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Manual High Resolution Paper Scale PCE-LSZ



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1. General description

This type of scale PCE-LSZ...C is mainly used in paper production, tissue production, paper laboratories, textile production companies as well as by material importing companies ... and in laboratory practice. This scale it's perfect for sales departments comparing the paper or fabric weight to the competition when visiting customers.

For periodical control of the balance the user should own weight standard of OIML E2 class (weight value stated in Technical Data sheet) – available separately.

All balances are metrologically tested - calibration on demand.

NACE classification: 33.20.31.

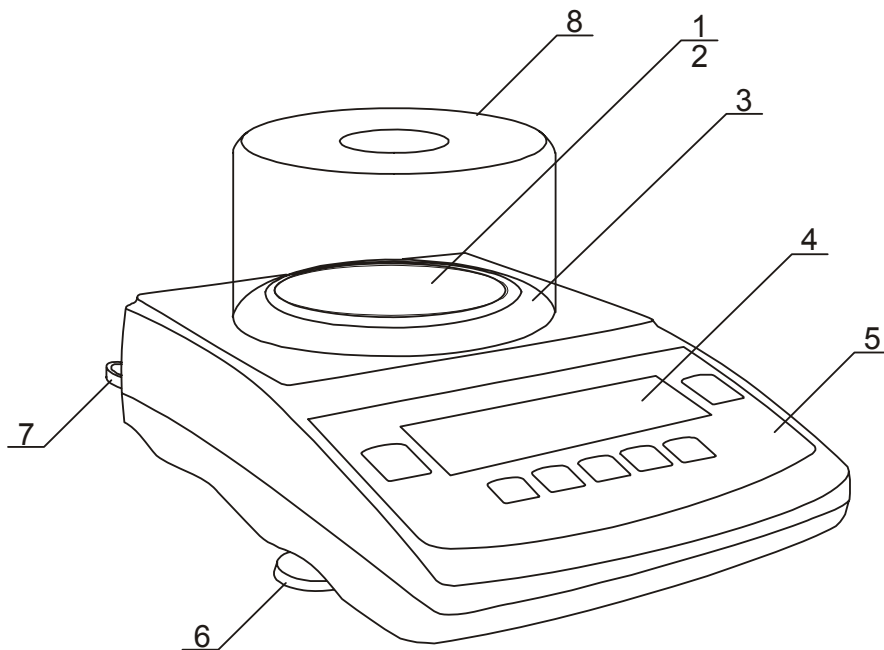
2. Completeness

A standard set consist of:

1. Balance
2. Pan elements:
 - round pan balances (PCE-LSZ 100C - PCE-LSZ 600C): pan support and pan
 - rectangular pan balances (PCE-LSZ 1000C - PCE-LSZ 4000C): pan supports (4pcs.) and pan
3. Antiblast glass draft shield with lid (PCE-LSZ 100C - PCE-LSZ 500C),
4. Feeder ZN 12V/500mA,
5. User Manual,
6. Guarantee card.

3. Balance description

Front view (PCE-LSZ 100C - PCE-LSZ 600C)

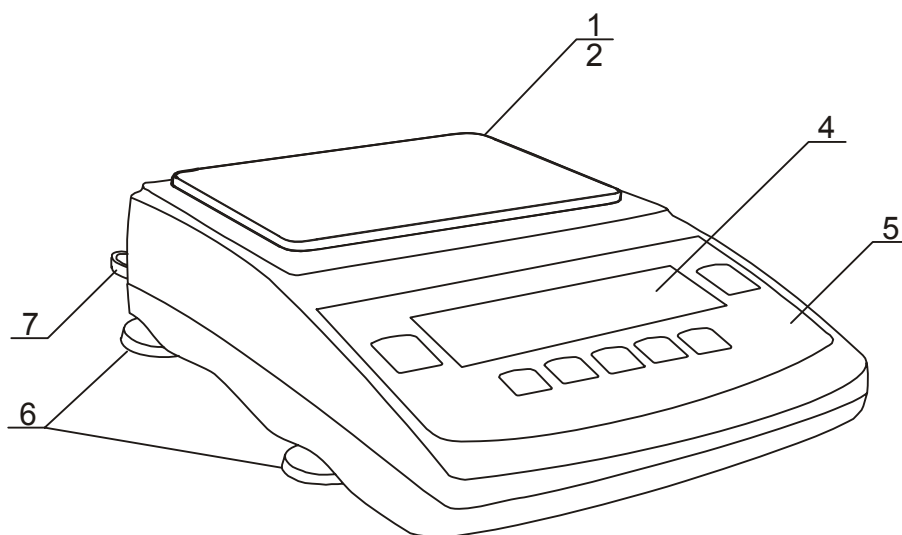


- 1 – pan
- 2 – pan support
- 3 – pan ring
- 4 – LCD display
- 5 – keys
- 6 – rotating legs
- 7 – water level
- 8 – antiblast shield

Note:

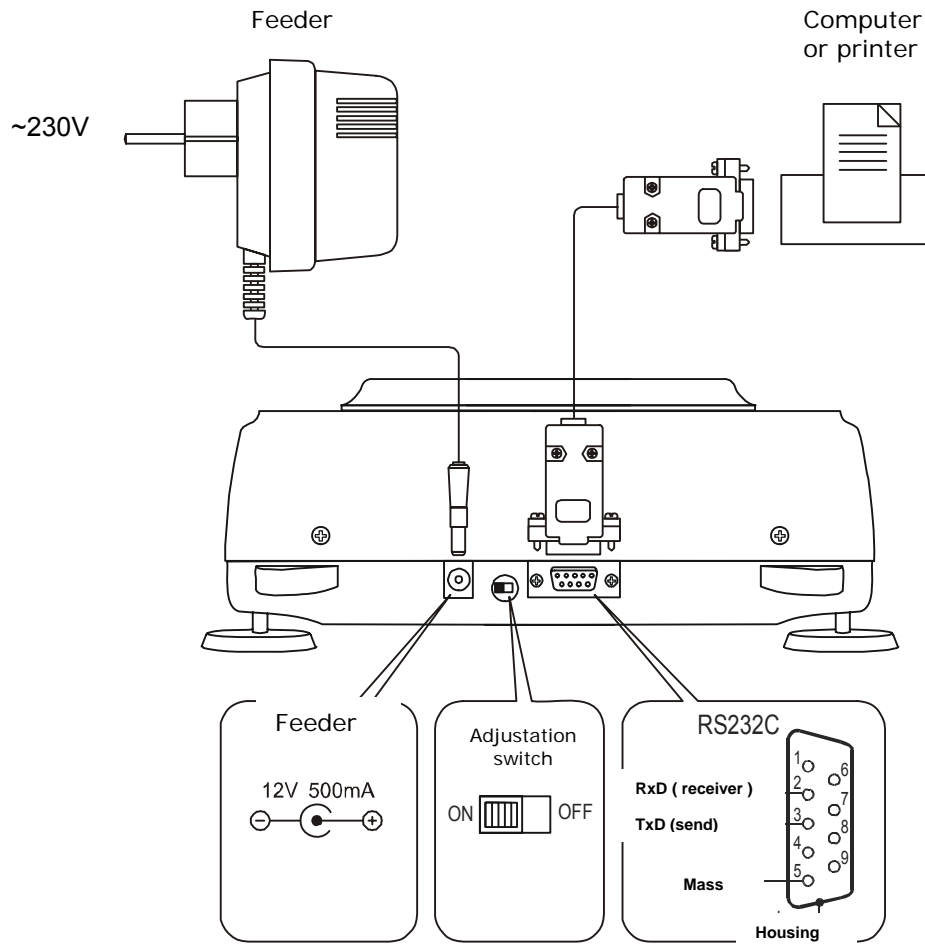
PCE-LSZ 600C does not have the pan ring and the antiblast shield.

Front view (PCE-LSZ 1000C - PCE-LSZ 4000C)

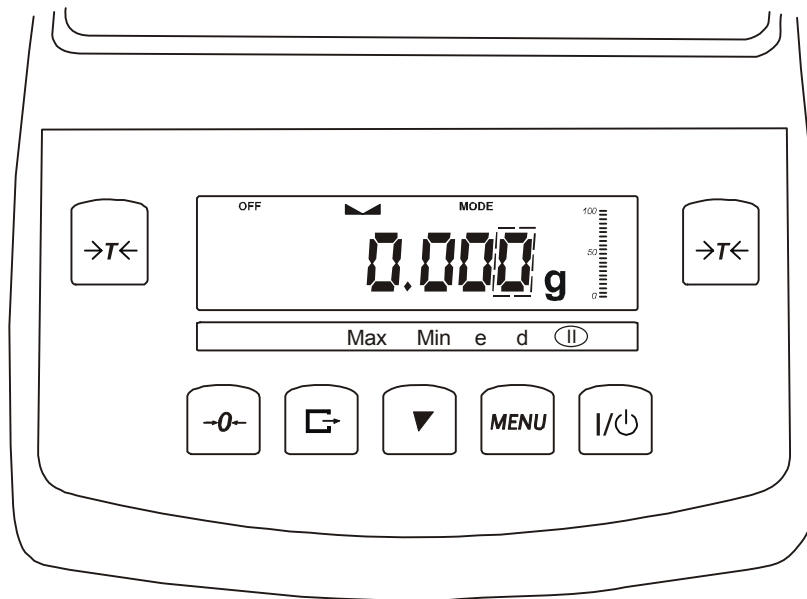


- 1 – pan
- 2 – pan supports
- 4 – LCD display
- 5 – keys
- 6 – rotating legs
- 7 – water level

Rear view:



4. Keys and indicators



Basic functions:

- | | |
|---|--|
| <p>→T←</p> <p>→0←</p> <p>G</p> <p>Menu</p> <p>I/⏻</p> | <ul style="list-style-type: none"> - tare (subtract package weight from weighed mass) - zeroing (balances for direct sale use only), - data output (print / transmission), - internal calibration, - Menu, - switch-on/switch-off (standby), |
|---|--|

- | | |
|--|--|
| <p>indicator </p> <p>bar indicator</p> <p>indicator OFF</p> <p>Max, Min, d, e, I</p> | <ul style="list-style-type: none"> - result stabilisation, - load indicator 0 ÷ 100%, - stand-by mode, - metrologic parameters and accuracy class. |
|--|--|

When entering numeric values use the keys as described below:

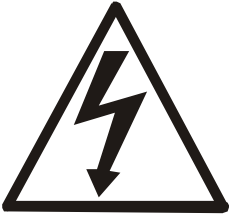
- | | |
|--|---|
| <p>▼</p> <p>G</p> <p>→T←</p> <p>MENU</p> | <ul style="list-style-type: none"> - change digit value - decimal point, - move to the next position - end. |
|--|---|

5. Technical data


Type	PCE-LSZ100C	PCE-LSZ 200C	PCE-LSZ 300C	PCE-LSZ 500C
Capacity (Max)	100g	200g	300g	500g
Min load (Min)	0,02g	0,02g	0,02g	0,02g
Reading unit (d)	0,001g	0,001g	0,001g	0,001g
Verification unit (e)	0,01g	0,01g	0,01g	0,01g
Tare range	-100g	-200g	-300g	-500g
Accuracy class	II			
Working temperature	+18 ÷ +33°C			
Weighing time	<5s			
Pan dimension	φ115mm			
Balance base dim. (including legs)	215(235)x345x90mm			
Balance weight	5kg			
Power	~230V 50Hz 9VA / =12V 300mA			
Calibration weight (OIML)	F2 100g	F2 200g	F2 200g	F1 500g

Type	PCE-LSZ 600C	PCE-LSZ 1000C	PCE-LSZ 2000C	PCE-LSZ 3000C	PCE-LSZ 4000C
Capacity (Max)	600g	1000g	2000g	3000g	4000
Min load (Min)	0,5g	0,5g	0,5g	0,5g	0,5g
Reading unit (d)	0,01g	0,01g	0,01g	0,01g	0,01g
Verification unit (e)	0,1g	0,1g	0,1g	0,1g	0,1g
Tare range	-600g	-1000g	-2000g	-3000g	-4000g
Accuracy class	II				
Working temperature	+18 ÷ +33°C				
Weighing time	<5s				
Pan dimension	φ150mm	165x165mm			
Balance base dim. (including legs)	215(235)x345x90mm				
Balance weight	5kg				
Power	~230V 50Hz 9VA / =12V 300mA				
Calibration weight (OIML)	F2 500g	F2 1000g	F2 2000g		

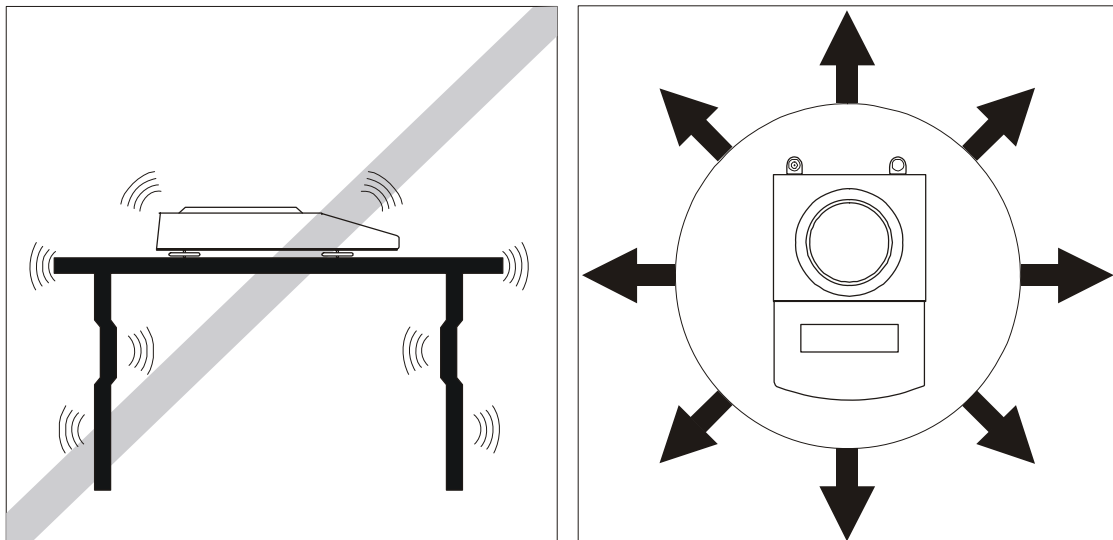
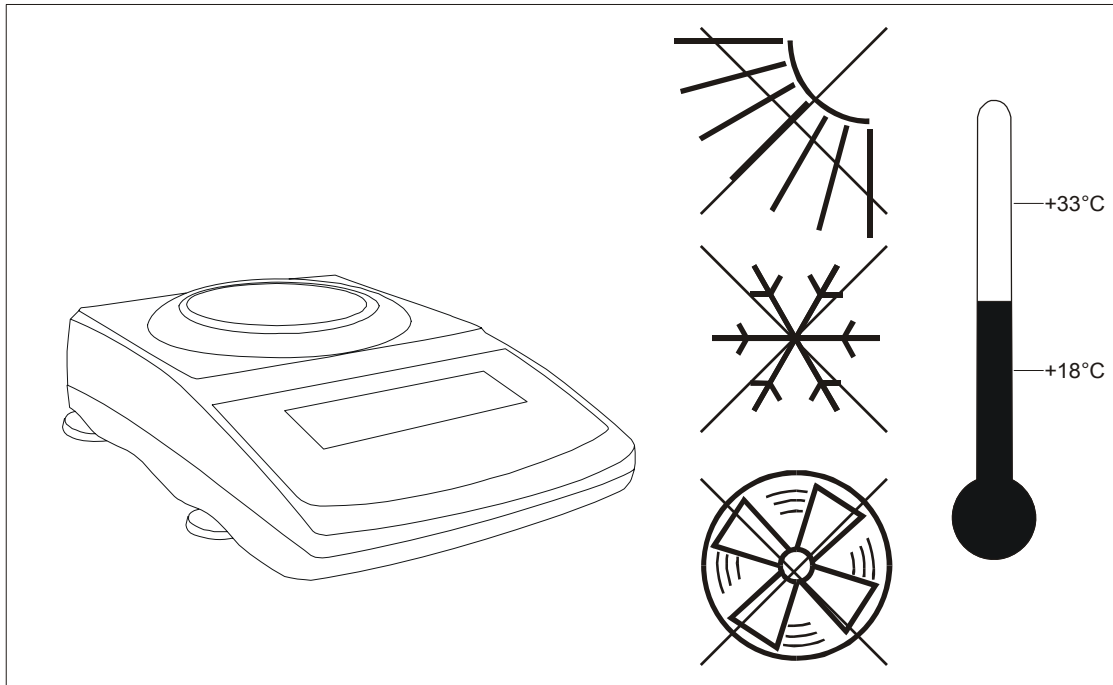
6. Security rules

	<p>To avoid electrical shock or damage of the balance or connected peripheral devices, it is necessary to follow the security rules below.</p>
<ul style="list-style-type: none"> • For power supply use only a socket with a ground contact. • All repairs and necessary regulations can be made by authorised personnel only. • To avoid fire risk use a feeder of an appropriate type (supplied with the balance). Pay attention that supply voltage is compatible with specified technical data. • Do not use the balance when its cover is opened. • Do not use the balance in explosive conditions. • Do not use the balance in high humidity. • If the balance seems not to operate properly, unplug it from the mains and do not use until checked by authorised service. 	

7. Environment protection

	<p>According to legal regulations it is forbidden to dispose electronic equipment in waste containers. (WEEE-Reg.-Nr. DE64249495).</p>
<ul style="list-style-type: none"> • Please return wasted balance to the point of purchase or other company specialised in recycling of wasted electronic components. 	

8. Working environment

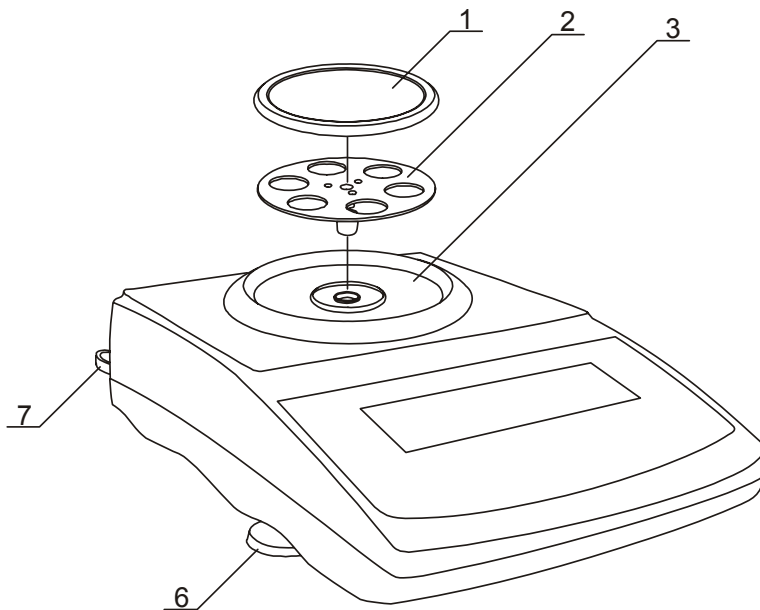


When choosing a location to set up the balance, remember the following rules to ensure proper working conditions and user-friendly operating:

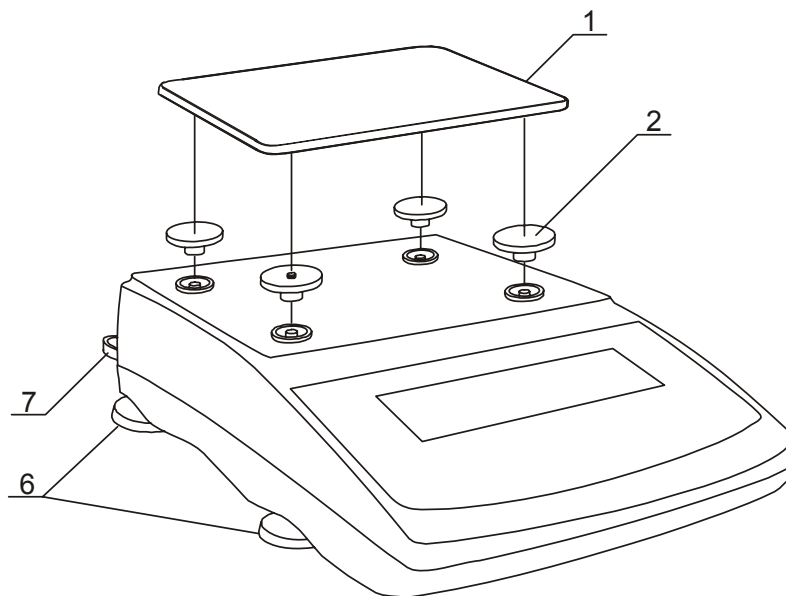
- setup the balance on an even, flat surface leaving necessary room for easy access,
- maintain proper working temperature,
- avoid strong air drafts, vibrations, dust, big temperature changes and humidity over 90%,
- avoid locations with extreme heat radiation and electromagnetic or magnetic fields.

9. Preparation – the balance

1. Take the balance and all supplied accessories (a feeder, pan elements) out of the box.
2. Place the balance on a stable ground not affected by mechanical vibrations and airflows.
3. Level the balance with rotating rear legs 6 so that the air bubble in water level 7 at the back of the balance is in the middle.
4. (PCE-LSZ 100C - PCE-LSZ 600C only) Gently place the pan support 2 into the socket in the balance mechanism through the pan ring 3 and put the pan 1 on the pan support (PCE-LSZ 600C balances are equipped with a pan integrated with the pan support).



5. (PCE-LSZ 1000C - PCE-LSZ 4000C only) Place the pan supports 2 on the mandrels at the corners of the casing. Place the pan 1 on the pan supports.



6. Plug a feeder to the power socket at the back of the balance.



Moisture in the air may condense on the surface of the balance when transferred to the warmer environment. In this case leave the balance for at least 4 hours unplugged from the mains for conditioning to avoid wrong operating or damage of the balance.

7. Leave the pan empty and plug the feeder to the mains (230V). At the end of self-tests, the balance displays zero indication and is now ready to work.

10. General rules

1. Weighed sample should be placed in the centre of the pan.
2. In balances with active $\rightarrow 0 \leftarrow$ key and with $d=e$, before placing a load on the pan make sure that zero indicator is displayed. If not, press $\rightarrow 0 \leftarrow$ key and wait until zero indication and zero indicator appears. In other balances the key does not operate.
3. The balance is equipped with tare equal to its range. To tare the balance press $\rightarrow T \leftarrow$ key (left or right). Storing tare value does not extend measuring range, but only subtracts it from a load placed on the pan. To make weight control easier and to avoid range overdrawn, the balance is equipped with the load indicator (graduated in percentages).
4. Weighing result should be read when the indicator "▲ ▲" lights, which signals stabilisation of a result.
5. When the balance is not used but it is necessary to be ready to work immediately, it can be switched off by pressing I/ϕ key. The balance reading system is then switched off to "standby" mode (signalled by the indicator "OFF"). To switch the balance on press I/ϕ key. The balance is immediately ready to operate maximum accuracy (after self tests).
6. The mechanism of the balance is a precise device, sensitive to mechanical strokes and shocks.



Do not overload the balance more than 20% of maximum load (Max). Do not press the pan with a hand.



Before transportation take off the pan (move it slightly and lift it up) and the pan base and preserve from any damages.

7. The balance should not be used to weigh ferromagnetic materials due to accuracy decrease.

11. Testing and calibration

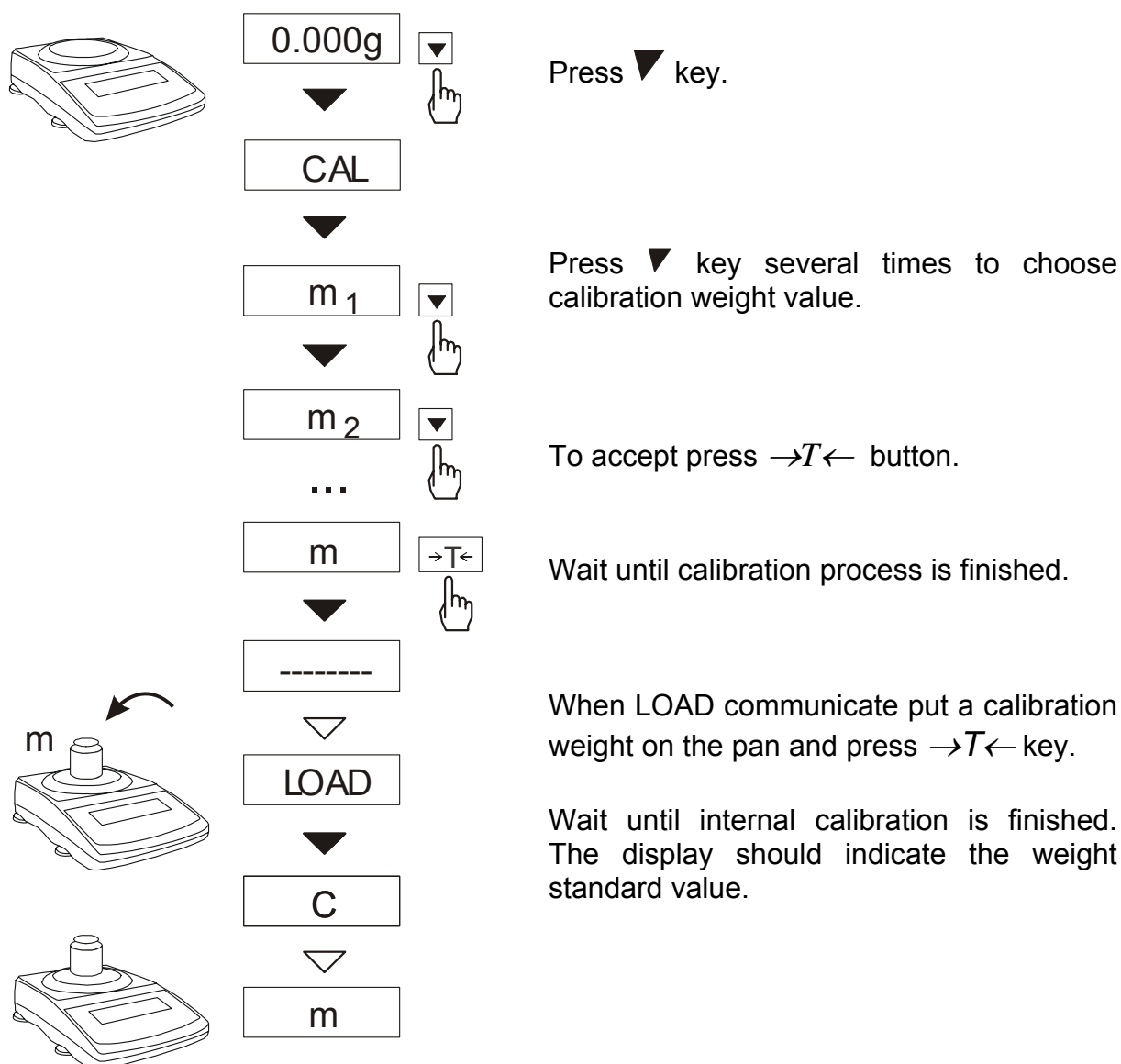
To ensure reliable results it is advised to check balance accuracy with an object of precisely known weight before and after each measuring session.

In case permissible error is exceeded calibrate the balance with an external weight standard or contact an authorised service.

12. External calibration

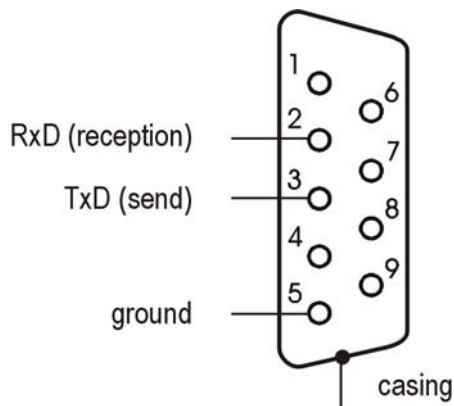
Calibration with external weight standard should be performed in case balance indications exceed permissible error. To calibrate the balance a service centre should use calibration weight as stated in Technical Data table (or of better accuracy) with valid calibration certificate.

Operation sequence:



13. Connecting the balance to a computer or a printer

The balance may send data to a computer or a printer through RS232C port.




When cooperating with the balance, a computer should be equipped with a program, which enables processing data from the balance.

PCE Group offers computer programs cooperating with balances. Demo versions and program descriptions are available on the website: www.pce-group-europe.com. There is also a freeware program for testing a serial port of the balance.

We also offer:

- Computer wires
- Thermal printers
- Label printers

The balance sends weighing result after initialising signal from a computer or after pressing  key.

Data transmission protocol description (Long protocol)

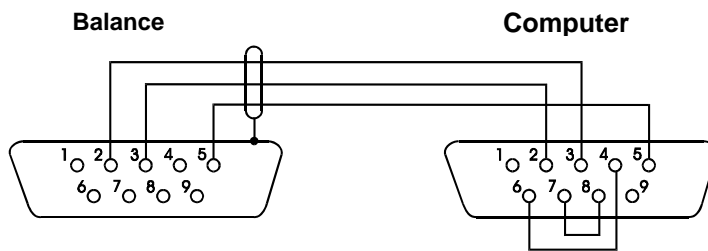
Computer → Balance: initialising signal S I CR LF (53h, 49h, 0Dh, 0Ah)

Balance → Computer: balance indication in the following format (16 Bytes)

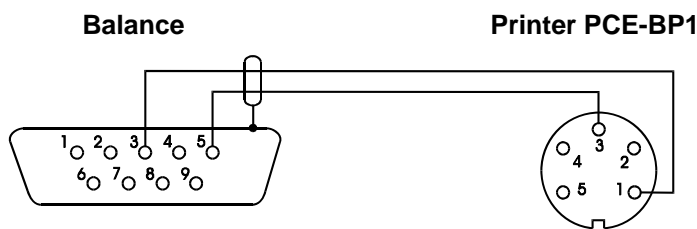
Byte	1	- sign or space
Byte	2, 11 and 14	- space
Byte	3÷4	- digit or space
Byte	5÷9	- digit, decimal point or space
Byte	10	- digit
Byte	12	- k, l, c, p or space
Byte	13	- g, b, t, c or %
Byte	15	- CR (0Dh)
Byte	16	- LF (0Ah)

It is possible to use transmission protocol other than LonG on customer's demand, e.g. Farb protocol used for cooperation with automatic paint mixer: continuous transmission (Send option), transmission speed 2400bps, additional "+" sign in first byte.

Connection cable WK-1 (balance – computer / 9-pin):



Connection cable WD-1 (balance - PCE-BP1 printer):



PCE-BP1 printer internal switches set-up:

SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
on	off	on	off	off	on	off	off

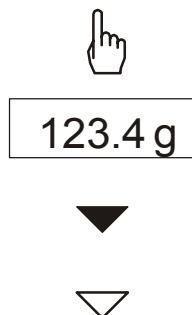
14. Special functions description

All balances, beside basic functions like weighing and tare, are equipped with the set of additional functions: calibration, pieces counting, autozeroing and serial port working mode setting. Other functions: recipe ingredients summing, density calculation and other special functions can be enabled as an option on customer request (described in additional brochure when ordered).

To display all available function, enter Function Menu with F key. Functions are displayed with successive numbers: F1-LIC, F2-AUt, etc. When special functions are displayed, "MODE" indicator is displayed.

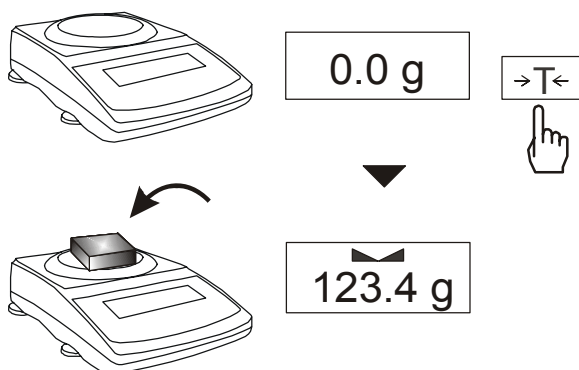
To make clear how to manage with each function, in further part of instruction descriptions are replaced with pictures.

15. Legend



- press a key
- balance indication
- forced change
- automatic change

16. Normal weighing

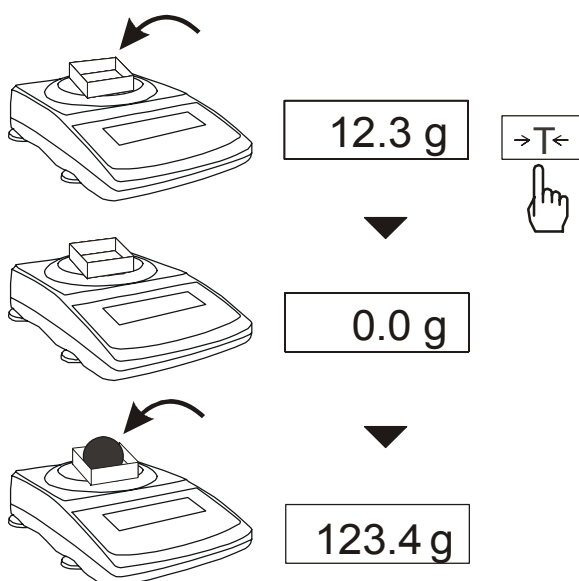


When the pan is empty and indication is different than zero press $\rightarrow T \leftarrow$ key.

Note: In balances for direct trade settlements (option) to zero a balance use $\rightarrow 0 \leftarrow$ key. $\rightarrow T \leftarrow$ key operates as Tare only when the pan is loaded.

Weighing result should be read when the indicator "▲▲" lights.

17. Weighing with tare



The balance is equipped with tare equal to its range.

18. Paperweight calculation (PAPeR)

The paper scale is a high precision / resolution device for the determination of the basis weight (in relation to a square meter of materials). This is the most accurate way to determine basis paper / tissue weight. The scale displays the basis weight of paper, tissue, fabrics ... directly in g/m² with 0.1 g/m² (0.001 g) resolution. This function enables to calculate paperweight of 1m² of paper basing on samples of known area.

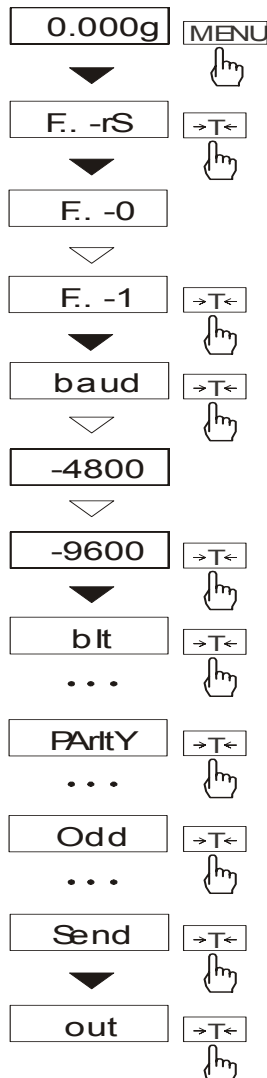
Weighing in g/m²

By the pressing of the key ↻ one changes for the conventionally weighing between the paper balancing function in g/m² and in [g]. The paper balancing mode [g/m²] by the indication ▲ in the left display corner suggested without that the unit [g/m²] at the display is indicated.


Weighing in g

Switch with the help of the key ↻ from the paper balancing mode into the conventional balancing mode in [g]. Present them the sample on the weighing platform of the balance. The weight of the sample is indicated to the balance at the display.

19. Serial port transmission parameters (F..rS)



The function enables to set the following transmission parameters (standard parameters underlined):

- transmission speed (bAud: 1200, 4800, 9600),
- the number of bits in a byte (bit: 7, 8),
- parity control (PARtY: 0, 1; Odd: 0, 1),
- Continuous transmission – without using , key, approx. 10 results per second (SEnd: 0, 1).


To set desired transmission parameters activate “F..rS” function, choose appropriate parameter and press →T← key to accept needed parameter value. The example at the left presents how to set transmission speed value to 9600bps.

To leave the function, choose “out” option.

20. Maintenance and repairs of small defects

1. The balance should be kept clean.
2. Take care that no dirt gets between the casing and the pan. If found any, remove the pan (lift it up), remove dirt and then replace the pan.
3. In case of improper operation caused by short-lasting power supply decay, unplug the balance from the mains and then plug it again after few seconds.
4. To calibrate the balance contact nearest service.
5. It is forbidden to make any repairs by unauthorised persons.
6. To repair the balance, please contact our nearest service.

Error communicates:

Communicate	Possible cause	Remedy
<i>C-1 ... 6</i> (over 1 min.)	selftests failed	if displayed more than 1 minute, contact an authorised service
<i>L</i>	pan missing	put the pan on
	mechanical damage	contact an authorised service
<i>H</i>	overloading	remove the load from the pan
	mechanical damage	contact an authorised service
<i>Err H</i>	the pan is not empty	remove a load from the pan
 indicator does not appear	unstable ground vibrations air flows	place the balance on a stable ground not affected by mechanical vibrations and airflows
	balance damage	contact an authorised service
-----	taring in progress	as above

Declaration of Conformity



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Konformitätserklärung

Declaration of conformity for apparatus with CE mark
Konformitätserklärung für Geräte mit CE-Zeichen
Déclaration de conformité pour appareils portant la marque CE
Declaración de conformidad para aparatos con disitintivo CE
Dichiarazione di coformità per apparecchi contrassegnati con la marcatura CE

PCE-LSZ...C

1. EN 55022 standard *Limits and methods of measurement of radio disturbance characteristics of information technology equipment* and IEC 61000-4-3 *Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test* harmonized with the Council Directive 89/336/EEC (Electromagnetic compatibility directive).

Additional information:

Conformity evaluation for the Council Directive 89/336/EEC was carried out by Research Laboratory of Electrotechnology Institute.

Date: 01.03.2006

Signature: _____



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Management

In this direction will find a vision of the measurement technique:
<http://www.industrial-needs.com/measuring-instruments.htm>

NOTE: "This instrument doesn't have ATEX protection, so it should not be used in potentially explosive atmospheres (powder, flammable gases)."