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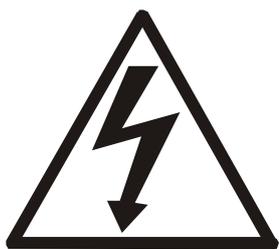


Electronic Balance

## Instruction Manual

SERIES PCE-PB-N

## 1. Safety Indication



The platform scale may only be plugged into a socket with earth conductors (PE) according to regulations. The protective effect must not be abolished by using an extension line without earth conductors. In case of voltage supplies from networks without connected earth conductor, a comparable protection according to the effective installation guidelines is to build by a specialist. **During mains operation of the scale, the batteries have to be removed.**

- Reparation and other services may only be performed by qualified personnel.
- Operating the scale in possibly explosive areas is forbidden.
- It is not advised to operate the scale in environments with higher air humidity.
- If the line cord appears to be damaged, the device has to be disconnected from the power network, effective immediately, and contact our consultants.



To implement the RoHS (redemption and disposal of electric devices) we take back our devices. They will either be recycled by us or be disposed through a recycling company according to statutory provisions.

**WEEE-Reg.-Nr. DE 69278128**

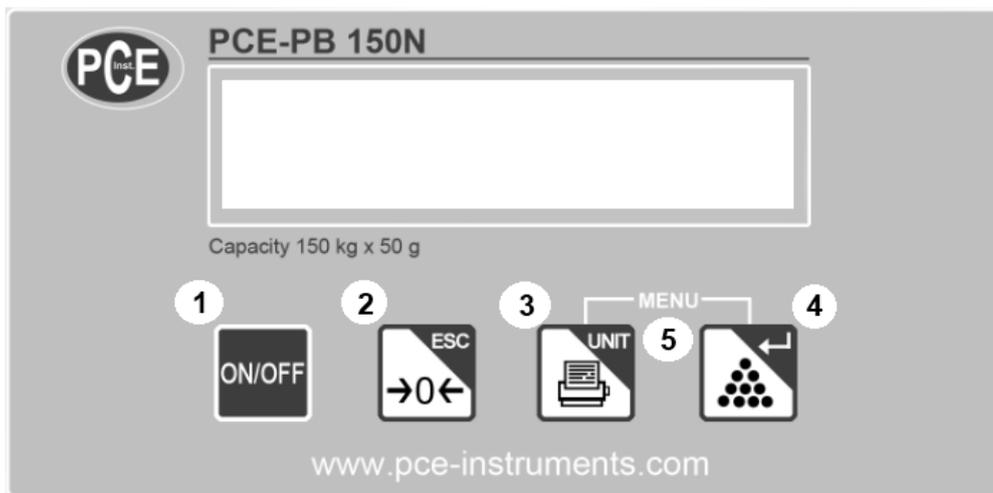
## 2. Technical Specifications

Scale editon	<b>PCE-PB 60N</b>	<b>PCE-PB 150N</b>
Weighing range (Max)	60 kg	150 kg
Minimum load (Min.)	60 g	150 g
Reading Precision (d)	20 g	50 g
Accuracy / max. error limit	± 80 g	± 200 g
Scaling platform (L x W x H)	300 x 300 x 45 mm	
Display	LCD 20 mm digit height (lightened)	
Display cable	90 cm spiral cable extractable up to approx. 1.5 m (connector)	
Measuring units	kg / lb / N (Newton) / g	
Operation temperature	+5°C ÷ +35°C	
Interface	USB / bidirectional	
Weight of Scale	approx. 4 kg	
Power Supply	DC9V / 200 mA adapter or 6 x AA 1.5V batteries	
Advised calibration weights	M1 class (eligible)	

### 3. Introduction

The platform scale is a scale, which is due to its characteristic functions applicable in almost every area as a multifunctional scale. The display of the platform scale is connected via an approx. 90 cm spiral cable that can be extended to approx. 1.5 m. Thus the objects that are to scale may easily protrude the weighing platform of 300 x 300 mm. The platform scale can be operated with either an adapter or commercial batteries. The characteristic functions are: Multiple tare through the entire weighing range, Auto ON-OFF can be deactivated, Auto Zero can be deactivated, adjustable data transfer, bidirectional USB interface.

### 4. Key Description



1. **Power Key**   
- Switches scale ON or OFF.
  
2. **ZERO / TARE Key** (dual function) 
  1. *TARE* – The weight value is tared, or gross- / net- weighing
  2. *ESC (Escape)* – the key facilitates leaving certain functions within the menu
  
3. **Print / Unit Key** (triple function) 
  1. Switch measuring unit into kg / lb / g or N (Newton)
  2. Send measured value to computer (press and hold for 2 sec.)
  3. Settings can be alternated in the menu
  
4. **Count / Enter Key** (dual function) 
  1. Activate unit counting function
  2. Within the menu as key to confirm (Enter)
  
5. **Menu / Settings** Key combination of  &   
enables accessing the menu navigation of the scale and to perform certain user settings

## 5. Operation

Remove the package from the platform scale and set up on a straight and dry surface. Pay attention to the scale being set up stable and safe. Now if the display shall be set up on a table, you can insert the display stand into the display (see back of display). Now you can connect the spiral cable of the platform to the display, and either insert the batteries (6 x 1.5 V AA) or connect the 9 V adapter to the scale (depending on the power source you want to use).

**ATTENTION:** If the scale shall operate on mains power, you have to remove the batteries from the scale in order to prevent damages.



By pressing “ON /OFF” , you can start the scale.

If the display of the scale indicates 0.00 kg, the scale is now ready for operation.

## 6. Scaling

Start scaling only after the display shows 0.00 kg. If the display already indicates a weight, when in fact the

scale is unloaded, please press “ZERO / TARE”  in order to set the value back to zero, since you would otherwise detect fault values. If the display indicates 0.00 kg, you can start the scaling process. If the weight scale is stable (no unsteady values) the result can be read on the display. The steady value is indicated by a circle at the right top. (stability indication, see picture)



## 7. “ZERO / TARE” Function

### Unladen weight / gross - net weighting

As already mentioned by means of the “ZERO / TARE” key, the value indicated on the display can be set to zero (tared). The display shows indeed a 0.00 kg value but the weight that was set to zero will be memorized in the internal data storage of the scale and can be accessed.

The scale allows a multiple-tare up to the maximum capacity of the scale.

To “tare / zero” the weights does not mean that the scaling range of the scale (see scaling range) can be extended by that.

A switch between gross and net weight can be performed only one time. Therefore hold “ZERO / TARE” pressed until “notArE” is indicated on the display.

#### **Example:**

After initiation the scale indicates “0.00” kg. The operator puts an empty box onto the scale, and the scale indicates eg. “2.5 kg”. The user presses “ZERO / TARE”, so that the display shows shortly the information “tArE” and afterwards “0.00 kg”, despite the fact that the box is still standing on the scale. Now the operator removes the box from the scale and the scale then indicates “-2.50 kg”, so the operator starts filling the box with the objects that are to weigh e.g. 7.50 kg of apples. After placing the box onto the scale again, the scale now indicates “7.5 kg” instead of 10.00 kg on the display, so only the weight of the objects without the box (net weight).

If the operator only wants to see the gross weight that is on the scale (apples + box = gross weight), the “ZERO / TARE”- key has to be held pressed. Shortly afterwards, approx. 2 seconds, the display will show the following information “notArE” and afterwards the gross weight. In this case the display of the scale indicates “10.00 kg”.

## 8. Scaling units

By means of the “Print / Unit” –key the weighing unit can be switched. By pressing the “Print/ Unit”- key several times, the display switches between kg / lb / Newton and g.

g = gram / kg = kilogram = 1000 g / lb = pound = 453.592374 g / N = Newton = 0.10197 kg

## 9. Counter function „PCS“

The scale enables performing a units count by means of reference weights. The weight of one piece should not fall below the reading precision (definition = d). Please consider the minimum load, resolution and accuracy of the scale. (see technical specifications page 2)

The initial operation is performed in two steps.

1. Place 5 / 10 / 20 / 25 / 50 / 75 or 100 pieces of the product that is to weight onto the scale.
2. If the weighed value remains stable, press the “**Count / Enter**”-key and keep it pressed until the display skips to “**PCS**” and one of the following numbers occurs onto the display: 5 / 10 / 20 / 25 / 50 / 75 or 100.
3. By means of the “**Print / Unit**”-key, you can switch between 5 / 10 / 20 / 25 / 50 / 75 or 100. Choose the number according to your chosen reference number and confirm by pressing “**Count / Enter**”. The blinking number will stop blinking and the scale is now in count mode. (compare with picture below)



You can switch by means of the “**Count / Enter**”- key between count mode and standard mode. The determined weight per piece will be saved until the next alternation.

If you want to proceed the count with the least used weights per piece, press the “**Count / Enter**” - key. The display will then skip into the count mode. (display info “PCS”)

**TIPP:** In order to reach a more accurate count, the reference weight should be determined with a counter unit that is as high as possible. Fluctuating weights per piece are no rarity, so that a good average value should be determined as the weight per piece. (minimum load / consider reading precision and accuracy)

**Example:** The user places 10 objects with a gross weight of 1.50 kg onto the scale. The scale counts 1.50 kg : 10 = 0.15 kg (150g) as weight per piece. Every weight that is determined after that, will simply be divided by 150 g and be shown at the display as the counter unit.

## 10. Settings / Functions

The characteristics of this scale is in its many useful setting options. Starting from adjusting the USB interface over setting the automatic switch-off to RESET, the scale provides multiple options to adjust the scale precisely according to the customer’s preference.

In order to access the menu, in which the settings of the scale are adjusted, keep pressing “**Print / Unit**”

and the “**Count / Enter**” key for approx. 2 seconds.  & .

The display will show shortly "**Pr-Set**" and then one of the following menu points (listed below).

- **SEnd** (setting data transfer/ further informations under **10.2**)
  - **KEY\*** (per key-press)
  - **ASK** (following request of computer)
  - **ConT** (continuous data transfer)
  - **STAb** (data transfer if scaling value is stable)

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- **bAUD** (Settings of Baud rate / further information under **10.3**)
  - **2400**
  - **4800**
  - **9600\***

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- **Au-PO** (Setting automatic switch-off - Auto-Power-OFF / further information under **10.4**)
  - **on\*** after approx. 5 minutes
  - **oFF**

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- **bA-LI** (setting display lights– backlight / further information under **10.5**)
  - **on** (ON)
  - **oFF** (OFF)
  - **Au-to\*** (Lights "ON" for approx. 5 seconds if scale is loaded)

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- **FIL** (Filter settings / Response time of scale / further information under **10.6**)
  - **FIL 1** (quick)
  - **FIL 2\*** (standard)
  - **FIL 3** (slow)

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- **Ho-Fu** (Hold function / hold weight value on display / further information under **10.7**)
  - **KEY-Ho\*** (hold function through key combination)
  - **AuHo** (automatic hold-function after value is stabilized)
  - **PEAk** (PEAK hold function / Peak value indication)
  - **ANIM** (function to weigh animals Ø value)

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- **Zero** (Setting zero point for weight at start of scale / further information under **10.8**)
  - **SET-Zo** (appoint initial weight)
  - **AuT-Zo** (adjustment of auto-tare function at initiation of scale)
    - **on\*** (Sets weight to zero during start)
    - **oFF** (The weight will be indicated at the beginning (from zero point))

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- **CALib** (Adjustment of calibration / adjustment / further information under **10.9**)
  - **C-FrEE** (calibration /adjustment with arbitrary weight)
  - **C-1-4** (linearly calibration/ adjustment)

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- **rESEt** (reset to factory defaults / further information under **10.10**)

## 10.1. Functions of the keys in adjustment menu

1. **“Print / Unit”**   
The key allows switching between menus and alternating settings.
2. **“Count / Enter”** key   
The key is a confirmation key, if settings shall be adopted.
3. **“ZERO / TARE”** key   
The key enables going one step back or leaving the menu.

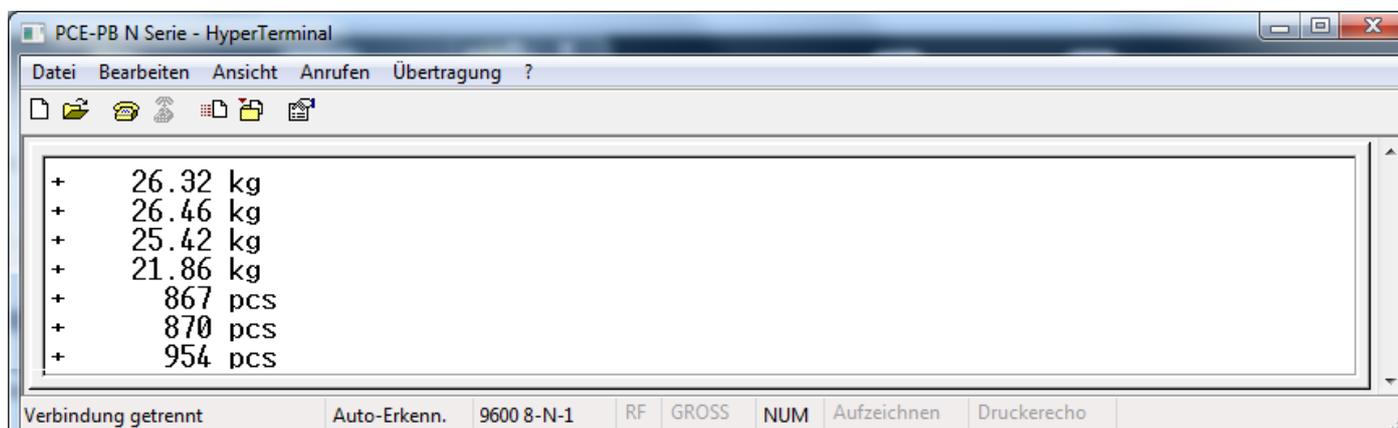
## 10.2 - SEnd

Settings of USB interface or of data transfer.

The USB interface of the scale is a bidirectional interface. Bidirectional interfaces enable a data dialogue. Thus the scale can not only send those data but also receive orders. Additionally there are several options about the exact time of sending those data to the computer. Therefore the scale provides the following transfer options:

**10.2.1 - KEY** Data transfer per key press, press **“Print / Unit”**  **(approx. 2 sec.)** and keep pressing until the second beep tone signals data transfer.

**10.2.2 - Cont** Continuous data transfer (approx. two values per second)



**10.2.3 - STAb** At this setting the data will only be sent, if the weighing value is steady (see stability indicator on display)



### 10.2.4 - ASK Data transfer on request by computer

Here the characteristics of the bidirectional interface are emphasized.

By means of the following directives the scale can be remote-controlled.

This allows an easy integration into systems like e.g. inventory control systems or the Delivery software of certain shipping companies like DHL, GLS etc.

#### - TARE order (-T-)

This order tares the weight, which is placed on the scale

Order :            **ST + CR + LF**

#### - Enter a Tare value:

This order allows entering a Tare value that is to subtract from the gross value.

Order: **ST\_ \_ \_ \_ \_ (respect position, compare with „enter options“)**

Entering option for 60 kg scales between ST00060 and ST60180 (min. 60g / max. 60,180g)

Entering option for 150 kg scale between ST00150 and ST150450 (min. 150g / max. 150,450g)

In case the entered tare value lays above the scaling range of the scale, the display will indicate that by  
“\*\*\*\*\*”

(The order does not function if the PEAK hold function or the function for weighing animals is activated)

#### - Request for indication of current value

Order:            **Sx + CR + LF**

#### - OFF switches off scale

Order:            **SO + CR + LF**

If an order is sent that the scale does not recognize, the display indicates the fault by showing “Err 5”

## Interface description

Settings of the USB interface are:

Baud rate 2400 – 9600 / 8 bits / none parity / one bit stop

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### Format 16 digits

The display including the units (“g” / “kg” etc.) incl. the “+” or “-” digits covers a maximum of 16 digits.

Example: + 60 kg

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
±	SPACE	-	-	-	6	0	.	5	0	SPACE	-	k	g	CR	LF

Byte	1	-	symbol „+„ or „-„
Byte	2	-	SPACE
Byte	3 to 10-	-	number ( <u>feed-in of weight</u> ) or SPACE
Byte	11	-	SPACE
Byte	12 to 14	-	indication unit (Newton / kg / g / lb or PCS)
Byte	15	-	CR (0Dh)
Byte	16	-	LF (0Ah)

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### 10.3 **bAud** Adjustment of Baud rate

In order to generate a smooth communication, the Baud rate has to be synchronized with the settings at a computer and the software. Select between:

**2400 / 4800 or 9600 baud**

### 10.4 **Au-PO** Auto-Power-OFF

The scale allows activating or deactivating the automatic switch-off. This might be preferable e.g. to spare battery power. If this function is activated, the scale will be switched off automatically, if it is not operating for a longer term (approx.. 5 minutes). To restart the scale, simply press "**ON/OFF**" at the scale.

Options are:

- **on** Automatic switch-off after approx. 5 minutes
- **oFF** Scale is active until pressing "**ON/OFF**"

### 10.5 **bA-LI** Settings of display lights – Backlight

This function allows adjusting the background lights of the display according to personal preferences.

Options are:

- **on** Background lights permanently on
- **oFF** Background lights off
- **Au-to** Lights "ON" while the scale is in operation (approx. 5 sec.)

### 10.6 - **FIL** Filter setting / Response time of scale

Through this function you can alternate the settings of the response time however you prefer them. E.g. if you blend mixtures by means of the scale, we recommend to adjust a quick response time. But if the scale is positioned at a locations, where there is vibration e.g. next to a machine, we recommend a long response time, since otherwise the values would always jump back and forth.

Options are:

- **FIL 1** short response time
- **FIL 2\*** standard response time
- **FIL 3** long response time

## 10.7 - Ho-Fu Hold function / freeze value on display

This function allows holding the weight result at the display, although the load might already be removed from the scale.

Options are:

10.7.1 - **KEY-Ho\*** Hold function through key code ( & )

If this function is active, the value shown on the display can be frozen by pressing the key combination shown above. Therefore simply press both buttons and hold them pressed until the display shows "Hold". Now the value is held on the display for as long as not pressing "**ZERO / TARE**" again.

10.7.2 - **Auto** Automatic hold function after value is stabilized

This function automatically freezes the weighing value on the display, as soon as it is stable. The value will be held for 5 seconds and will then automatically switch back to weighing mode.

10.7.3 - **PEAK** PEAK hold function / indication of maximum value

This function allows indicating the maximum value on the display. **(approx. 2Hz at FIL 1)**

**Example:** The display indicates "0.00 kg". The operator places 5 kg onto the scale, so that the scale then indicates "5.00 kg". After that the operator now places 20 kg onto the scale, so that "20.00 kg" is indicated. Then the operator places 10 kg onto the scale, which still indicates "20.00" kg, since it is still the peak value of the measuring process. The scale will freeze the peak value as long as the operator does not press "**ZERO / TARE**" and the display skips back to "0.00 kg".

10.7.3 - **ANIM** function to scale animals / Ø value

This function facilitates the scaling of objects that do not allow determining a stable value due to their movement, e.g. animals or other living objects. Therefore the scale collects several unstable values and calculates the average value. The determination of the average weight will take about 7 seconds and will be generated from 14 values.

## 10.8 Zero      Adjustment of zero point at initiation of scale

This function concerns the zero point of the scale. If a weight is placed on the platform of the scale prior to its initiation, the scale will automatically be set to zero to avoid default measurements. There might be also situations where it might be better to not tare the weight. Example: to control filling level.

Therefore these functions are provided:

**10.8.1 AuT-Zo**      Here the automatic tare-function of the scale can be deactivated.

- **on**                    (tares weight at start)
- **oFF**                  (Weight will be indicated at start (from zero point))

**Example:** The operator has a 50.00 kg container placed on the scale and turns off that scale overnight. During the night 10.00 kg are removed from inside the container. If the function is activated (**AuT-Zo= ON**) the scale will indicate after start "0.00 kg" on the display. If the function "**AuT-Zo**" is set on **OFF**, the display will indicate after start 40.00 kg on the display.

**Caution:** If the function is deactivated, major measurement aberrations may occur. *Pay attention to the "tare storage" being cleared before activating it. In order to achieve higher accuracy, we advise calibrating the scale first.*

**Important:** *The measuring range cannot be extended by that. The gross weight must not exceed the maximum load of the scale. (see technical specifications)*

**10.8.2 SET-Zo**      Regarding the function above, a weight can be set that will be subtracted at the next initiation.

Therefore the weight, which has to be subtracted, must be placed onto the scale first, then enter "**SET-Zo**" and confirm with "**Count / Enter**". Leave the menu by pressing „**ZERO / TARE**“ and restart the scale.

If there is a new zero point to be set, the function that is described above shall be switched off by setting AuT-Zo= OFF.

**Example:** The operator places an empty container onto the scale (weight 5 kg) and sets by means of the "**SET-Zo**" function a new zero point. If the operator now restarts the scale, the display will indicate now 0.00 kg. After that the container is filled with 45.00 kg. The scale will now indicate only 45.00 kg irrespective of a gross weight of 50.00 kg, if including the weight of the container. Now, if the scale is then switched-off and e.g. 15 kg removed from the inside of the container, the scale will indicate 30.00 kg by its next start. Again: the weight of the container itself (5.00kg) will not be included in the indication.

**Attention:** Please consider that the tare – data storage should be empty, when activating this function, otherwise fault measurements might occur. Therefore set the function "**AuT-Zo**" to **ON** and restart the scale.

**Important:** *The measurement range cannot be extended by that. The gross weight must not exceed the maximum load. (see technical specifications)*

## 10.9 CALib      Adjustment calibration/adjustment

The scales are calibrated by the manufacturer, but should still be checked regularly on their accuracy. In case of aberrations the scale can be recalibrated by means of this function. Therefore reference weights are required. We recommend using approx.  $\frac{3}{4}$  of the maximum load.

### 10.9.1 C-FrEE      Calibration / Adjustment with arbitrary weight

If the display of the scale indicates “C-FrEE”, press and hold the “Count / Enter” key. Now “W- \_ \_ \_” will occur on the display. Then press the “ZERO / TARE” key. The display will now indicate “W- 0 1 5”. The blinking digit can now be altered by means of the “Print / Unit” key. With “Count / Enter” you can skip from one digit to the next. Adjust by means of these keys the weight that will be used for the calibration.

**ATTENTION:** You can only feed-in weights in “kg” and without decimals.

If you have fed-in the weight, confirm the feed by pressing the “ZERO / TARE” key. The display will indicate shortly “LoAd-0” and then a value of approx. “7078”. As soon as the value will now be half-way stable, press “ZERO / TARE” again. The display will indicate “LoAd-1”.

Now you can place the weight onto the scale again and repeat by pressing “ZERO / TARE”. The display will indicate shortly the value, that was fed-in, and then another value e.g. “47253”. As soon as the value is half-way stable again, press “ZERO / TARE” again. The display will indicate automatically “PASS”, if the calibration succeeded and automatically switch-off.

Thus the calibration is completed.

**If you want to cancel the calibration during calibration process, press during “Load” state, the “Count / Enter” key and hold until “SEtEnd” will be shown on the display.**

### 10.9.2 C-1-4      Linearly Calibration / Adjustment

A linearly calibration is a calibration option that is more accurate, which is performed with several increasing weights. This calibration allows a higher accuracy compared to a single-weight-calibration. The weights are preset on the scale and cannot be altered.

As soon as the display indicates “C-1-4”, please press “Count/Enter”. Now the display will show the measuring range of the scale, e.g. “r-60”. In case the wrong scaling range is indicated, it can be alternated via the “Print/Unit” key. Finally press “ZERO / TARE”. The display will then show a value of approx. “7078”. As soon as the value shown on the display seems half-way stable, please press “ZERO / TARE” again. Now the display will shortly indicate the actual weight, which you will have to place at the scale, e.g. “C-15” and then a value, e.g. “0”.

Now place the default weight onto the scale and wait until the value is stabilized again. Now press the “ZERO/TARE” key again. Follow these steps until the calibration is completed.

(If the display indicates “Err-1”, it means that the adjustment wasn’t successfully performed)

The following weights will be necessary:

**60 kg scale: 15 kg / 30 kg / 45 kg / 60 kg**

**150 kg scale: 30 kg / 60 kg / 90 kg / 120 kg**

**In case you want to cancel the calibration, while it is in progress, please press during “LoAd” state, the “ON/OFF” key and keep pressed until the display shows “OFF”.**

## 10.10 rESet (reset to factory settings)

This function facilitates resetting the scale back to factory settings. The settings that are marked on page 6 with an (\*) are the factory settings.

When the display of the scale indicates “rESet”, please press the “ZERO / TARE” key



until the display indicates “SetEnd”. Restart the scale afterwards.

**Caution:** The calibration/ adjustment will not be reset to the adjustments to the ones that were set after delivery, since eventual calibration certificates would be invalid then.

## 10.11 Possible problems

Symbols	Error	Solution
“000000”	Measuring range exceeded	Check weight / readjustment
“LobAtt”	Power supply under 5.8V	Change battery
“Err 0”	Calibration error	Adjustment of scale
“Err 1”	Calibration error	Repeat calibrator
“Err 3”	Error weighing cell	Check connection
“Err 5”	Invalid command	Check requesting command at computer
*55.20 kg*	Default weight values???	Tare- / Zero point check / Calibration
	Scale does not start	Check power supply

For further questions and information on calibration, please contact us: PCE Inst.

To implement the RoHS (redemption and disposal of electric devices) we take back our devices. They will either be recycled by us or be disposed through a recycling company according to statutory provisions.

