Precisa Balances Series XB

Operating Instructions

Precisa

The Balance of Quality

350-8105-000c1

Identification

The present operating instructions apply to Precisa balance of the XB-Series with five-key control panel and multifunction display.

Customer service

Precisa Instruments AG
Moosmattstrasse 32
CH-8953 Dietikon

Tel.   +41-44-744 28 28
Fax.   +41-44-744 28 38
email   **service@precisa.ch**

http://www.precisa.com
Refer to our website for information about local customer service centers and details of their addresses.

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Introduction

What you should know about these Operating Instructions

Precisa balances are simple and functional to operate.

Nevertheless, you should read through these operating instructions in their entirety, so that you can make optimal use of the full potential and the diverse possibilities of the balance in your daily work.

These operating instructions contain guidance in the form of pictograms and keyboard diagrams, which should help you in finding the required information:

- Key names are presented in quotation marks and are accentuated by printing in semi-bold script: «**ON**/**OFF**».

- In the explanation of the operating steps, the appropriate display for the current operating step is shown for clarity at the left alongside the list of operating steps:

Display shows	List of the Operating steps
SPRACHE DEUTSCH	• Press «**MODE**» button repeatedly
or	
LANGUE FRANCAISE	"SPRACHE DEUTSCH", "LANGUE FRANCAISE" or "LANGUAGE ENGLISH"
or	
LANGUAGE ENGLISH	appears in the display.

- For the labelling of dangers and advice, please see Chapter 1 "Safety".

Guarantee-card

A guarantee-card, which was filled in by your Precisa dealer before handing over the balance, is enclosed with the instruction manual.

🛈   **NOTE**
Check, if the guarantee-card is enclosed with these operating instructions and is completely filled out.

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■ *Contents*

1   Safety

1.1   Representations and symbols

Important instructions, which involve safety, are highlighted with the appropriate action:

⚠ **DANGER**
Warning of a possible danger, which can lead to death or to serious injuries.

⚠ **CAUTION**
Warning of a possibly dangerous situation, which can lead to less severe injuries or damage.

❶ **NOTE**
Tips and important rules on the correct operation of the balance.

1.2   Safety recommendations

• In using the balance in surroundings with increased safety requirements the corresponding regulations must be observed.

• The balance may only be used with the power adaptor (stamped: Precisa) supplied exclusively for use with the Precisa balance.

• Before inserting the power adaptor, make sure that the operating voltage stated on the power adaptor agrees with the mains voltage. If not, please refer to Precisa Customer Service.

• If the power adaptor or its cable is damaged, the balance must immediately be disconnected from the electricity supply (pull out the power adaptor). The balance may only be operated with a power adaptor in perfect condition.

■ *1 Safety*

- If there is any reason to believe that it is no longer possible to operate the balance without danger, the balance is to be immediately unplugged from the electricity supply (pull out power adaptor) and secured against inadvertent operation.
- In carrying out maintenance work, it is essential to heed the recommendations in Chapter 11 "Maintenance and servicing".
- The balance must not be operated in an area subject to explosion risks.
- Take care when weighing liquids that no liquid is spilt into the inside of the balance or into connections on the rear of the equipment or the power adaptor.
  If liquid is spilt on the balance, the latter must immediately be unplugged from the mains electricity supply (pull out power adaptor).
  The balance may be operated after it has first been re-checked by a Precisa Service technician.
- The operating instructions must be read by each operator of the balance and must be available at the workplace at all times.

2   Your balance

2.1   Construction and functions

2.1.1   Construction of the balance

The balance consists of the balance body (1), the scale-pan holder (4) and the pan (5), which depending on the model may be square (fig. 2.1, right) or round (fig. 2.1, left).

Depending on the model (see Chapter 2.3 "Data and parameters") the balance additionally has a simple windshield (fig. 2.1, right) or a windshield with sliding doors (fig. 2.1, left) (2) and/or a protective ring (3).
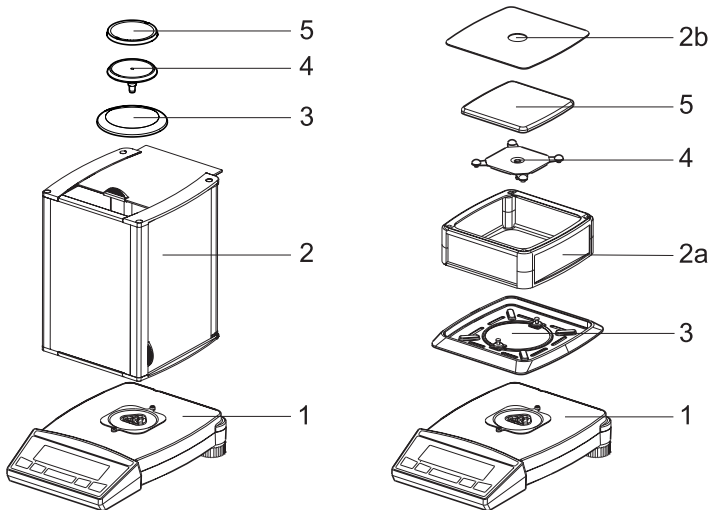
Fig. 2.1   Your balance

2.1.2 **Functions of the balance**

Precisa balances of the XB-Series are high-quality electronic precision balances with a readability of 0.0001 grammes to 1.0 gramme, according to type.

The versatile weighing programs allow you to use the Precisa balances of the XB-Series not only for simple weighings but also in a simple manner for carrying out various weighing applications such as, for example, percentage- or component counting weighings and document the measurements obtained accurately and unequivocally.

Within the XB-Series, both Dual-Range Balances and Floating-Range Balances (with a relocatable area with a 10-fold increase in precision) are available. In addition, in the XB series of balances, Precisa also offers balances protected against water and dust to the international 1P65 standard.

Virtually all models of the XB-Series can be delivered in calibratable design to EG/OIML specification.

The most important basic production features of the Precisa XB-Series include:

• Anti-theft encoding with four-figure numerical code
• Multi-stage password protection for the program menus
• ICM-Autocalibration (intelligent calibration mode)
• 5-key multifunction control panel
• LCD- or fluorescent display with multi-line display
• ISO- and GLP-compliant reporting of results of measurements
• RS232/V24 serial interface for data transfer
• Capacity and residual tare display
• Storable user-configuration (UMM User Menu Memorized)
• Functions programmed ex-works for:
  – Parts counting
  – Percentage weighing
  – Weighing in different, internationally-valid units
• Appliance for under-floor weighings
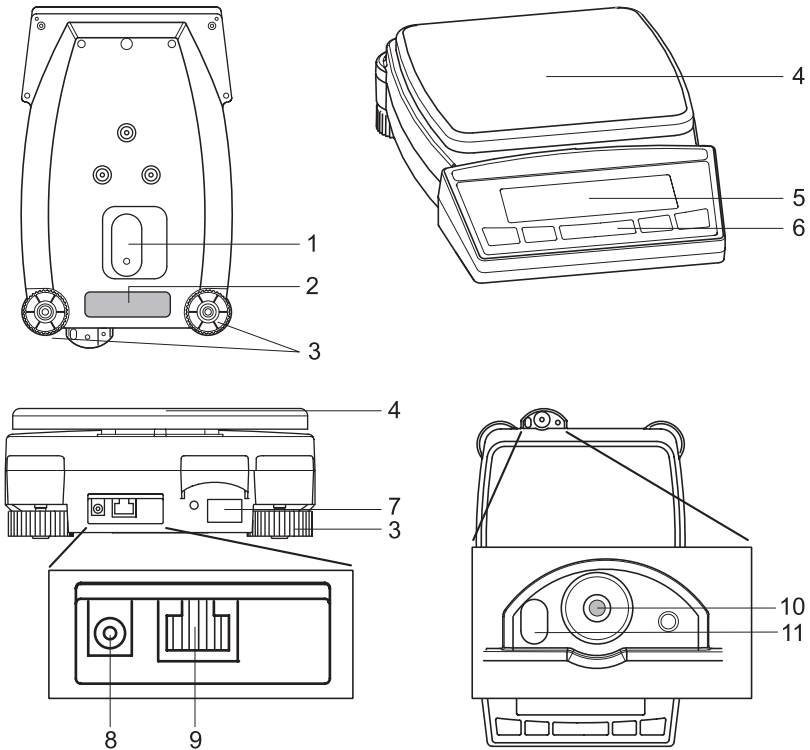
Fig. 2.2   Construction of the balance

1   Cover of the device for under-floor weighings
2   Nameplate
3   Adjustable feet (for levelling)
4   Weighing pan
5   Multifunction display
6   5-key control panel
7   Serial No. plate
8   Connecting socket for power adaptor
9   RS232-Interface
10   Bubble level
11   Eyelet for attaching a safety chain

■ *2 Your balance*

2.2 Application, conformity, labelling

2.2.1 Correct use of the balance

The balance may only be used for the weighing of solid-materials and of liquids filled into secure containers.

The maximum allowable load of the balance must never be exceeded, otherwise the balance may be damaged.

In using the balance in combination with other appliances made by Precisa as well as with appliances produced by other manufacturers, the current regulations for the safe use of the relevant attachments and their application in accordance with instructions must be observed.

2.2.2 Conformity

The balance has been manufactured and tested in accordance with the standards and recommendations set out in the enclosed certificate of conformity.

The power adaptor produced for the operation of the balance and intended exclusively for this application, complies with the electrical protection class II.

2.2.3 Labelling

Label	Location of label
Manufacturer's name-plate (1)	Casing-front, middle
Nameplate (2)	Casing-front, left
Weighing range (3)	Casing-front, right, first column
Calibration value (4)	Casing-front, right, second column above
Readability (5)	Casing-front, under the calibration value
Model plate (6)	Casing-underside, centre rear
Serial No. plate (7)	Casing-rear, left, under the bubble level

Tab. 2.1   List of appliance labels

The balance shows the following labels:
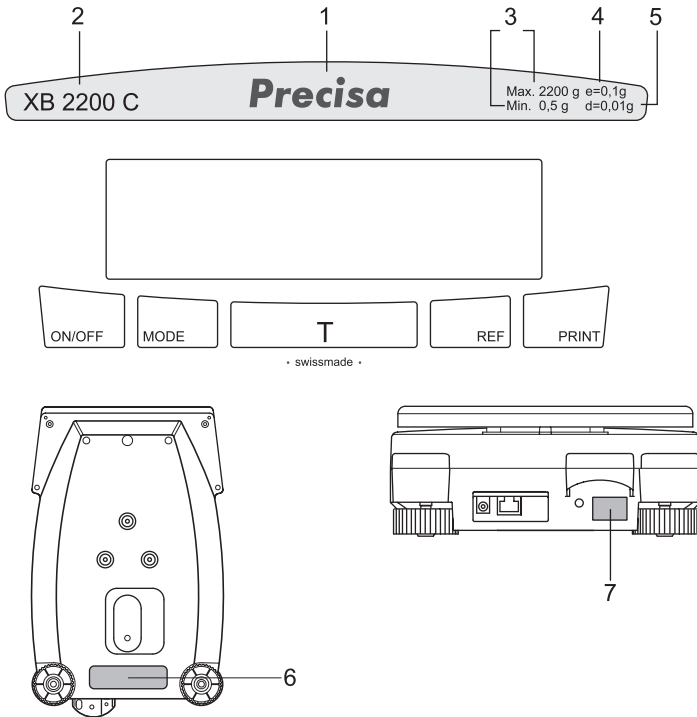
Fig. 2.3   Balance labels

2.3   Data and parameters

The Precisa balances of Series XB are divided into five main-groups A, C, D, G and M. The letter in the name corresponds to the design specification (e.g. A = analytical balance, M = Milligramme balance) the number before it corresponding in each case to the maximum allowable load (in grammes).

The allowable weighing range, the calibration value and the readability of the balance are printed on the casing (see Tab. 2.1 List of appliance labels) and are therefore not presented here.

2.3.1   Technical data

- **Precisa XB-A (e.g. XB 120 A)**
  – with closed glass-cover "BASIC" as standard
  – round weighing pan, ∅ 80 mm
  – Fluorescent- or LCD-Display

- **Precisa XB-M (e.g. XB 620 M)**
  – with windshield "simple" as standard
  – square weighing pan, 135 x 135 mm
  – Fluorescent- or LCD-Display
  – also available as Floating-Range version

- **Precisa XB-C (e.g. XB 1200 C)**
  – square weighing pan, 170 x 170 mm
  – Fluorescent- or LCD-Display
  – also available as Floating-Range version
  – also available with dust and water splash protection to IP65

- **Precisa XB-D (e.g. XB 3200 D) and XB-G (e.g. XB 10200 G)**
  – square weighing pan, 200 x 200 mm
  – Fluorescent- or LCD-Display
  – also available as Floating-Range version
  – also available with dust and water splash protection to IP65

The following applies to all Precisa-XB-balances:

- **Mains connection**
  – 115 or 230V (+15/-20%); 50 to 60Hz
- **Power consumption**
  – without peripheral appliances 6.0 VA
- **RS232/V24 Interface**
- **Allowable ambient conditions**
  – Temperature: 5°C … 40°C
  – Relative humidity: 25%… 85%, non-condensing

If you have any questions on the technical data or require detailed technical information on your balance, please contact your Precisa Technical Representative.

3   Starting up

3.1   Unpacking the balance

Precisa balances are delivered in an environmentally-friendly package, specifically developed for this precision instrument, which provides optimal protection for the balance during transportation.

❗ **NOTE**
Retain the original packaging in order to avoid transportation damages when shipping or transporting the balance and to allow the balance to be stored in the best conditions if it is out of operation for an extended period.

In order to avoid damage, attention must be given to the following points when unpacking the balance:

• Unpack the balance quietly and carefully. It is a precision instrument.

• When outside temperatures are very low, the balance should first be stored for some hours in the unopened transport package in a dry room at normal temperature, so that no condensation settles on the balance when unpacking.

• Check the balance immediately after unpacking for externally visible damage. If you should find transport damages, please inform your Precisa Services representative immediately.

• If the balance is not to be used immediately after purchase but only at a later time, it should be stored in a dry place where fluctuations in temperature are as low as possible (see Chapter 12 "Transport, storage and disposal").

• Read through these operating instructions, even if you already have experience with Precisa-balances, before you work with the balance and pay attention to the Safety recommendations (see Chapter 1 "Safety").

■ *3 Starting up*

3.2 Scope of delivery

Inspect delivery for completeness immediately on unpacking all components.
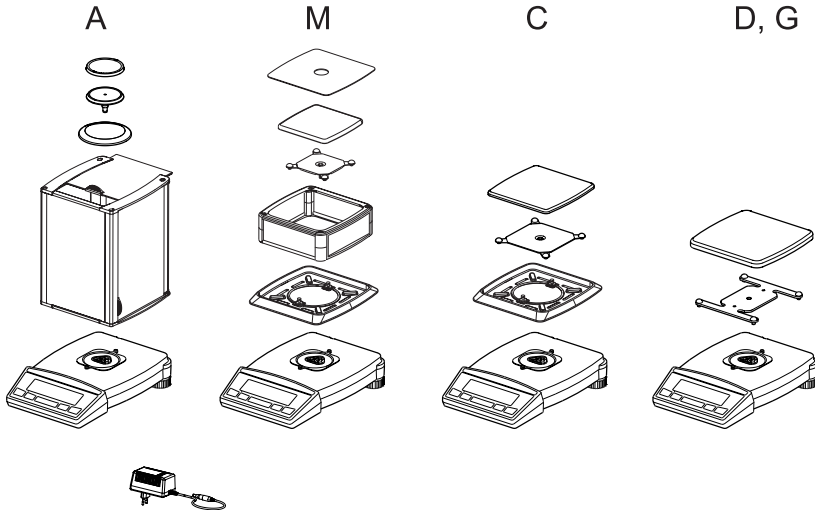
Fig. 3.1   Scope of delivery (broken down by groups)

Component delivered	present yes / no
Balance	
Scale-pan support	
Weighing pan	
Power adaptor	
Protection-cover for the display	
Windshield BASIC (group A)	
Windshield simple (group M)	
Protective ring (groups A, M and C)	
Operating instructions	
Guarantee-card	
Conformity note	

Tab. 3.1: Check list for the scope of delivery

3.3   Assembly of the balance

The balance is delivered in partly dismantled condition. Assemble the individual components in the following sequence (see fig. 2.1 and fig. 2.2).

• Install the dust-protection cover on the balance

• Install the windshield as well as the protective ring with the two screws supplied

• Place the scale-pan holder in position and add the weighing pan

• Insert the power adaptor cable plug into the socket at the rear of the balance.

❗ NOTE

A screwdriver is required for assembly.

All parts must fit together easily. Do not apply force. Precisa Customer Service will be pleased to help you with any problems.

3.4   Choice of a suitable location

The balance location must be chosen in such a way as to guarantee perfect functioning of your balance, so that the allowable ambient conditions (see Chapter 2.3.1 "Technical data") are maintained and, in addition, so that the following prerequisites are met:

• Put the balance on a solid, firm and preferably vibration-proof, horizontal base

• Make sure that the balance cannot be shaken or knocked over

• Protect from direct solar radiation

• Avoid drafts and excessive temperature fluctuations

❗ NOTE

With difficult environment-conditions (where the balance may be easily shaken or subject to vibration) the balance can nevertheless provide accurate results through suitable adjustment of the stability control (see Chapter 5.7 "Weighing mode").

3.5 Checking the mains voltage

The following Safety recommendations must be observed when connecting the balance to the mains:

⚠ **DANGER**
The balance may only be operated with the power adaptor supplied.
Check before connecting the power adaptor to the mains supply, that the operating voltage stated on the power adaptor agrees with the local mains voltage.
If the operating voltage is not the same as the mains voltage, the power adaptor must on no account be connected to the mains supply. Contact the Precisa-Customer Service.

3.6 Levelling the balance

To function properly, the balance must be precisely horizontal.

The balance is fitted with one "bubble level" and two adjustable feet for level-control, with the aid of which it is possible to compensate for small height differences and/or unevennesses in the surface on which the balance is standing.

The two screw feet must be adjusted so that the air bubble is precisely in the centre of the sight glass of the bubble level (see Fig. 3.2 Correct levelling with the aid of the bubble level).
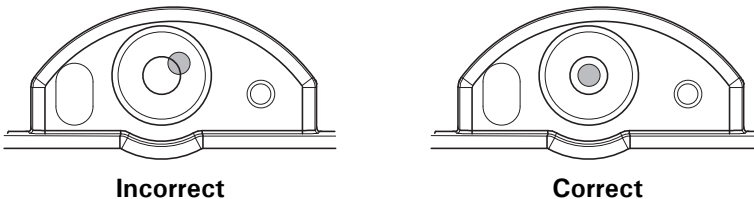
Incorrect   **Correct**

Fig. 3.2   Correct levelling with the aid of the bubble level

❗ **NOTE**
In order to get exact measurements, the balance must again be carefully levelled after each relocation.

3.7   Calibration of the balance

Since the Earth's gravity is not the same everywhere, each balance must – in accordance with the underlying physical weighing principle – be adjusted to compensate for the gravity at each location. This adjustment process, known as "calibration", must be carried out on initial installation and after each subsequent relocation. In order to get exact measurements, it is recommended moreover, that the balance should also be calibrated intermittently during the weighing operation.

❗ **NOTE**
The balance must be calibrated on initial installation and after every relocation.
If you work in accordance with "Good Laboratory Practice GLP" observe the prescribed intervals between calibrations (adjustments).

The setting of the calibration is effected in the configuration menu. Depending on the model of balance, this may be done externally, internally or automatically (see Chapter 5.6 "Calibration functions").

With the aid of the "Intelligent Calibration Mode" ICM the balance can itself determine the size of the calibration weight, which enables an exact calibration with different size weights (in 10 g, 50 g, 100 g and 500 g steps, depending on implementation).

3.8   Dual Range and Floating Range balances

With the Precisa Dual Range balances, weighing is always first carried out in the small, more exact range. Only when the small range is exceeded will the balance switch automatically into the bigger range.

The Floating Range balances have a 10-fold more precise fine range, which is movable over the entire weight range. By pressing the tare key «**T**» the fine-area can be called up as often as required over the entire weight range.

3.9 Standardized balance

The standardized balances of the Precisa XB-Series are provided with the EU/OIML licence or meet the local standardisation regulations.

The balance program and certain functions of the weighing output differ from the standard program in the case of the standardized XB balances – in accordance with the EU/OIML provisions.

❗ NOTE
If a circle appears in the main-display of a standardized balance, so the indicated value is unstandardised.
In balances of class (1) the circle also stands for the warm-up phase.
Your Precisa Customer Service will be happy to assist you at any time if you have any questions on the standardization of the balance or on working with standardized balances of the XB-Series.

3.10 Under-floor weighing

Objects which, because of their size or shape, cannot be put on the scale, can be weighed by means of under-floor weighing.

Proceed as follows:

• Turn off the balance.

• Remove the scale-pan and the scale-pan support and turn the balance around.

• Push the metal-cover (1) on the floor of the balance to one side.

• Hang a small hook (available as an accessory, see Chapter 13 "Accessories") into the aperture (3) of the now visible metal casting (2).

• Place the balance over an opening.

• Replace the scale-pan support and the scale-pan.

• Level the balance (see Chapter 3.6 "Levelling the balance").

• Switch on the balance.

• Hang the object to be weighed on the hook and carry out the weighing.
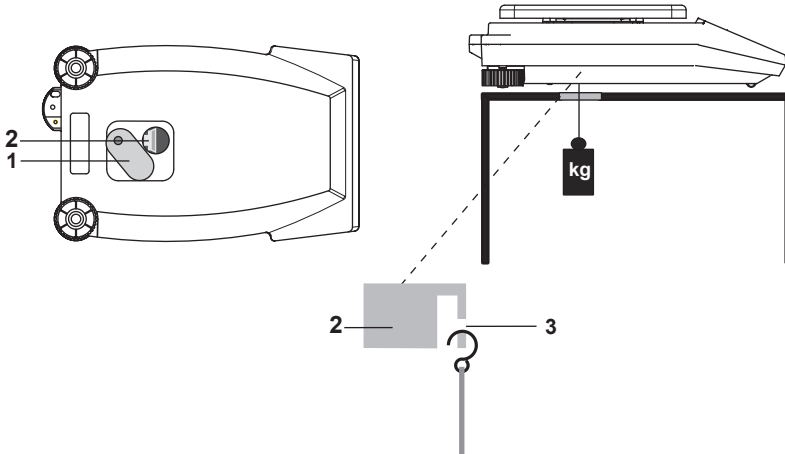
Fig. 3.3   Setting up the balance for under-floor weighings

⚠ **CAUTION**

Take care that the hooks used for the under-floor weighing are stable enough to hold the goods which you wish to weigh.

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❶ **NOTE**

Take care that no dirt or moisture can get into the balance with the scale-pan carrier removed.

After completing the under-floor weighing, the opening in the floor of the balance must be closed again (dust protection).

4 Modes of operation and operating

4.1 Switching on the balance

• Press «**ON/OFF**» to switch on the balance.
The balance carries out a self-diagnosis in order to check the most important functions. After completion of the start-up process (approximately ten seconds) "Zero" appears in the display.

The balance is ready for operation and is in the weighing mode.

4.2 Auto-Standby Mode

The balance is equipped with an Auto-Standby mode, which can be activated or deactivated in the configuration menu.

If the Auto-Standby mode is activated, the balance automatically switches to Standby some time after the last weighing or key operation (current-saving function).

The delay before switching to Standby is defined in the configuration menu (see Chapter 5.7 "Weighing mode").

• Press any button or put on a weight in order to switch the balance from the Standby mode back to the weighing mode again.

4.3 Setting and storing the configuration

• Press «**ON/OFF**», to switch on the balance.
• Continue to hold down the «**MODE**» and the «**T**» button during the start-up process, until the desired configuration appears on the display and then release the button:

"FACTORY CONFIG.": Load factory configuration.

"USER CONFIG.": Load user configuration.

"STORE CONFIG.": Store present configuration as user configuration.

4.4 Significance of the two main menus

The balance has two main menus available: the configuration menu and the application menu.

The basic-program of the balance is defined in the **configuration menu**. With this, you can either work with the basic-configuration programmed ex-works, or define and store a user-configuration adapted to your specific needs.

In the **application menu**, you define a working program, which is suited to the specific weighing problem.

4.5 Activating the two main menus

4.5.1 Activating the configuration menu

• Press «**ON/OFF**» to switch on the balance.
• Continue to hold down the «**MODE**» button during the start-up process (approximately 10 seconds), until the currently set language appears.
• Now you can change the configuration menu.

4.5.2 Activating the application menu

• After the start-up process has finished, press «**MODE**» until "SET APP. …" appears on the display. You are now in the application menu.

4.6   How the menu control operates

The configuration menu and the application menu each have a main path and up to two sub-paths in which the parameters for the different function programs of the balance are defined.

Moving in the menu path:

- «**MODE**»-short: In path to the right or start input.
- «**MODE**»-long: In path downwards.
- «**PRINT**»-button: In path to the left (in main path exit menu).

Input:

- «**MODE**»-short: Change value or position.
- «**MODE**»-long: Change one position to the right or terminate input.
- «**PRINT**»-button: Terminate input.

• SET DATA PRINT		
Main path	**Sub-path 1**	**Sub-path 2**
	⇐ «PRINT» ⇒ «MODE» short	⇐ «PRINT» ⇒ «MODE» short
⬇ «MODE» long	⬇ «MODE» long	⬇ «MODE» long
	⇐ «PRINT» ⇒ «MODE» short	⇐ «PRINT» ⇒ «MODE» short
⬇ «MODE» long	⬇ «MODE» long	⬇ «MODE» long
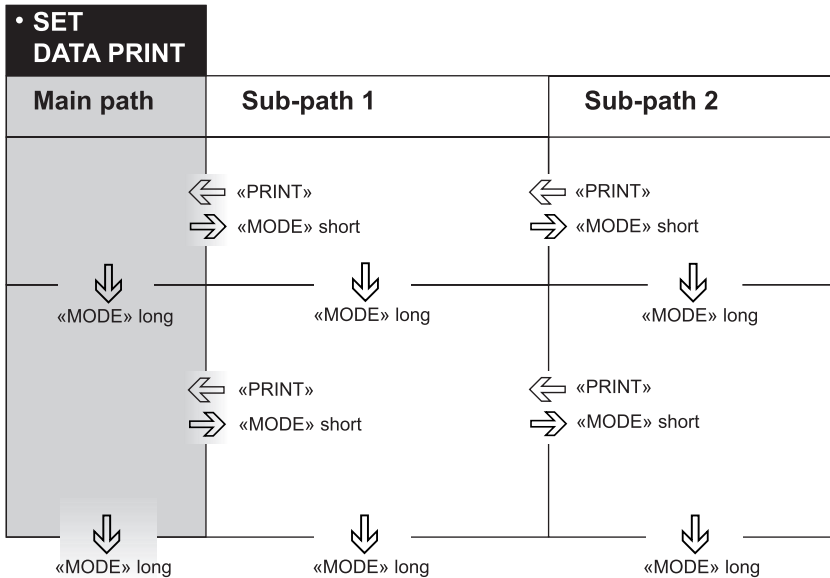
4.6.1   Control panel

Four of the five keys of the Multifunctional Control Panel serve multiple functions (functions for the weighing mode and for the programming mode respectively).
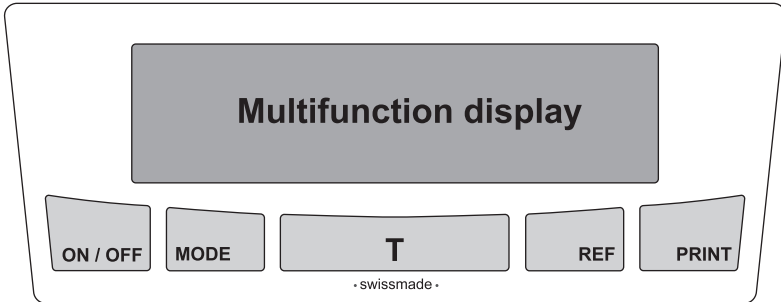
Fig. 4.1 The Five-key Control Panel

4.6.2 Operating in the weighing mode.

	Name	Function during weighing
ON/OFF	«ON/OFF»	• Switching the balance on and off
MODE	«MODE»	• Calling up the configuration menu and the application menu • Switches between the Basic program and the chosen application
T	«T»	• Initiate Tare Function and/or Calibration Function
REF	«REF»	• Run application (see Chapter 6 "Working with the application menu")
PRINT	«PRINT»	• Start print function • Exit the menu

Tab. 4.1   Key functions

🛈   **NOTE**
For the operation of the «**T**» and «**PRINT**» see Chapter 7 "Special operating keys".

For an illustration of the method of operation see Chapter 10 "Practical examples".

4.6.3   Display

The balance display has two lines (1 and 2).
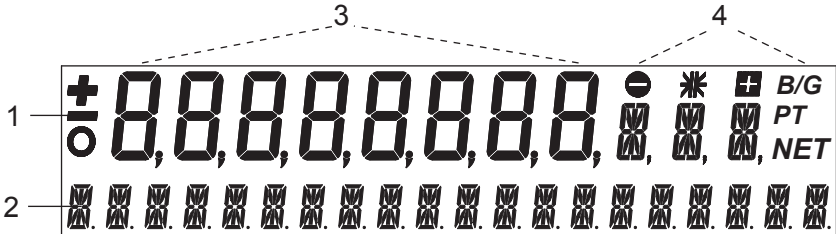
Fig. 4.2   Display

The upper display-line (1) includes the 8-figure measurement display (3) as well as various symbols (4).

The lower line (2) serves as a 20-character info-line in connection with the cursor keys for controlling the working programs.

4.7   Password protection of the menus

The two main menus of the balance can be protected by a freely selectable, four-figure password against unintentional changes.

• With password protection deactivated, any operator can change the balance configuration and application menus.

• With "standard" password protection activated, only the configuration menu is protected against unintentional changes.

• With "high" password protection activated, both the configuration menu and the application menu are protected against unintentional changes. Only after entering the correct, four-figure password can changes be made to the configuration menu and the application menu.

🛈 NOTE

The password protection is deactivated at the works.

The **pre-programed password** set in the works is: **7 9 1 4**

This password is the same for all Precisa balances and is always valid, in parallel with a self-selected password.

Make a note of your **personal password**.

4.8 Anti-theft encoding

The balance can be protected against theft by a freely selectable, four-figure numerical code:

• With anti-theft encoding deactivated, the balance can be switched on again and operated after interruption of the power supply without entering a code.

• With anti-theft encoding activated, the balance requires the entry of the four-figure code after each interruption to the power supply.

• If the code is input incorrectly, the balance is blocked.

• If the balance is blocked, it must first be disconnected from the power supply, then reconnected and unblocked by entering the correct four-figure code.

• After seven consecutive incorrect entries the display will read "NO ACCESS, CALL SERVICE". In this case, only Precisa Service can unblock the balance again.

🛈 NOTE

The anti-theft-encoding is deactivated in the works.

The **pre-programmed code** set by the works is: **8 9 3 7**

This code is the same for all Precisa balances. For reasons of security you should therefore always select your own code.

Keep your personal code in a safe place.

To activate the anti-theft encoding and to alter the code programmed in the works to one which you have chosen yourself, see Chapter 5.11 "Anti-theft encoding".

5 Working with the configuration menu

This chapter describes the configuration menu and its functions.
To activate the menu, see Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates".

5.1 Structure of the configuration menu

The basic adjustment of the balance is defined in the configuration menu:

Main path	Definable functions
LANGUAGE	*Language (E, G, F)*
CONTRAST	*Screen contrast (only for balances with LCD display)*
UNIT-1	*Unit in which the results of the weighing are displayed*
SET DATA PRINT	*Print formats; Type of values to be printed (individual values, continuous printout, time or load change dependent values, date, time, user, etc.)*
SET CALIBRATION	*Method of calibration*
SET WEIGHING MODE	*Stability mode (Quality of the balance location), Auto-Standby mode, zero correction, tare method (rapid or standard tare)*
SET INTERFACE	*Baud-rate, parity, handshake functions of the peripheral interface*
SET DATE AND TIME	*Date and time (standard format or American format p.m. and a.m.)*
PASSWORD	*Password protection for defining the menus*
THEFTCODE	*Activating/deactivating and changing the anti-theft code.*

Tab. 5.1 Contents of the configuration menu

Printing conventions used in this document:

• The settings in the sub-paths pre-programmed in the works are printed in **bold** in these operating instructions.

• For greater clarity, only that part of the menu tree which corresponds to the function is shown with each description of the function.

• You will find the entire menu tree for the configuration menu in Chapter 15 "Configuration menu tree".

• Explanations of the menu functions are printed in *italics*.

5.2   Language-function

To activate the menu see Chapter 4.5 "Activating the two main menus" und Chapter 4.6 "How the menu control operates".

• LANGUAGE		
SPRACHE DEUTSCH		*select language*
LANGUAGE ENGLISH		
LANGUE FRANCAISE		

In order to alter the language, proceed as follows:

• Switch off balance.

• Switch on balance and depress «**MODE**» until the currently activated language is shown.

• Release «**MODE**».

• Press «**MODE**» repeatedly until the language you require is shown.

• Press «**PRINT**» in order to confirm the selection.

• Press «**PRINT**», in order to quit the menu.

5.3   Contrast

To activate the menu see Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates".

• CONTRAST		
CONTRAST **6**	Set contrast	*Only with LCD displays*

Setting the display contrast in balances with LCD readout.

5.4   Selecting the weight unit

To activate the menu see Chapter 4.5 "Activating the two main me-
nus" and Chapter 4.6 "How the menu control operates".

• UNIT-1			
UNIT-1	**g**		*Gramme*
	kg		*Kilogramme*
	-----		*-----*
	Bht		*Baht*

The balance can show results in different units, although with some
balances display is not possible in milligrammes or kilogrammes
because of the corresponding weight range.

Display	Weight unit	Conversion to grammes
g	Gramme	
(mg)	Milligramme	0.001 g
(kg)	Kilogramme	1000 g
GN	Grain	0.06479891 g
dwt	Pennyweight	1.555174 g
ozt	Troy ounce	31.10347 g
oz	Ounce	28.34952 g
Lb	Pound	453.59237 g
ct	Carat	0.2 g
C.M.	Carat Metric	0.2 g
tLH	Tael Hong Kong	37.4290 g
tLM	Tael Malaysia	37.799366256 g
tLT	Tael Taiwan	37.5 g
mo	Momme	3.75 g
t	Tola	11.6638038 g
Bht	Baht	15.2 g

Tab. 5.2   Possible weight units and conversion factors

5.5 Print functions

To activate the menu see Chapter 4.5 "Activating the two main me-
nus" and Chapter 4.6 "How the menu control operates".

• **SET DATA PRINT**		
	AUTO-START ON/**OFF**	*Start print automatically on switching on/off*
	MODE UNSTABLE	*Individual print, each value*
	MODE **STABLE**	*Individual print, stable value*
	MODE LOADCHANGE	*Print after load changes*
	MODE CONTINUOUS	*Continuous print after every Integration time*
	MODE TIMEBASE	*Continuous print with time basis*
	TIMEBASE **2.0**	*Time basis (in seconds) freely selectable*
	SET PRINTFORMAT	DATE AND TIME ON/**OFF** BALANCE-ID ON/**OFF** PRODUCT-ID ON/**OFF** GROSS AND TARE ON/**OFF** UNITS ON/**OFF** OPERATOR-ID ON/**OFF** PRODUCT ttt… PRODUCTMODE **HOLD** PRODUCTMODE DELETE PRODUCTMODE COUNT OPERATOR ttt…

With "SET PRINTFORMAT", elements which are switched on are prin-
ted in each case:

• With "UNITS" all momentarily active units are printed out,

• with "PRODUCT ttt…" the product name can be entered
  alphanumerically,

• with "PRODUCTMODE HOLD" this product name is stored,

- with "PRODUCTMODE DELETE" it is deleted after each expression,
- with "PRODUCTMODE COUNT" a counter, which is incremented by 1 after each expression,
- "OPERATOR ttt…" is the alphanumeric input of the operator.

When a peripheral device (for example a printer) is connected, the balance interface must be configured in the submenu "SET INTER-FACE" (see Chapter 5.8 "Interface-functions").

5.6   Calibration functions

To activate the menu see Chapter 4.5 "Activating the two main me-nus" and Chapter 4.6 "How the menu control operates".

• **SET CALI-BRATION**			
	MODE	OFF	*Closed*
	MODE	**EXTERNAL**	*External*
	MODE	EXT-DEF.	*External with user-defi-ned weight (DEF n.nnn g)*
	MODE	INTERNAL	*with internal weight*
	MODE	AUTO	*Automatic (AUTOCAL)*
	DEF.	**0.000 g**	*Calibration weight for EXT.-DEF. mode*
	AUTOCAL.	**TIME/TEMP.**	*Autocal. on time/temp.*
	AUTOCAL.	TIME	*Autocalibration on time*
	AUTOCAL.TEMPERATURE		*Autocal. on temperature*
	AUTOCAL.-TIME	**6 h**	*Time for Autocalibration*

For the calibration of the balance see Chapter 3.7 "Calibration of the balance" and Chapter 14.2 "Notes on calibration".

❶   **NOTE**
The works setting depends on the model of balance. The internal calibration modes are only available if the self calibration system (SCS) is installed.

5.7   **Weighing mode**

To activate the menu see Chapter 4.5 "Activating the two main me-
nus" and Chapter 4.6 "How the menu control operates".

• SET WEIGH-ING MODE		
	FLOATINGDISPLAY 0.04 FLOATINGDISPLAY 0.08 FLOATINGDISPLAY **0.16** FLOATINGDISPLAY 0.32	*Input Integration time* *(in seconds)*
	STABILITY LOW STABILITY **MEDIUM** STABILITY HIGH	*Setting the Stability* *control (instability of* *the balance location)*
	AUTO-STANDBY **OFF** AUTO-STANDBY 5 MIN AUTO-STANDBY 10 MIN AUTO-STANDBY 30 MIN	*Auto-Standby not-acti-* *ve or active after* *nn minutes*
	AUTO-ZERO **ON**/OFF	*Automatic zero correc-* *tion on/off*
	QUICK-TARE ON/**OFF**	*Quick tare on/off*

With the aid of the weighing mode functions, you describe the quality
of the balance location (see Chapter 3.4 "Choice of a suitable locati-
on").

With the aid of the AUTO-STANDBY function, you can define the
period of non-use before the balance goes over automatically into the
energy-saving mode.

❗ **NOTE**
The Auto-Standby function only works with the automatic zero-correction activated (see Chapter 5.7 "Weighing mode").

5.8   Interface-functions

To activate the menu see Chapter 4.5 "Activating the two main me-nus" and Chapter 4.6 "How the menu control operates".

• SET INTERFACE			
	BAUDRATE	300	*Select baud-rate*
	BAUDRATE	**600**	
	BAUDRATE	1200	
	BAUDRATE	2400	
	BAUDRATE	4800	
	BAUDRATE	9600	
	BAUDRATE	19200	
	PARITY	**7-EVEN-1STOP**	*Select parity*
	PARITY	7-ODD-1STOP	
	PARITY	7-NO-2STOP	
	PARITY	8-NO-1STOP	
	HANDSHAKE	**NO**	*Enter handshake*
	HANDSHAKE	XON-XOFF	*function*
	HANDSHAKE	HARDWARE	

With the aid of the interface functions, the RS232/V24 interface of the balance is matched to the interface of a peripheral device (see Chapter 8 "Data transfer to peripheral devices").

5.9   Date and time

To activate the menu see Chapter 4.5 "Activating the two main me-
nus" and Chapter 4.6 "How the menu control operates".

• SET DATE AND TIME		
	DATE [DD.MM.YY]	*Set date and*
	TIME [HH.MM.SS]	*time*
	FORMAT **STANDARD**/US	

❗   **NOTE**
These settings are only available if the clock is installed.
The date and time display continues in the event of a power failure. If this is not the case, the balance backup battery is exhausted and must be replaced by Precisa Customer Service.

5.10 Password protection

To activate the menu see Chapter 4.5 "Activating the two main me-
nus" and Chapter 4.6 "How the menu control operates".

• PASSWORD		
PASSWORD – – – –	DATA-PROTECTION **OFF**	*No protection*
	DATA-PROTECTION MED	*The configuration menu is protected*
	DATA-PROTECTION HIGH	*The configuration menu and the application menu are protected*
	NEW PASSWORD – – – –	*Enter new password*

The password protection permits you to protect the application menu
and/or the configuration menu against unintentional changes.

See Chapter 4.7 "Password protection of the menus" and
Chapter 10.1.4 "Activation of password protection" for further
information on password protection.

5.11 Anti-theft encoding

To activate the menu see Chapter 4.5 "Activating the two main me-
nus" and Chapter 4.6 "How the menu control operates".

• **THEFTCODE**		
THEFTCODE －－－－	THEFT-PROTECTION ON/**OFF**	*Switch encoding on/off*
	NEW CODE －－－－	*Enter new code*

If the anti-theft encoding is activated, a four-figure code must be
entered after every interruption of the power supply in order to release
the balance for use.

For further information on the anti-theft encoding see Chapter 4.8
"Anti-theft encoding".

To activate the anti-theft encoding, proceed as described for pass-
word protection.

6 Working with the application menu

This chapter explains which working programs the balance has and how these are operated (see also Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates").

If «PRINT» is operated in an application, a report corresponding to the application is printed out.

6.1 Structure of the application menu

To activate the menu see Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates".

The working programs of the balance are called up using the application menu and adapted to the user's needs:

Main path	Definable functions
SET APP.	Select application program:
SETUP APPLICATION	Specify parameters for the working program selected under "Application»
AUTO-START ON/OFF	The selected working program can, if required, be loaded automatically every time the balance is swtiched on

Tab. 6.1   Structure of contents of the application menu

Printing conventions:

• The settings for the sub-menus programmed in works are printed in **bold** in these operating instructions

• For a greater clarity, only that part of the menu tree which corresponds to this application is shown with each application description.

• You will find the complete menu tree for the application menu in Chapter 16 "Application menu tree".

• Explanations of the menu functions are printed in *italics*.

6.2   Selecting a working program

See Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates" for the activation of the application menu.

● SELECT APPLICATION			
SET APP.	**OFF**		*Normal weighing*
	UNITS		*Different units*
	COUNT		*Parts counting*
	PERCENT		*Percent weighings*
	NET-TOTAL		*Add weighing results with intermediate tare*
	DENSITY		*Density determinations*

In this function-field, select the desired working program.

If a working-program is selected in the "SET APP." menu, then only those sub-menus, which contain functions and parameters necessary to define the chosen working program are shown in the "SETUP APPLICATION" menu.

To activate the menu see Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates".

6.3   Changing application / weighing mode

To activate an application, it must first be selected in the application menu (see Chapter 6.2 "Selecting a working program").

• Press the «**MODE**» button. The display will show either the name of the selected application "UNITS", "COUNT", ... or "BALANCING" (for switching back to weighing mode).
(If "SET. APP. OFF" appears immediately, no application has yet been selected.)

• Release the «**MODE**» button.

• The balance has now switched over to the application and you can run the application with the «**REF**» button.
(In the weighing mode the «**REF**» button has no function).

6.4 Application "UNITS"

See Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates" for the activation of the application menu.

• SETUP APPLICATION			
UNITS	UNIT-2	kg	*kilogramme*
	UNIT-2	mg	*milligramme*
	UNIT-2	-----	*-----*
	UNIT-2	**OFF**	*not active*
	UNIT-3	GN	*Grain*
	UNIT-3	-----	*-----*
	UNIT-3	**OFF**	*not active*
	UNIT-4	C.M.	*Metric carat*
	UNIT-4	-----	*-----*
	UNIT-4	**OFF**	*not active*

🛈 NOTE

For basic operation, Unit 1 is defined in the configuration menu (standard unit for all weighings, if the working-program "UNITS" is not called up, see Chapter 5.4 "Selecting the weight unit").

Operation:

Start the application (see Chapter 6.3 "Changing application / weighing mode").

• Press the «**REF**» button until the desired unit appears on the display.

• Release the «**REF**» button.

6.5   Application "COUNT"

See Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates" for the activation of the application menu.

• SETUP APPLICATION		
COUNT	REFERENCE **10** PCS	*Reference-number of pieces = 10*

With the aid of the "COUNT" program you can count items of uniform weight (screws, balls, coins, etc.).

Depending on the weight and tolerances of the objects to be counted, you should count a representative number of items for the regulation of the reference-weight.

Operation:

Start the application (see Chapter 6.3 "Changing application / weighing mode").

• Place a number of objects on the weighing pan.

• Press the «**REF**»-button until the reference quantity appears on the display.

• If the reference quantity is correct release the «**REF**»-button. Otherwise hold down the «**REF**»-button. The pre-defined values will appear (1, 10, 25, 50, …). As soon as the desired value appears release the «**REF**»-button. (The current value can be increased by 1 by briefly releasing and pressing the «**REF**»-button.)

6.6   Application "PERCENT"

See Chapter 4.5 "Activating the two main menus" and Chapter 4.6 "How the menu control operates" for the activation of the application menu.

• **SETUP APPLICATION**			
PERCENT	DECIMALS	**AUTO**	*Enter number of decimal*
		0	*places*
		1	
		2	
		3	

With the aid of the "PERCENT" program you can display and print out the weight of different measurements as a percentage of a previously defined reference weight.

Operation:

Start the application (see Chapter 6.3 "Changing application / weighing mode").

• Place the reference weight on the weighing pan.

• Press the «**REF**»-button until "REFERENCE 100%" appears on the display.

• Release the «**REF**»-button.

6.7   Application «Net-Total»

There is no Setup menu for this application.

With the aid of the „NET-TOTAL" application you can add individual weighings, where the balance is tared to zero again before each individual weighing.

Functions of the application:

«Sto n»:	- Take stable value and add to the sum of the components.
	- Tare balance.
	- Short confirmation with display „StorEd n".
«rESEt»:	- Reset
«InFo»:	- Display of:
	- Total weight „TOT"
	- Residual capacity „R-C"
	- Individual components „n"
	- Exit info with «**MODE**»-button.

Operation:

Start the application (see Chapter 6.3 "Changing application / weighing mode").

• Place something on the weighing pan.

■ *6 Working with the application menu*

• Press the «**REF**»-button until the desired function appears on the display.
Release the «**REF**»-button.

7   Special operating keys

7.1   The Tare key «T»

• **Effects taring**
   – Ensure that the balance is in the weighing mode
   – Briefly press «**T**»
   – The balance performs a tare operation.

• **Effects a calibration**
   – Ensure that the balance is in the weighing mode
   – Keep «**T**» pressed until "CALIBRATION" is displayed
   – Release «**T**»
   – The balance carries out a calibration in accordance with the set-
     tings in the configuration menu (cf. Chapter 5.6 "Calibration
     functions") and reports these by means of a printout.

• **Carries out a calibration test**
   – Ensure that the balance is in the weighing mode
   – Keep «**T**» pressed until "TEST CALIBRATION" is displayed
   – Release «**T**»
   – The balance carries out a calibration test.

❗ **NOTE**
A calibration and/or a calibration-test can be cancelled with **«ON/OFF»**.

■ *7 Special operating keys*

7.2   The Print key «PRINT»

- **Print out an individual value or a report**
  – Ensure that the balance is in the weighing mode
  – Briefly press «**PRINT**»
  – The individual value or report will be printed out.

- **Reset product counter to 1**
  – Ensure that the balance is in the weighing mode
  – Keep «**PRINT**» pressed until "RESET PROD.-COUNTER" is displayed
  – Release «**PRINT**»
  – The product counter will be reset to 1.

- **Print out a balance status**
  – Ensure that the balance is in the weighing mode
  – Keep «**PRINT**» pressed until "PRINT STATUS" is displayed
  – Release «**PRINT**»
  – The balance status will be printed out.

- **Print out the application-setup**
  – Ensure that the balance is in the weighing mode
  – Keep «**PRINT**» pressed until "PRINT APPLICATIONS" is displayed
  – Release «**PRINT**»
  – The application-setup will be printed out.

8 Data transfer to peripheral devices

For data-transfers to peripheral devices, the balance is equipped with an RS232/V24-interface.

Before the data-transfer, the RS232 interface must be matched with the one in the peripheral device in the balance's configuration menu (see Chapter 5.8 "Interface-functions").

• Handshake
The handshake is set to "NO" (none) in the works. It can be set to software handshake XON/XOFF, or to hardware handshake.

• Baud rate
Possible baud rates: 300, 600, 1200, 2400, 4800, 9600 or 19200 baud.

• Parity
Possible parity: 7 even 1 stop, 7 odd 1 stop, 7 No 2 stop or 8 No 1 stop.

Parity	SB	1	2	3	4	5	6	7	8	SP
7-even-1	SB	1.DA	2.DA	3.DA	4.DA	5.DA	6.DA	7.DA	PB	SP
7-odd-1	SB	1.DA	2.DA	3.DA	4.DA	5.DA	6.DA	7.DA	PB	SP
7-no-2	SB	1.DA	2.DA	3.DA	4.DA	5.DA	6.DA	7.DA	1.SP	2.SP
8-no-1	SB	1.DA	2.DA	3.DA	4.DA	5.DA	6.DA	7.DA	8.DA	SP

SB: Start bit   PB: Parity bit
DA: Data bit   SP: Stop bit

8.1   Connection to peripheral devices

• **Standard, duplex connection**

Balance	RJ 45	D25 / D9	Peripheral device
RS 232 out	2 ———————▶	3 / 2	RS 232 in
RS 232 in	6 ◀———————	2 / 3	RS 232 out
GND	5 ———————	7 / 5	GND

• **Standard, duplex connection with additional hardware handshake in the peripheral device**

Balance	RJ 45	D25 / D9	Peripheral device
RS 232 out	2 ———————▶	3 / 2	RS 232 in
RS 232 in	6 ◀———————	2 / 3	RS 232 out
GND	5 ———————	7 / 5	GND
CTS	3 ◀———————	20 / 4	DTR
DTR	7 ———————▶	5 / 8	CTS

• **Pinout of RJ45 socket**

Balance	RJ 45	Remark
n.c.	1	Not connected
RS 232 out	2	Out (V24)
CTS	3	In (V24)
VDC	4	Out (9..16V)
GND	5	0V
RS 232 in	6	In (V24)
DTR	7	Out (V24)
EXTBUS	8	In (5V, logic)

8 7 6 5 4 3 2 1
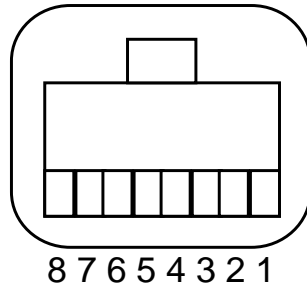
8.2   Data-transfer

• **Display**

| S | D7 D6 D5 D4 D3 D2 D1 D0 | U U U |

The data-transfer takes place in ASCII code:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	...	...	...
B	B	B	S	D7	D6	D5	D4	D3	D2	D1	DP	D0	B	U	...	CR	LF

B	Blank (space)
S	Sign (+, -, space)
DP	Decimal Point
D0...D7	Digits
U ...	Unit (only when weight is stable, else no unit transfered)
CR	Carriage Return
LF	Line Feed

❗ **NOTE**
Unused positions are filled with spaces.
The decimal-point DP can be between D0 and D7.

8.3   Remote control-commands

Command	Function
ACKn	Handshake n = 0 off; n = 1 on
CAL	Start calibration (only where INT or EXT selected)
DN	Reset weight display
D..........	Describe weight display (right-aligned)
@N	Reset Info display
@.........	Describe Info display

In	Set FLOATINGDISPLAY time n = 0 t = 0.04 s
	                                            n = 1 t = 0.08 s
	                                            n = 2 t = 0.16 s
	                                            n = 3 t = 0.32 s

N	Reset balance
OFF	Switch off balance
ON	Switch on balance
PCxxxx	Enter anti-theft code
PDT	Print out date and time
PRT	Start printing (Press "Print" key)
PST	Start print status

Pn (ttt.t)	Set print mode
	        n = 0 Individually print each value (unstable)
	        n = 1 Individually print each value (stable)
	        n = 2 Print after change of load
	        n = 3 Print after each integration period
	        n = 4 Print on time basis in s (ttt.t)

R%k	Set current weight = 100% with k = 0…7 decimal places (k = A: use automatic positioning of decimal point)
REF%k rrr…	Set reference weight rrr… for 100% with k = 0…7 decimal places (k = A: use automatic positioning of decimal point)
Rnnn	Set current weight = nnn items
REFrrr…	Set reference weight rrr… for 1 item

Command	Function		
Sn	Set stability n	n = 0	low
		n = 1	medium
		n = 2	high
SDTttmmjj hhmmss	Set date and time (German) (Tag, Monat, Jahr, Stunde, Minute, Sekunde)		
SDTmmdyy hhmmss	Set Date and Time (English) (Month, Day, Year, Hour, Minutes, Seconds)		
T (ttt)	Tare or set tare to a specific value		
Uxnn	Set unit x (1…4) of the balance with nn (0 = g, 1 = mg, 2 = kg, …)		
UxS	Switch balance to unit x (1…4)		
ZERO	Zero balance (provided weight is stable and within the zero position range)		

Tab. 8.4   Remote control-commands

❗ **NOTE**
Each remote control-command must terminate with «CR» «LF».
The commands are acknowledged if required.

8.4   Examples for the remote control of the balance

Input	Description of the function executed
D ‒‒‒‒‒	Five dashes will be shown
DTEST123	Will show: tESt123
D	The display will be dark
T100	-100.000g (Tare set to 100 g)
T1	-1.00000 g (Tare set to 1 g)
T	Balance will be tared

Tab. 8.5   Examples for remote control

9 Error messages and correction of faults

The balance shows a description of the fault in the info-line.

❗ **NOTE**
If an error occurs without a description of the error in the info-line, a Precisa Service Engineer must be called.

9.1 Notes on correcting faults

The following table shows faults and their possible causes. If you cannot clear the fault on the basis of the table, please contact a Precisa Service Engineer.

Fault	Possible cause
Weight display does not light	• Balance not switched on • Connection to power adaptor is interrupted • Power supply has failed (interruption to current) • The power adaptor is defective
"OL" is shown in display	• The weight range has been exceeded (Observe information on the maximum weight range)
"UL" is shown in display	• The weight range is below the range of the balance (Scale pan or scale pan holder missing)
The weight display fluctuates continuously	• The draft is too strong at the balance location • The balance support is vibrating or varying • The scale pan is touching a foreign body • The time chosen for FLOATINGDISPLAY is too short • The material being weighed is absorbing moisture • The material being weighed is being blown away, is evaporating or is subliming • Strong temperature variations in the material being weighed

Fault	Possible cause
Results of weighing are clearly incor- rect	• The balance was not correctly tared • The balance is not correctly levelled • The calibration is no longer correct • There are strong temperature variations
There is no display or only dashes	• The stability control (Balance functions) is set too sensitively • The time selected for FLOATINGDISPLAY is unsatisfactory
Configuration menu cannot be changed	• The password lock is activated in the configu- ration menu
The display flashes conti- nuously du- ring calibration	• The balance location is not quiet enough (Inter- rupt calibration with «**ON/OFF**» and relocate the balance in a better position) • Use of an imprecise calibration weight (only applies to external calibration)

Tab. 9.1   Possible faults and their removal

10   Practical examples

10.1   Changing the configuration menu

See Chapter 4.5.1 "Activating the configuration menu", for the acti-
vation of the configuration menu.

10.1.1 Setting the choice of language

In order to alter the display language, proceed as follows:

SPRACHE DEUTSCH

or

LANGUE FRANCAISE

or

LANGUAGE ENGLISH

- Press «**MODE**» and hold down until the currently set language appears.
- Release the «**MODE**»-button.

LANGUAGE ENGLISH

- Press «**MODE**» repeatedly, until the desired language is displayed (the display will flash).
- Hold down «**MODE**» until entry is complete (display ceases to flash) or press «**PRINT**».
- Press «**PRINT**» to exit menu.

10.1.2 Setting the Weight unit

In order to alter the weight unit, proceed as follows:

UNIT-1 g

UNIT-1 OZ

- Press «**MODE**» and hold down until the currently set unit appears.
- Release the «**MODE**»-button.
- Press «**MODE**» repeatedly, until the desired unit is displayed (the display will flash).
- Press «**PRINT**» to confirm the input (display ceases to flash).
- Press «**PRINT**» again to exit menu.

10.1.3 Setting the Print functions

In order to alter the print parameters proceed as follows:

SET DATA PRINT	• Press «**MODE**» and hold down until "SET DATA PRINT" appears.
	• Release the «**MODE**»-button.
AUTO-START OFF	• Press «**MODE**» briefly. "AUTO-START …" will appear.
AUTO-START ON	• Press «**MODE**» repeatedly, until the desired setting is displayed (ON or OFF will flash).
MODE STABLE	• Press «**MODE**» and hold down the button until the next print function appears ("MODE …").
	• Release the «**MODE**»-button.
MODE TIMEBASE	• Press «**MODE**» repeatedly, until the desired setting is displayed.

- Press «**MODE**» again and hold down the button until the next print function appears. Change the setting in the same way.
- Press «**PRINT**» to return to "SET DATA PRINT".
- Press «**PRINT**» again to exit menu.

10.1.4 Activation of password protection

The possibilities for setting the password protection are described in Chapter 5.10 "Password protection".

In order to activate password protection, proceed as follows:

| PASSWORD – – – – |

- Press «**MODE**» and hold down button until "PASSWORD – – – –" appears.
- Release the «**MODE**»-button.

| PASSWORD 000 |

- Press «**MODE**» briefly. The first digit of the password will flash.
- Enter the first digit by briefly pressing «**MODE**» repeatedly.

| PASSWORD 700 |

- Press «**MODE**» until the second digit flashes. Enter the second digit by briefly pressing «**MODE**» repeatedly.

| PASSWORD 7914 |

- In the same way enter the third and fourth digit of the password.
- Hold down «**MODE**» until input is complete (no digit flashing).

| DATA-PROTECTION OFF |

- Press «**MODE**» briefly. "DATA-PROTECTION …" will appear.
- Press «**MODE**» repeatedly, until the desired data-protection is displayed (the setting will flash).

| NEW PASSWORD 7914 |

- Press «**MODE**» and hold down button until "NEW PASSWORD 7914" appears.
- Release the «**MODE**»-button.

| NEW PASSWORD 1234 |

- Your own new password can now be entered in a similar manner to the foregoing.

| PASSWORD – – – – |

- Press «**PRINT**» to return to "PASSWORD – – – –".
- Press «**PRINT**» to exit menu.

10.2 Selection of an application program

See Chapter 4.5.2 "Activating the application menu" for the activation of the application menu.

10.2.1 Setting for Counting by weighing

For Setup, see Chapter 6.5 "Application "COUNT""
To count uniformly heavy objects such as coins, screws or similar things, proceed as follows:

SET APP....

• Press «**MODE**» and hold down button until the currently set application appears.
• Release the «**MODE**»-button.

SET APP. COUNT

• Press «**MODE**» repeatedly, until "SET APP. COUNT" is displayed (the application will flash).
• Press «**PRINT**» to confirm the input.

SETUP APPLICATION

• Press «**MODE**» until "SETUP APPLICATION" appears.
• Release the «**MODE**»-button.

REFERENCE 10 PCS

• Press «**MODE**» briefly, the currently set reference quantity appears.
• Release the «**MODE**»-button.

REFERENCE 010 PCS

• Press «**MODE**» briefly. The first digit of the reference quantity will start to flash.
• Enter the first digit by briefly pressing «**MODE**» repeatedly.

REFERENCE 020 PCS

• Press «**MODE**» until the second digit flashes. Enter the second digit by briefly pressing «**MODE**» repeatedly.

■ *10 Practical examples*

```
REFERENCE 025 PCS
```

- In the same way enter the third digit of the reference quantity.
- Hold down «**MODE**» until input is complete (no digit flashing).
- Press «**PRINT**» twice to exit menu.

By briefly depressing the «**MODE**»-button you can change to "COUNT".

Place the set number of objects on the weighing pan. The reference weight for the count will be defined by briefly depressing the «**REF**»-button.

11   Maintenance and servicing

The balance must be treated carefully and cleaned regularly. It is a precision instrument.

⚠ **DANGER**

For maintenance-work, the balance must be separated from the power supply (remove power adaptor plug from socket). Also ensure that the balance cannot be reconnected to the power supply during the work by a third party.

Take care during cleaning that no liquid penetrates into the appliance. If liquid is spilt on the balance, the latter must immediately be disconnected from the electricity supply. The balance may only be used again after it has first been checked by a Precisa Service Engineer.

The connections on the rear of the appliance and the power adaptor may not come into contact with liquids.

Regularly dismantle the weighing pan and the weighing pan holder and remove any dirt or dust from under the weighing pan and on the balance housing with a soft brush or a soft, lint-free cloth, moistened with a mild soap solution.

The scale and the holder can be cleaned under running water. Take care that both parts are completely dry, before they are re-installed on the balance.

⚠ **CAUTION**

Never use solvents, acids, alkalis, paint thinners, scouring powders or other aggressive or corrosive chemicals for cleaning, since these substances attack the surfaces of the balance housing and can cause damage.

The regular maintenance of the balance by your Precisa Service Representative will guarantee unrestricted functioning and reliability over many years and will extend the lifespan of the balance.

12 Transport, storage and disposal

12.1 Transportation and shipping of the balance

Your balance is a precision instrument. Treat it carefully.

Avoid shaking, severe impacts and vibration during the transportation.

Take care that there are no marked temperature fluctuations during the transportation and that the balance does not become damp (condensation).

❗ **NOTE**
The balance should preferably be dispatched and transported in the original packaging to avoid transportation damage.

12.2 Storage of the balance

If you would like to take the balance out of service for an extended period, disconnect it from the electricity supply, clean it thoroughly (see Chapter 11 "Maintenance and servicing") and store it in a place which fulfils the following conditions:

• No violent shaking, no vibrations

• No large temperature fluctuations

• No direct solar radiation

• No moisture

❗ **NOTE**
The balance should preferably be stored in the original packaging, since this provides optimal protection for the balance.

13   Accessories

13.1   Accessories

Accessory	Article-number
Second display, free-standing	350-8504
Second display, built-in	350-8505
Second display, wall mounted	350-8516
Interface RS232	350-8506
Interface 20 mA current loop passive	350-8526
Analog output -10 V… + 10 V (Resolution 10 mV)	350-8508
Smartbox Module for various applications:	
Parts counting with stored values and part numbers	350-8511-001
Finished pack control to FPVO	350-8511-002
Signal-lamp with 3 bulbs (green, yellow, red)	350-8510
Input/Output module (6 TTL inputs, 8 Relay outputs)	350-8509
Multiplexer for up to 7 balances (RS232)	350-8513
Data-cable RJ45 - RJ45, 0.75 m	350-8525
Data-cable RJ45 - RJ45, 1.5 m	350-8520
Data-cable RJ45 - RJ45, 3 m	350-8521
Data-cable RJ45 - DB9 female (PC), 1.5m	350-8557
Data-cable RJ45 - DB25 female (PC), 1.5m	350-8558
Data-cable RJ45 - DB25 male (Printer), 1.5m	350-8559
Accumulator pack, complete	350-8514

■ *13 Accessories*

Accessory	Article-number
Density determination kit	350-8515
Windshield for M- and C-balances	
Heighth 180 mm	350-8518
Heighth 260 mm	350-8519
Dust cover for display	350-4096
Night cover	350-4097
Hooks for under-floor weighing	350-8527

14   Further information

14.1   Notes on the Weighing mode

14.1.1 Set Weighing mode: FLOATINGDISPLAY

The value set for FLOATINGDISPLAY defines the period, after which each new measurement is displayed.

For the definition of this period, the quality of the balance-location is crucial. The stability control must also be suitably chosen.

Recommended values:

• Optimal balance location:	FLOATINGDISPLAY 0.04 or
	FLOATINGDISPLAY 0.08
• Good balance location:	FLOATINGDISPLAY 0.16
• Critical balance location:	FLOATINGDISPLAY 0.32

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❶   NOTE

The value of the Floating Display is a function of the stability control and the balance location. For balance location, see Chapter 3.4 "Choice of a suitable location" and Chapter 5.7 "Weighing mode".

14.1.2 Set Weighing mode: Stability control

The value set for the stability control depends on the quality of the balance location and must be correctly chosen in order to obtain optimal, reproducible results. Choose:

• "HIGH STABILITY" at an **optimal** balance location,

• "MEDIUM STABILITY" at a **good** balance location or

• "LOW STABILITY" at a **critical** balance location

14.1.3 Set Weighing mode: Auto-Standby

The Auto-Standby mode turns off the balance automatically, if:
• the balance is tared and has shown "Zero" for at least 5 minutes
• the balance has received no remote control command via the interface for at least 5 minutes,
• the automatic zero correction "Auto-Zero" is activated.

It is possible to start the balance again after it has been switched off by an automatic Auto-Standby:
• Briefly depress any key
• Put a weight on the scale
• Give a remote control command via the interface

14.1.4 Set Weighing mode: Auto-Zero

If the automatic zero correction "Auto-Zero" is activated, the balance always gives a stable zero (e.g. even with room temperature fluctuations).

14.2 Notes on calibration

The calibration of the balance is fixed in the configuration menu (see Chapter 3.7 "Calibration of the balance" and Chapter 5.6 "Calibration functions").

Possible types of calibration, depending on the model of balance:
• External calibration by means of ICM (Intelligent Calibration Mode)
• External calibration with freely selectable weight
• Internal calibration
• Automatic calibration

❗ **NOTE**
The calibration can be interrupted at any time by pressing «**ON/OFF**».

14.2.1 External calibration by means of ICM

Depending on the type of balance, calibration weights in steps of 10 g, 50 g, 100 g and 500 g can be used, where the calibration weight must correspond to the precision of the balance.

For an external calibration by means of ICM, "SET CALIBRATION MODE EXTERNAL" must be selected in the configuration menu (see Chapter 5.6 "Calibration functions").

• Switch to "BALANCING" with the «**MODE**»-key

| CALIBRATION |

• Press «**T**» until "CALIBRATION" appears.

| - - 0000 g |

• The balance carries out a Zero measurement (0.000 g is shown flashing)

| - - 2000 g |

• After the zero measurement the display flashes with the recommended calibration weight
• Place the calibration weight on the pan

| - - 2000 g |

• The display continues to flash

| + 2000 g |

• Calibration is complete when the display stops flashing

14.2.2 External calibration with freely selectable weight

For an external calibration with user-definable weight, "SET CALIBRATION MODE EXT. -DEF." must be selected in the configuration menu (see Chapter 5.6 "Calibration functions").

Then, the effective value of the calibration weight (DEF. n'nnn g) must be entered with up to tenfold precision compared with the balance.

> **🛈 NOTE**
>
> If calibration is carried out with the free weight, then only this weight may be used.

Then proceed as follows:

- Switch to "BALANCING" with the «**MODE**»-key

CALIBRATION

- Press «**T**» until "CALIBRATION" appears.

- - 0000   g

- The balance carries out a Zero measurement (0000 g is shown flashing)

- - 372   g

- After the zero measurement the display flashes with the previously entered calibration weight
- Place the calibration weight on the pan

- - 372   g

- The display flashes rapidly

+ 372.15   g

- Calibration is complete when the display stops flashing (the exact weight is shown)

14.2.3 Internal calibration

For an internal calibration with the built-in calibration weight "SET CALIBRATION MODE INTERNAL" must be selected in the configuration menu (see Chapter 5.6 "Calibration functions").

Then proceed as follows:

- Switch to "BALANCING" with the «**MODE**»-key
- Press «**T**» until "CALIBRATION" is shown.
- The calibration is finished after a certain period of time.

14.2.4 Automatic calibration

For an automatic calibration with the built-in calibration weight "SET CALIBRATION MODE AUTO" must be selected in the configuration menu (see Chapter 5.6 "Calibration functions").

The balance now calibrates itself automatically every 24 hours and/or after each temperature change of 3 degrees Celsius, depending on the definition in the configuration menu "SET CALIBRATION AUTOCAL".

The time of the automatic calibration is as determined in the configuration menu under "SET CALIBRATION AUTOCAL. -TIME n h".
(e.g. 6 h for 06.00 o'clock in the morning).

| ❶ NOTE |
|---|
| For the automatic calibration by time and by time/temp. the date and time of the balance must first be correctly set (see Chapter 5.9 "Date and time"). |
| The calibration can also be effected manually any time while auto-calibration is activated. |
| The automatic calibration then takes place only if no weight is placed on the pan for at least five minutes. |
| It is recommended, that the time for the auto-calibration be set at a time outside the normal business hours (for example, in the early morning). |

15   Configuration menu tree

«**MODE**»-button pressed on switching on:

• LANGUAGE	
	LANGUAGE ENGLISH SPRACHE DEUTSCH LANGUE FRANCAISE

• CONTRAST
CONTRAST   **6**

• UNIT-1	
UNIT-1	**g** mg kg GN dwt ozt oz Lb ct C.M tlH tlM tlT mo t Bht

• SET DATA PRINT	
	AUTO-START ON/**OFF**
	MODE UNSTABLE MODE **STABLE** MODE LOADCHANGE MODE CONTINUOUS MODE TIMEBASE
	TIMEBASE **2.0**

	SET PRINTFORMAT	DATE AND TIME	ON/**OFF**
		BALANCE-ID	ON/**OFF**
		PRODUCT-ID	ON/**OFF**
		GROSS AND TARE	ON/**OFF**
		UNITS	ON/**OFF**
		OPERATOR-ID	ON/**OFF**
		PRODUCT	ttt…
		PRODUCTMODE	**HOLD**
		PRODUCTMODE	DELETE
		PRODUCTMODE	COUNT
		OPERATOR	ttt…

● **SET CALI-BRATION**		
	MODE	OFF
	MODE	**EXTERNAL**
	MODE	EXT.-DEF.
	MODE	INTERNAL
	MODE	AUTO
	DEF.	**0.000 g**
	AUTOCAL.	**TIME/TEMP.**
	AUTOCAL.	TEMPERATURE
	AUTOCAL.	TIME
	AUTOCAL.-TIME	**6 h**

● **SET WEIGH-ING MODE**		
	FLOATINGDISPLAY	0.04
	FLOATINGDISPLAY	0.08
	FLOATINGDISPLAY	**0.16**
	FLOATINGDISPLAY	0.32
	STABILITY	LOW
	STABILITY	**MEDIUM**
	STABILITY	HIGH
	AUTO-STANDBY	**OFF**
	AUTO-STANDBY	5 MIN
	AUTO-STANDBY	10 MIN
	AUTO-STANDBY	30 MIN
	AUTO-ZERO	**ON**/OFF
	QUICK-TARE	ON/**OFF**

■ *15 Configuration menu tree*

• **SET INTERFACE**	
	BAUDRATE 300
	BAUDRATE **600**
	BAUDRATE 1200
	BAUDRATE 2400
	BAUDRATE 4800
	BAUDRATE 9600
	BAUDRATE 19200
	PARITY **7-EVEN-1STOP**
	PARITY 7-ODD-1STOP
	PARITY 7-NO-2STOP
	PARITY 8-NO-1STOP
	HANDSHAKE **NO**
	HANDSHAKE XON-XOFF
	HANDSHAKE HARDWARE
• **SET DATE AND TIME**	
	DATE [DD.MM.YY]
	TIME [HH.MM.SS]
	FORMAT **STANDARD**/US
• **PASSWORD**	
PASSWORD – – – –	DATA-PROTECTION **OFF**
	DATA-PROTECTION MED
	DATA-PROTECTION HIGH
	NEW PASSWORD ––––
• **THEFTCODE**	
THEFTCODE – – – –	THEFT-PROTECTION **OFF**
	THEFT-PROTECTION ON
	NEW CODE ––––

16   Application menu tree

Press «**MODE**»-button in operation:

• SET APP.	
OFF UNITS COUNT PERCENT	
• SETUP APPLICATION	
	Division depends on the current application, see Chapter 6 "Working with the application menu"
• AUTO-START	
AUTO-START **ON**/OFF	

17   Configuration menu tree

«**MODE**»- and «**T**»-button pressed on switching on:

FACTORY CONFIG.	Load factory-configuration.
USER CONFIG.	Load user-configuration.
STORE CONFIG.	Store present configuration as user-configuration.