via the RS232 interface. Standard baud rate 4800.
P10 Fd	Zero-tracking		Zero tracking setting. Reserved for use by authorised technicians only.
P11 bL	Backlight		Backlight setting. Options: Auto / on / off.
		Auto	Backlight is enabled when the weighing surface is loaded.
		on	Backlight is permanently enabled.
		of	Backlight is permanently disabled.
P12 bP	BEEP		Audible signal setting for checkweighing.
		0	Audible signal is disabled.
		1	Audible signal between two values is enabled.
		2	Audible signal beyond two values is enabled.
P13 ti	Time		Year, date and time setting. Navigate within the digits with % and MODE, increase the digits by 1 with TARE, confirm and save with ZERO.
		20FF	Setting the year.
		1F3F	Setting the date (format: month - day).
		3FFF	Setting the time (format: hours - minutes).

Accidental or intentional changes to these parameters by unauthorised persons can significantly affect the scale functionality!

8. Care and maintenance

8.1 Cleaning

Disconnect the mains plug before cleaning the scale. Use only a damp cloth or an ordinary disinfectant for cleaning. Do not use aggressive liquid cleaning agents, abrasive or acidic detergents or white spirit.

Make sure that no liquid cleaning agent or water penetrates the scale and always follow the manufacturer's instructions for use.

8.2 Error indication

An error message may appear on the scale display during the switch-on self-test or during operation. The mean-ing of the error messages is described below. If an error message is displayed, switch off the scale, then switch it on again, repeat the procedure that caused the error message, and finally perform calibration or other functions.

If the error message still appears, contact your customer service representative for further assistance.

ERROR MESSAGE	DESCRIPTION	POSSIBLE CAUSES
Err 4	The switch-on zero exceeds the permissible value (typically 4% of the maximum weighing range) when the scale is switched on or when the ZERO button is pressed.	The weighing platform has already been loaded when the scale has been switched on. Weighing platform overload when the scale is set to zero. Improper calibration of the scale Damaged load cell Damaged electronics
Err 5	Keypad fault	Improper use of the scale.
Err 6	Wrong indication of the AD converter when the scale is switched on.	Weighing platform not installed Damaged load cell Damaged electronics
Err 7	Current weight cannot be set as 100%.	This error message is displayed when the % button is pressed in zero position.
Err 8	Calibration error	Wrong calibration. If the problem persists, contact your customer service representative.
Err 9	Scale is not stable. Display does not return to zero.	This message can only appear when the scale is switched on. In this case, keep the scale stable or warm up the scale for a few minutes.

8.3 Storage and Transport

Keep all parts of the packaging in case you need to return the shipment to avoid possible damage during transportation.

8.4 Disposal

Waste electrical equipment do not belong in household waste. Devices with this marking may not be disposed of as residual waste, but must be recycled.

Remove (if possible) all batteries and rechargeable batteries from the devices and send them to the battery disposal.

Make sure that only depleted batteries or batteries with insulated poles are disposed of so that there is no short circuit!

8.5 Warranty

ADE will repair or replace this product if evidence is provided that it has failed within 1 year from the date of sale (proof of purchase is required) due to lack of workmanship or defective material. All moving parts, such as batteries, cables, etc. are excluded.

The use of accessories other than those approved by ADE, especially batteries, will void the warranty.

This warranty does not cover external normal wear and tear or damage caused by accident or misuse. The war-ranty will not apply for devices that have been opened by unauthorised persons. The statutory rights of the customer are not affected by this agreement in any way.

The dealer from whom the scale was purchased is responsible for complaints, customer service and spare parts.

9. Technichal Data

Model:	ZW60-45
Capacity	45 kg
Graduation d	1 g
Resolution	1:45,000
Tare range	up to 45 kg
Reproducibility	1 g
Linearity ±	1 g
Units of measurement	g

Interface	RS232 data output (optional only, not upgradeable)
Stabilisation time	Typically 2 seconds
Operating temperature	0°C – 40°C
Protection type	IP44
Power supply	6 V/DC / 4 Ah rechargeable battery, 230 V mains connection via power adapter
Calibration	With external weight
Display	6-digit LCD digital displays, 52 mm digit height
Housing	ABS plastic housing, stainless steel weighing platform
Weighing platform	365 x 235 mm
Housing dimensions	(WxDxH) 365 x 365 x 135 mm
Net weight	5.1 kg
Applications	Multi-purpose scale with simple piece counting function
Functions	Weighing, piece counting, totaliser, freely programmable minimum and maximum values with audible signal, automatic switch-off, backlight

Power supply	6 V/DC / 4 Ah internal rechargeable battery
	230 V power adapter
Power consumption	approx. 20 mA DC (without backlight)
	approx. 40 mA DC (with backlight)

10. Declaration of Conformity

CE

Declaration of conformity by the manufacturer

This product has been manufactured in accordance with the harmonised European standards. They conform to the regulations of the EC-directives listed below:

- EMC Directive 2014/30/EU
- Low voltage directive 2014/35/EU
- RoHS Directive 2011/65/EC

in the currently valid versions.

This declaration will lose its validity if any modification is made to the scale without our consent.

Hamburg, May 2021

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