

Thank you very much for the confidence you have shown in our products by choosing a METTLER TOLEDO precision scale. To obtain complete satisfaction from your scale, it is essential that you read through these operating instructions carefully. These operating instructions apply to scales of the PM series with a weighing range between 11 and 32 kg. Although the operating procedures for these scales are identical, differences exist regarding the weighing range and the readability accuracy.

Preparation	Set line voltage / Choosing the location Mounting the weighing platform / Levelling the scale	page 4 page 5
Operation	Controls / Connections / Display METTLER DeltaTrac / METTLER DeltaRange Switching display on/off Simple weighing and taring Symbols	page 6 page 7 page 8 page 9 page 10
Menu	Overview Calibrating Adapting the scale to the type of weighing (weighing process adapter) Adapting the scale to the ambient conditions (vibration adapter)	page 11 page 12 page 14 page 15

Configuring	Overview Configuration example Standard setting and printout Scale operating settings Unit selection, applications, status displays Adaptation to external equipment for data exchange Securing configuration	page 16 page 18 page 20 page 22 page 24 page 26 page 28
Applications	Overview Weight unit selection Piece counting Plus/minus and percent weighing Animal weighing / Weighing in extremely unsteady or vibrating surroundings Print/transfer command	page 30 page 31 page 32 page 34 page 36 page 37
What if	Troubleshooting	page 38
Miscellaneous	Change line voltage/fuse Change protective cover / Cleaning Glossary of special terms	page 40 page 41 page 42
Technical data	Overview of the PM balance and scale families Technical data for individual models General technical data Standard equipment Weighing ranges in secondary units decimal places in secondary units	page 43 page 45 page 48 page 49 page 50 page 51

Set line voltage



Before switching on the scale, ensure that the line voltage setting matches the local power supply.

The balance/scale has already been set in the factory to the correct line voltage for your country. The balance/scale may be operated only when connected to a supply network with a PE conductor.

Select the proper location

For best results choose a suitable location for your scale.





A firm, vibration-free location as horizontal as possible

Avoid exposure to direct sunlight





No extreme temperature changes

No draft

Despite a possibly unfavorable location, your scale can still produce accurate weighing results: In this case you should adjust the vibration adapter accordingly. For procedure, refer to section "Menu".

Mount the weighing platform ...



Install platform support **11** with all four pins sitting on rubber grommets **40**; then place weighing platform **10** on platform support **11**; connect power cable **20**.

... and now level the scale



After each relocation of the scale, repeat levelling procedures. For this purpose adjust bubble in level indicator **6** with the two levelling screws **7**.

Control elements and connections



- 1 Control bar (On / Menu / Re-Zero)
- 2 Off key OFF
- 3 Function and switch key F
- 4 Print key PRINT
- 5 Connector for data interface
- 6 Connector for METTLER TOLEDO GM instruments
- 7 Fuse holder (with spare fuse)
- 8 Power socket
- 9 Screw feet (level adjustment)
- 10 Level indicator

Display



- 31 Status indicators
- 31 a Vibration adapter
- 31 b Weighing process adapter
- 31 c Weight status
- **31 d** Automatic zero correction (Autozero)
- 31 e Special status of digital display*
- 31 f Stability control
- **32** Digital display
- 33 Units
- **34** DeltaTrac (dynamic graphic indicator and dispensing aid with 60 radial segments)
- 35 Tolerance limits
- * indicates calculated quantities such as mean values or values multiplied by constants, as well as data entered via the interface

The METTLER DeltaTrac

This **dynamic graphic indicator** with 60 radial segments is incorporated in all scale models. METTLER DeltaTrac shows you a graphic representation of the numerical values shown in the digital display.



With absolute weighing, subtractive weighing, weighing-in and formula weighing, the dynamic display **indicates the** weighing range used up and that still remaining.



With the aid of METTLER DeltaTrac you can check fill quantities and determine deviations from a definable target weight in percent.

You can always see the tolerance limits with correct signs,

as well as positive or negative deviations (see "Applications").

When used together with METTLER TOLEDO Pacs, the METTLER DeltaTrac can also perform additional functions (see booklet "Applications – Technical data – Accessories").

METTLER DeltaRange® balances ...

... include a fine range with **10 times the normal accuracy**. Briefly pressing the control bar (taring) will activate DeltaRange anywhere throughout the entire weighing range.



Note: The 10 times more accurate fine range also remains effective for backweighing.

Operation

Operation

Switch on display (▼ display changes automatically)



Note: Should a power outage occur, the display will indicate -OFF- immediately the power is restored. You should then briefly press the control bar (also consult "What if ...").

Switch off display



Weighing mode



Press the OFF key; the display fades. The electronics remain live as long as the power cable is connected (standby). Thus, the scale is always ready for operation; no warm-up time required.

Simple weighing

Caution: Before the scale is used for the first time, it must be calibrated (see "Calibrating" in section "Menu").



Note: The stability detector can be switched off during taring by pressing the control bar twice. It is then possible that the display does not show exactly 0.0 g. The foot or hand switch from the accessories offers the possibility of external taring.

Operation

Introducing the symbols

Use the following example to familiarize yourself with the key symbols. Switch on the display and remove weight from weighing pan. Now try to select and change the weighing process adapter **31b**.



Note: If the display automatically returns to zero (weighing mode) **3 seconds** after the control bar was last pressed, simply begin the procedure again.

Have you adjusted the status display so that the "drop symbol" is shown on the left of the display? If your first attempt was unsuccessful, try again. You will find further information regarding the weighing process adapter and much more in the following sections.

^{*} With scales without a built-in calibration weight (PM ... -N), "-CAL-" appears.

Menu

We distinguish between two levels of software. The first, simpler level, we call the **Menu**. It can be activated by pressing and holding the control bar. The second software level is called the **Configuration** file and is described in detail in the section "Configuring".

When the Menu is activated, you can ...



... calibrate your scale ...

... use the weighing process adapter to set the weighing modes or the weighing sample, and

... use the **vibration adapte**r to adapt the scale to the ambient conditions.

You can select the menu from the weighing mode. Switch on display and remove load from weighing platform. Then press control bar (and keep depressed): The Menu sequence starts. After the third menu step the scale returns to the weighing mode. Now release the control bar.

Note: If you have selected the menu step "Weighing process adapter" or "Vibration adapter" and do **not** press the control bar for **3 seconds**, your scale will return automatically to the weighing mode. However, the actual settings are stored (the same applies if you return to the weighing mode by pressing and holding the control bar).

^{*} With scales without a built-in calibration weight (PM ... -N), "-CAL-" appears.

Automatic calibration with PM ... -K

Before the scale is used for the first time, it must be calibrated (to take the acceleration due to gravity into account). **Caution:** To obtain accurate results it is advisable to connect the scale to the power supply 30 minutes before calibrating.

00. [RL Int [AL Int [8L Int 00。

Start calibration with display switched on by pressing and holding the control bar (weighing mode, display zero with empty weighing platform).

Release control bar when "CAL Int" is displayed.

The calibration runs automatically.

Note: You can also trigger the calibration via the serial interface with the command "CA" (see operating instructions "Bidirectional data interface of the PM balances").

After the calibration, the scale automatically returns to the weighing mode.

Calibrate with an external calibration weight with PM ... -N

Before using the scale for the first time, it must be calibrated (taking gravity into consideration). **Caution:** For exact results it is advisable to connect the scale to the power supply 30 minutes before calibrating.



Menu

Adapt your scale to the type of weighing (weighing process adapter)

Access	Weighing mode	With this adapter you will optimize the display speed of the digits as a function of weighing mode: For instance, for fine dispensing of powders even the last place of the digital display must be continuously recognizable. This is not the case for absolute weighing; the adapter thus suppresses the display during the weighing process. The result with all decimal places will appear only when it is stable.
	Weighing process adapter	
Adjustments	Weighing process	Remarks
	Fine dispensing (weighing-in) of fine powder or small quantities of liquids	For slow addition of the sample, all decimal places of the display are available. The weight increase can thus be followed easier.
	Universal	Standard setting. With DeltaDisplay -on-, the last decimal place is suppressed in coarse dispensing, see page 23.
	Absolute weighing	In this setting, you can rapidly check a weight . Only the final result appears in the display. "" is displayed during the unstable phase.
	Animal weighing or weighing in extremely	Your scale is operating in the animal weighing mode , e.g. movements of a live animal do not influence the display. The measurement values are averaged during a certain time period and subsequently indicated on the display. Starting of measuring cycle and setting of measuring time are explained the section "Applications, animal weighing".

* With scales without a built-in calibration weight (PM ... -N), "-CAL-" appears.

... as well as to the ambient conditions (vibration adapter) Under vibration-free conditions adjust the adapter to obtain results Access within the shortest possible time. However, if you are operating in an environment with severe vibrations or drafts, adjust the adapter to Weighing mode 0.0 • obtain reliable results, even under adverse conditions. [RL Int Vibration adapter **Adjustments** Weighing environment Remarks Very quiet and stable With this setting your scale operates very fast (short weighing cycle), but the scale is relatively sensitive to ambient dis-turbances. Normal Standard setting • Unstable, e.g. draft or Your scale is **not sensitive** to external disturbances, however, strong building vibrations its operation is slowed down.

* With scales without a built-in calibration weight (PM ... -N), "-CAL-" appears.

Special requirements need special settings within the configuration file

Your scale has been factory-set to a standard configuration, i.e. the settings in the configuration file correspond to the most common user requirements. If you wish to change these settings to meet special requirements you must access the configuration file and change the settings according to your needs. The configuration file is divided into four sectors, in which you can change the following settings:





Unit selection, applications etc.



Selection of basic unit



Selection of second unit and applications



Switch on status displays



Adapting to peripherals for data interchange



Transmission mode

Baud rate





Pause between data transfers and handshake

Suppression of certification symbols in data transmission

Please see the following pages for more information on the individual setting possibilities.

Note: Short-form operating instructions are enclosed with this operating manual and show the configuration file with all possible settings. These short-form instructions are intended for use as an overview aid in your day-to-day work.

Configuring

Configuring - a quick introduction



Access

Start from standby, i.e. display switched off. Now press control bar and **release only** when display shows –Conf–. Display now automatically changes over to – Reset–.



Selecting sectors The 4 sectors can be selected by **briefly** pressing the control bar.

Note:

The –End– display between the sectors –I-Face– and –Reset– indicates the end of the four sectors.



Selecting adjustment For instance in sector –Unit–: Keep control bar **depressed** until the desired selection is displayed (e.g. –Unit 1–). Have you found the setting –Unit 1–? If not, switch off the display by pressing the OFF key. Then restart by accessing the configuration file. This time it's sure to work.

Un it i Press briefly x times Un it i Ib	Change setting e.g. from –g– (gram) to –lb– (pound): Briefly press control bar several times until pound (lb) appears in display.
Un it i Un it i Un it i	Return to weighing mode After completing your configuration keep control bar depressed until zero indication appears (weighing mode). The effective settings are now stored, and you can proceed with your weighings.
	Note: If you release the control bar at – End – (each sector is termi- nated with –End–) and then press briefly , you will return to the start of the corresponding sector (e.g. –Unit–).

If, after making these changes, you would like to return to the **standard configuration**, please turn to the next page. The following pages also tell you everything you wish to know regarding the individual setting options. A general overview of the configuration file is available from the enclosed **short-form operating instructions**.

Standard setting and record printout

Standby

Access



Symbols





▼

Press and hold control bar until required display appears

Display changes automatically

Important

Return to weighing mode always by pressing and holding the control bar until zero is displayed.

If you do not press the control bar for **40 sec**, the scale will **automatically** return to the weighing mode.

Control bar

press

briefly

rESEE L ISE nol ISE - - - - -SM.122 12009 RANGE 2000.0 0.1 4000.0 V End

Settings

Standard settings Yes/No?

For resetting your scale to standard configuration, select sector –Reset–. Now press control bar until –yes– is displayed. **By pressing and holding the control bar again until –End– or zero appears**, you **acknowledge** the resetting (weighing mode appears after –End– indication). Your scale is now reset to the original factory setting.

Printout of scale specifications and the actual configuration Yes/No?

To obtain a printout of scale specifications and the selected settings in the configuration file select –List–. **Acknowl-edge** the List command by pressing and holding the control bar until - - - - - appears. The record with the following values can be printed out with an attached printer (e.g. METTLER TOLEDO GA44):

Balance specification values			Actual configuration			
 STANDARD TYPE INR FULL d CAL 	Software version, e.g. V.10.40.00 Stock designation, e.g. PM3281 (Type code for PM30000-K) Identification number, 7 digits Weighing range, e.g.11000.0 g Readability, e.g. 0.1g INTERNAL with PMK Calibration weight value e.g. 4000.0 g with PMN	 As dd AZ Un Un [] S b P Pa AU 	 d Stability control, e.g. step 2 Readability, e.g. 0.1 g DeltaDisplay, e.g. on Automatic zero correction, e.g. on it 1 Basic unit, e.g. lb it 2 Second unit,e.g. lb or Applications, e.g. PCS [] Status display, e.g. auto Transmission mode,e.g. Stb Baud rate, e.g. 2400 Baud Parity, e.gE- use Pause duration between data transfers, e.g. 1 s Suppress special characters, e.gon- 			

Configuring

SERLE

Setting scale operating parameters

Standby

Access





Symbols Control bar press briefly Press and hold control bar until required display appears **Display changes automatically Standard setting** Selectable setting - 3-

Important

Return to weighing mode, always by pressing and holding the control bar until zero is displayed.

If you do not press the control bar for 40 sec, the scale will automatically return to the weighing mode. Modified settings will be stored.

× R5d -2- ←→ -3- ↓ · · · ·	Automatic stability detector 31f Weighing result is stable	ection lights up when the scale (except for data transfer	is unstable. At the same mode "S" being set to –Al	time, the data interface is blocked until the I– or –Cont–; see sector –I-Face–).
	Weighing speed:	very fast	Reproduction:	good
	-2-			
	- 4-	fast		very good
	Selection of display see	quences (Readability)		
	Step (d) 1 Display (g)	2 5 1 02 05	10 20 50 1 2 5	100 10
dd. on to off	Weighing-in aid (DeltaD DeltaDisplay is a weighin ing on the rate of weighin normal weighing.	Display) switching on o Ig-in aid for fast, accurate Ig-in. In the final phase o	r off e weighing. The number o f the weighing-in process	f decimal places is reduced by one, depend- the scale automatically switches back to
	switch on	oFF switch off		
	Automatic zero correcti Autozero automatically co	i on (Autozero) switchin ompensates for zero drif	g on or off or soiled platform.	
\bigvee	on switch on	oFF switch off		
End	Note: The symbol –AZ–,	in either position (on/off)	, appears only in the conf	iguration file.

Unit selection, Applications, Status displays

Standby

Access



 Symbols

 Image: Control bar press briefly

 Image: Display changes automatically

 Image: Control bar until required display appears

 <t

Important

Return to weighing mode, **always** by pressing and holding the control bar until zero is displayed.

If you do not press the control bar for **40 sec**, the scale will **automatically** return to the weighing mode. Modified settings will be stored.



Setting options

Basic weighing unit

In addition to the weight unit g, the following weight units can be selected for weighing:

^g gram	kg kilogram	b pound	ounces	ozt troy ounces	tl tael
dwt pennyw	eight ct C.M.	k carat	r	no unit display (display	value in g)

Note: The number of decimal places depends on the scale model and selected weight unit (see "Decimal places for secondary units" in the booklet "Applications – Technical data – Accessories" and "Conversion factors" in the section "Applications" under "Switching weight unit").

-Unit 2- includes the same weight units as basic unit. In addition you may select:

PCS		Stk	Piece counting
-----	--	-----	----------------

% Plus/ minus or percent weighing

For further information regarding these applications, see section "Applications".

Switch status indicators 🙈 , 🛺 on or off

 Buto
 3 minutes after switching on scale, the two status indicators remain

 status indicators fade automatically.
 Image: Construction of the two status indicators remain

Adaptation to external equipment for data exchange

Standby

Access





Important

Return to weighing mode, **always** by pressing and holding the control bar until zero is displayed.

If you do not press the control bar for **40 sec**, the scale will **automatically** return to the weighing mode. Modified settings will be stored.

General information

Every METTLER TOLEDO PM scale is factory-equipped with a bidirectional interface (CL and RS232C). For detailed information see operating instructions "Bidirectional Interfaces of the PM scales".

Data format of scale interface:

1 start bit, 7 data bits, 1 parity bit, stop bit automatic (1 RX / 2 TX).

-F8[{		
5.	526 ←→ RLL font ← Ruto	Data transfer mode Stb The next possible stable value is transferred after initiation of print/transfer command (after release by stability detector). RLL The momentary value (dynamic "SD" or stable "S") is transferred after initiation of print/transfer command. Only stable values are transferred automatically after each change of weight (required change 1 g, with scales having readability 1 g: 5 g. For animal weighing, see section "Applications". Lonb All values (dynamic "SD" and stable "S") are transferred automatically.
¢ 2		Baud rate The Baud rate is the transfer rate unit for serial data transmission in bits/sec:
[]	∠200 ← x times	110 150 300 600 1200 2400 4800 9600 Baud
	-E- ← -0- ↓ ↓ -5- ← -∩∩-	Parity Parity control permits recognition of simple bit errors in data transmissions: -E- even parity -D- odd parity -D- mark parity -5- space
PRUSE	/	 Pause between transfers and handshake (hardware related for RS 232C) Settings –Pause 0–, 1 and 2 permit the adaptation of transfer rate to data receivers working at different rates (specifications in seconds). –Pause H– evaluates the hardware related handshake signal for RS 232C. The scale is ready for handshake mode operation. Caution: In handshake operation, no external key may be attached to the Data I/O output as a transfer key (see booklet "Applications – Technical data – Accessories").
Ru Q	off 💭 on	Certification symbols in data transmission If scales are connected to peripheral units that can not process the certification symbols (<>, *) (e.g. LP16-M Infrared Dryer and SQC systems) or if a printout of these symbols is not required, the function –Au– must be set to –on–.
End	•	

How to protect the new settings in the configuration file

After having completed your configuration, you can protect your settings against inadvertent changes. Proceed as follows:



To protect the program cassette from possible interference, it is absolutely essential to first disconnect the line cable **20**.



Lift off weighing platform **10** and platform support **11**. Undo screw **21**. Carefully lift off top housing **22** and place to one side with the display pointing downward.



Grasp bracket of program cassette **8**, and carefully pull out cassette.



In the aperture of the program cassette **8**, the shorting jumper **24** is now visible. It can be lifted off from the contact pins (e.g. with a small pencil).



To protect your settings in the configuration file from involuntary changes, position the jumper across **both** contact pins (position **secured**).



Reinsert the program cassette **8**, make sure it is pressed in firmly and fully. Close the scale housing. Connect power cable **20**.

Your settings are now secured, i.e. accessing the configuration file is no longer possible. If you wish to remove the security provision, follow sequences shown in Figures 1 to 4. In Figure 5 select the position "**not secured**".

Standard applications at a keystroke

Counting in or out of a container, percent formula weighing of powders or liquids, plus/minus checks of fill quantities, weighing in grams or in a second, selectable unit, or even animal weighing: all this and more can be performed with the applications built in as standard. You can choose between the following applications:



Changing weight units You can switch between two selected weight units, e.g. between gram and carat.



Animal weighing

Animal weighings can also be performed simply and rapidly.



Piece counting The scale can be used for piece counting; 10 is the fixed reference value.

Symbols



Press control bar **briefly**



Press and hold control bar until required display appears

Display changes automatically



Plus/minus and percent weighing

The scale can also be used for plus/minus checks. If your scale is used for checks in %, the METTLER DeltaTrac indicates the deviation from the preset target weight, the tolerance limits of +/- 2.5 % and their violations. You can of course perform the usual percent weighings simply and rapidly.

Switching weight unit

Configuration



Standby

In the configuration file, select the setting -Unit 1- in the -Unit- sector: The standard setting has the basic unit gram (g). If you wish to change this, press the control bar repeatedly until the desired unit appears.

Now press and hold the control bar until –Unit 2– is displayed: Select desired second unit (e.g. –ct–) b y briefly pressing control bar.

Return to weighing mode

Working with two units Basic unit, e.g. 0.0 9 -g- (gram) Switch unit: Press key F Second unit, e.g. B ct -ct- (carat) Return to basic unit: Press key F 0.0 9 Basic unit **Conversion factors** 28.349523125 g 0.035273962 oz ounce 1 oz ≈ 1 g ~ 453.59237 g 1 lb ≈ 1 g pound ~ 0.002204623 lb

Applications

pennyweight

troy ounce

carat

tael

1dwt ≈

1 ozt ≈

1 ct =

1tl ≈

1.55517384 g

31.1034768 g

37.4290 g

0.2 g

0.643014931 dwt

0.032150747 ozt

0.026717213 tl

5 ct

1 g

1 g

1 g

1 g

≈

~

=

~

Applications

Piece counting (fixed reference number = 10 pieces, 1 piece at least ¹/₄ digit)



Switch piece count/weight readout





Switch to weight display: Press key $\boxed{F[]{}}$





175 Stk 🖣

Return to display in PCS:	
Press key F	



Note: If the F-key is pressed again, the weight currently loaded will be stored as a new reference weight for the reference 10 items.



Applications

Plus/minus and percent weighing (tolerance limit ± 2.5 %, 100 % = target weight, minimum weight = 100 digit)



Switch percent weighing/weighing mode











787%

Return to display in % of target weight: Press key F



Applications

Animal weighing / Weighing in extremely unsteady or vibrating surroundings

Configuration



Set weighing process adapter **31 b** to "Animal weighing"



Use vibration adapter **31a** to select the desired time cycle (integration- + reading time):



6 sec. 8 sec.

Manual

- With PRINT key of your scale
- With print key of the GA44 Thermal Printer (see booklet "Applications – Technical data – Accessories")
- With the external transfer keys (see booklet "Applications – Technical data – Accessories")

Note: If printer is connected, the stable weight value is printed out automatically.

See also section "Menu".

The various displays have the following meanings:

- ™ 15320 g	Scale ready for animal weighing	Automatic
	Weighing cycle in process (integration time)	 Set data transfer mode "S" to -Auto- (see also "Configuring, Sector -I-Face-"). Placing a live animal on the weighing platform automatically initiates a weighing cycle. To initiate a new weighing sequence, the load on the scale bet-
¥⊇.œ 1532.0	Read result (Available reading time: Display remains stable for 35 sec.)	ween weighings must be below the following values: 10 g for 100 mg balances, 50 g for g balances.
Note: For certification animal weighing result.	reasons, an asterisk (*) must precede the	Note: For DeltaRange scales select smallest unit as a reference.

Print/ transfer command



Pressing the **PRINT** key triggers transfer of a value from the scale to the attached peripheral (printer, e.g. METTLER TOLEDO GA44 or computer).

Note: In the animal weighing mode **.**, pressing the **PRINT** key triggers the start of a new measurement cycle. See section "Applications" for further details.

What if...

A breakdown should occur anyhow

Display	Definition	Cause	Correction
	Display blank	- No power	- Check power system
		- Scale switched off	- Switch on scale
		- Power cable disconnected	- Connect power cable
		- Temporary disturbance	- Switch scale off/ on, or pull out/ plug in power cable
		 Incorrect operating voltage 	- Inform METTLER TOLEDO Service
		- Line fuse defective	- Replace fuse, see "Miscellaneous")
		- In case of repetition	- Inform METTLER TOLEDO Service
	Zero not defined	- Platform support and/or platform not in place	- Place platform support and/or platform on scale
L J	Underload	- Platform support and/or platform not in place	- Place platform support and/or platform on scale
		- Protective cover touching pan support	- Mount protective cover properly, see "Miscellaneous"
		- Weight below weighing range	- Tare
r	Overload	- Load beyond weighing range	- Reduce load
	Power loss	- Pull out then plug in power cable	- Switch on scale with control bar
011		- Temporary power failure	- Check power connector for proper fitting, then tare
° ۲4	Weighing result	- Unstable weighing location	- Adjust vibration adapter, see "Menu"
	unstable		- Place scale on stable support
		- Unsteady object on balance (e.g. animal)	- Set weighing process adapter to animal weighing
° 2.3 _			mode, see "Menu"
		 Incorrect operating voltage 	 Inform METTLER TOLEDO Service

Display	Definition	Cause	Correction
l 102.5 g (1 ¹):	Incorrect result	- Operational error	- Take off weight, tare and repeat weighing
			 Check levelling, see "Preparation"
			- Check calibration, see "Menu"
		- Wrong unit	- Select correct unit, see "Configuring"
		- Protective cover touching pan support	- Mount protective cover properly, see "Miscellaneous"
		- Weighing sample touching housing	 Rearrange weighing sample to avoid contact with hous- ing
Err I	Unstable when taring,	- Excessive vibration	- Adjust vibration adapter, see "Menu"
ca re	calibrating or setting	- Wrong calibration weight	
		- Stability detector setting too sensitive	- Adjust stability detector, see "Configuring"
Err2	Taring in overload or underload condition	- See overload/ underload	
Err3	Reference	- Reference is too small or missing	 Increase weight/ reference weight
	insufficient	(piece counting, plus/ minus or % weighing)	
ErrorÖ	Error message from	- Program cassette improperly inserted	- Insert program cassette correctly
to	monitor during	- Admissible temperature range exceeded	- Pull out/ plug in power cable
Errorg	automatic self check	Admissible temperature range exceeded	 If error message persists, contact METTLER TOLEDO Service

Changing the microfuse, quite simply



- Pull out power cable.
- Turn fuseholder 6 counterclockwise and pull out.
- Replace blown fuse with new 200 mA slow-blow fuse.
- Insert fuseholder 6, press in slightly and turn clockwise.
- Plug in power cable, switch on scale.

Remember to get a new spare fuse.

If the new fuse again blows after a short time, there is a fault in the power supply of the balance/scale. Please disconnect the balance/scale from the power supply and inform your authorized METTLER TOLEDO service facility.

How to change the protective cover



If weighing platform and platform support are already in place, take them off. Then detach protective cover **16** at the adhesive spots and carefully pull off upwards.

Replace in the reverse order.

Important: Protective cover must stick firmly (remove backing paper).

Note: Replacement protective covers are supplied in sets of 2.

Easy to clean



For cleaning the stainless steel platform, a cloth with soap and water is adequate. Never use powerful solvents.

Caution: Never position scale upside down (damage to measuring cell)!

Miscellaneous

42

You can't know all the words

Calibrating	Adapting the scale to a reference weight		see "Configuring"
Configuration cycle	A run through the configuration file	LCD	Liquid crystal display
Configuration file	A second level, lockable with the jumper with variable parameters and selectable applications as additions to the menu, see "Configuring"	Menu	The first level, consisting of calibration, adaptation of weighing process and vibration, can be extended with applications, see "Operation" and "Applications"
Configuring	The setting of parameters, see "Configuring"	Reproducibility	The similarity of values obtained from repeated weighings
Control bar	A single operating device for weighing, working through the menu and configuring your balance		on the same scale under the same conditions of measure- ment
DeltaDisplay	An aid to fast, accurate weighing-in, see "Configuring"	Sector	Part of the configuration file (Reset, Scale, Unit and
DeltaRange	Selectable fine range, see "Operation"		I-Face)
DeltaTrac	A dynamic graphic indicator with 60 radial segments,	Segment	A radial bar, 1/60th of the DeltaTrac
	see "Operation"	Standard setting	The settings for normal user requirements
Digit (d)	The smallest displayed value (e.g. METTLER TOLEDO PM11-N: 0.1g)	Standby	The scale is ready for use (power cable plugged in) but not switched on, i.e. display is blank
Dispensing	Precise weighing-in of powder or small amounts of liquid	Tare weight	The weight of weighing vessels or packaging
Display	The entire display unit, see "Operation"	Taring	Allowing for the tare weight(s), i.e. the digital readout
FD	Fluorescent display	C	shows zero
Indicators Jumper	These indicate the status of the scale, see "Operation" A small connector for locking the configuration,	Vibration adapter	A means of adapting the scale to its location, see "Menu"
		Weighing process adapter	A means of adapting the scale to the materials weighed, see "Menu"

Overview of the PM balance and scale families



Precision balances with readability 1 mg (10 mg)

PM100	Weighing capacity:	110 g		
PM200	Weighing capacity:	210 g		
PM400	Weighing capacity:	410 g		
PM1200	Weighing capacity:	1200 g		
PM480 DeltaRange	Fine range:	80 g	(Coarse range:	410 g)
M2500 DeltaRange	Fine range:	500 g	(Coarse range:	2100 g)

Precision balances or scales with readability 10 mg (0.1 g)PM300Weighing capacity:310 gPM600Weighing capacity:610 g

		-		
M2000	Weighing capacity:	2100 g		
M4000	Weighing capacity:	4100 g		
M6100	Weighing capacity:	6100 g		
M4800 DeltaRange	Fine range:	800 g	(Coarse range:	4100 g)

Precision scales with readability 0.1 g (1 g)

Weighing capacity:	3.1 kg
Weighing capacity:	6.1 kg

Precision scales with readability 1 g

Weighing capacity: 6.1 kg



M11-K, PM11-N	Weighing capacity:	11.0 kg					
M16-K, PM16-N	Weighing capacity:	16.0 kg					
M30000-K	Weighing capacity:	32.0 kg					
M34-K DeltaRange	Fine range:	4.0 kg	(Coarse range: 32.0 kg)				
M34-N DeltaRange	Fine range:	4.0 kg	(Coarse range: 32.0 kg)				
recision scales with reada	bility 1 g						
M15-K, PM15-N	Weighing capacity:	16.0 kg					
M30-K, PM30-N	Weighing capacity:	32.0 kg					

Technical data for individual models							
	PM100	PM200	PM400	PM1200	PM480 DeltaRange	PM2500 DeltaRange	
Readability - Fine range (recallable)	0.001 g -	0.001 g -	0.001 g -	0.001 g -	0.01 g 0.001 g	0.01 g 0.001 g	
Weighing capacity - Fine range (recallable)	110 g -	210 g -	410 g -	1200 g -	410 g 80 g	2100 g 500 g	
Taring range (by subtraction)	110 g	210 g	410 g	1200 g	410 g	2100 g	
Reproducibility (s) - Fine range	0.5 mg -	0.5 mg -	0.001 g -	0.001 g -	0.003 g 0.001 g	0.003 g 0.001 g	
Linearity - Fine range	± 0.002 g -	± 0.002 g -	± 0.002 g -	± 0.002 g -	± 0.005 g ± 0.002 g	± 0.005 g ± 0.002 g	
Sensitivity drift / °C (10 30 °C)	4 x 10 ⁻⁶	4 x 10 ⁻⁶	3 x 10 ⁻⁶	1.5 x 10⁻ ⁶	4 x 10 ⁻⁶	1.5 x 10 ⁻⁶	
Stabilization time ¹⁾	1.5/2/3 s	1.5/2/3 s	1.5/2/3 s	2.5/4/6 s	1.5/2/3 s	2.5/4/6 s	
Update speed	0.13 s	0.13 s	0.13 s	0.13 s	0.13 s	0.13 s	
Display ²⁾	FD	FD	FD	LCD	FD	LCD	
Result deviation in inclined position (1:1000)	0.005 g	0.005 g	0.005 g	0.005 g	0.005 g	0.005 g	
Weighing pan	Ø 130 mm	Ø 130 mm	Ø 130 mm	Ø 130 mm	Ø 130 mm	Ø 130 mm	
Calibration weight ³⁾	100 g/F1	100 g/F1	200 g/F1	1000 g/E2	100 g/F1	1000 g/F1	
Net weight	3.8 kg	3.8 kg	3.8kg	3.8 kg	3.8 kg	3.8 kg	
Balance housing (W $x D x H$) in mm	194 x 316 x 68						
Power consumption	6 VA						
Fusing	63 mA/220 V						
	125 mA/110 V						

Technical data for individual models

)								
	PM300	PM600	PM2000	PM4000	PM6100	PM4800 DeltaRange	PM3000	PM6000	PM6
Readability - Fine range (recallable)	0.01 g -	0.1 g 0.01 g	0.1 g -	0.1 g -	1 g -				
Weighing capacity - Fine range (recallable)	310 g -	610 g -	2100 g -	4100 g -	6100 g -	4100 g 800 g	3100 g -	6100 g -	6100 g -
Taring range (by subtraction)	310 g	610 g	2100 g	4100 g	6100 g	4100 g	3100 g	6100 g	6100 g
Reproducibility (s) - Fine range	0.003 g -	0.005 g -	0.005 g -	0.01 g -	0.01 g -	0.03 g 0.01 g	0.03 g -	0.05 g -	0.3 g -
Linearity - Fine range	± 0.01 g -	± 0.01 g -	± 0.02 g -	± 0.02 g -	± 0.02 g -	± 0.05 g ± 0.02 g	± 0.1 g -	± 0.1 g -	±1g -
Sensitivity drift / °C (10 30 °C)	4 x 10 ⁻⁶	6 x 10 ⁻⁶	4 x 10 ⁻⁶	3 x 10 ⁻⁶	3 x 10 ⁻⁶	4 x 10 ⁻⁶	4 x 10 ⁻⁶	6 x 10 ⁻⁶	6 x 10 ⁻⁶
Stabilization time ¹⁾	1/1.5/2.5 s	1.5/2/3 s	1.5/2/3 s	1.5/2/3 s	2.5/4/6 s	1.5/2/3 s	1/1.5/2.5 s	1/1.5/2.5 s	1/1.5/2.5 s
Update speed	0.13 s								
Display ²⁾	FD								
Result deviation in inclined position (1:1000)	0.01 g	0.05 g	0.5 g	0.5 g	1 g				
Weighing pan	Ø 130 mm	Ø 150 mm	Ø 150 mm	Ø 170 mm	Ø 150 mm	Ø 170 mm	182 x 228	182 x 228	182 x 228
Calibration weight Class F1 ³⁾	100 g	500 g	1000 g	2000 g	2 x 2000 g	1000 g	1000 g	2000 g	2000 g
Net weight	3.8 kg	4.2 kg	4.2 kg	4.2 kg					
Balance housing (W x D x H) in mm	194 x 316 x	68							
Power consumption	6 VA								
Fusing	63 mA/220	V							
	125 mA/110) V ——							

dependent on the setting of the vibration adapter
 FD Fluorescent display, self-luminous LCD Liquid crystal display, passive
 for noncertified version

46

	РМ11-К РМ11-N	РМ16-К РМ16-N	РМ30000-К
Readability - Fine range (recallable)	0.1 g -	0.1 g -	0.1 g
Weighing capacity - Fine range (recallable)	11000 g -	16000 g -	32000 g -
Taring range (by subtraction)	11000 g	16000 g	32000 g
Reproducibility (s) - Fine range	0.05 g -	0.05 g -	0.1 g -
Linearity - Fine range	± 0.2 g -	± 0.2 g -	± 0.2 g -
Sensitivity drift / °C (10 30 °C)	6 x 10 ⁻⁶	4 x 10 ⁻⁶	4 x 10 ⁻⁶
Stabilization time 1)	1.5/2/3 s	1.5/2/3 s	1.5/2/3 s
Update speed	0.13 s	0.13 s	0.13 s

	PM11-N	PM16-N		PM34-N DeltaRange	PM15-N	PM30-N
Readability - Fine range (recallable)	0.1 g -	0.1 g -	0.1 g	1 g 0.1 g	1 g -	1 g -
Weighing capacity - Fine range (recallable)	11000 g -	16000 g -	32000 g -	32000 g 4000 g	16000 g -	32000 g -
Taring range (by subtraction)	11000 g	16000 g	32000 g	32000 g	16000 g	32000 g
Reproducibility (s) - Fine range	0.05 g -	0.05 g -	0.1 g -	0.3 g 0.1 g	0.3 g -	0.3 g -
Linearity - Fine range	± 0.2 g -	± 0.2 g -	± 0.2 g -	± 0.5 g ± 0.2 g	± 0.5 g -	± 0.5 g -
Sensitivity drift / °C (10 30 °C)	6 x 10 ⁻⁶	4 x 10 ⁻⁶	4 x 10 ⁻⁶	4 x 10⁻ ⁶	4 x 10 ⁻⁶	4 x 10 ⁻⁶
Stabilization time ¹⁾	1.5/2/3 s	1.5/2/3 s	1.5/2/3 s	1.5/2/3 s	1/1.5/2.5 s	1/1.5/2.5 s
Update speed	0.13 s					
Display ²⁾	FD	FD	FD	FD	FD	FD
Result deviation in inclined position (1:1000)	0.3 g					
Weighing platform (W x L) in mm	245 x 350					
Calibration weight with PMK	incorporated	incorporated	incorporated	incorporated	incorporated	incorporated
Calibration weight Class F1 ³⁾ for PMN	2 x 2000 g	2 x 2000 g	-	2 x 2000 g	2 x 2000 g	2 x 2000 g
Net weight	12.5 kg					
Scale housing (W x D x H) in mm	360 x 330 x 130					
Power consumption	8 VA					
Fusing	200 mA/220 V					
	125 mA/110 V					

PM34-K DeltaRange

PM15-K

PM30-K

Technical data for individual models

General technical data

Basic unit of balance/scale, selectable ¹⁾	g, kg, lb, oz, ozt, tl, GN, dwt, ct, C.M., k
Switchable 2 nd unit ¹⁾	g, kg, lb, oz, ozt, tl, GN, dwt, ct, C.M., k
Applications, selectable	piece counting, +/- or % weighing, animal weighing
Digital display	7 digits
DeltaTrac ²⁾	60 segments
Power supply PM balances up to 6.1kg	voltage selectable: 115/230 V, +15/-20 %, 50/60 Hz
Power supply high-capacity PM scales	100/115/200/230 V, +15/-20 %, 50/60 Hz

Vibration adapter	choice of 3 settings, optical display
Weighing process adapter ;	choice of 4 settings, optical display
Stability detector	choice of 4 settings, optical display
Data interface	bidirectional RS232C/CL passive 20 mA
Baudrate	1109600 baud
Parity	even, odd, mark, space
 Transmission 	asynchronous 7-bit ASCII
 Plug-in connection 	15-pin MiniMETTLER TOLEDO socket
METTLER TOLEDO GM interface	15-pin MiniMETTLER TOLEDO for connection of peripherals
Admissible ambient conditions	
Temperature	0 °C40 °C
Relative humidity	15 %85 %
Height below/above sea level	-300 m + 600 m
Vibration	0.3 m/c^2
	¹⁾ see d
	²⁾ dynar

cimal places for secondary units ic graphic indicator and dispensing aid лу

Standard equipment

	PM100 PM200 PM400 PM480 PM1200 ¹⁾ PM2500 ¹⁾	PM300 PM600 PM2000 PM4000 PM4800 PM6100 ¹⁾	PM3000 PM6000 PM6	PM11-N PM15-N PM16-N PM30-K PM34-K PM30000-K
Molded in-use cover	v	v	v	\checkmark
Retainer ring for molded in-use cover	-	✓	-	-
Molded in-use cover for weighing platform	-	-	-	-
In-use cover for terminal	-	-	-	-
All-purpose draft shield	 ✓ 	-	-	-
Glass draft shield 2)	-	-	-	-
Power cable (to national codes)	v	v	v	\checkmark
Spare power fuse	v	v	v	\checkmark
Screwdriver	v	v	v	\checkmark
Hanger	v	v	v	41622
Leveling screws and level	v	v	v	\checkmark
Data interface RS232C and CL	v	v	v	\checkmark
METTLER TOLEDO GM interface	v	v	v	V
Calibration weight (OIML E2)	-	-	-	-

¹⁾ no hanger possible

Weighing ranges in secondary units

	PM100	PM200	PM300	PM400 PM480	PM480 (fine)	PM600	PM1200	PM2000 PM2500	PM2500 (fine)	PM3000
Range in g	110	210	310	410	80	610	1200	2100	500	3100
lb	0.243	0.463	0.683	0.904	0.177	1.345	2.645	4.630	1.103	6.834
OZ	3.88	7.41	10.93	14.49	2.827	21.51	42.33	74.07	17.63	109.35
ozt	3.536	6.752	9.97	13.18	2.573	19.61	38.58	67.51	16.07	99.67
tl	2.938	5.609	8.28	10.95	2.137	16.29	32.05	56.09	13.35	82.80
GN	1'697	3'240	4'784	6'327	1233	9'413	18'518	32'407	7'713	47'840
dwt	70.73	135.0	199.3	263.6	51.44	392.2	771.6	1'350	321.5	1'993
ct / k / C.M.	550	1'050	1'550	2'050	400	3'050	6'000	10'500	2'500	15'500
	PM4000 PM4800	PM4800 (fine)	PM6000 PM6100 PM6	PM11-N	PM15-N PM16-N	PM30-K PM34-K PM3000	PM34-K (fine) 0-K			
	PM4000 PM4800	PM4800 (fine)	PM6000 PM6100 PM6	PM11-N	PM15-N PM16-N	PM30-K PM34-K PM3000	PM34-K (fine) 0-K			
Range in g	PM4000 PM4800 4100	PM4800 (fine) 800	PM6000 PM6100 PM6	PM11-N	РМ15-N РМ16-N 16000	PM30-K PM34-K PM3000 32000	PM34-K (fine) 0-K 4000			
Range in g Ib	PM4000 PM4800 4100 9.039	PM4800 (fine) 800 1.764	PM6000 PM6100 PM6 6100 13.45	PM11-N 11000 24.25	РМ15-N РМ16-N 16000 35.27	PM30-K PM34-K PM3000 32000 70.54	PM34-K (fine) D-K 4000 8.818			
Range in g Ib OZ	PM4000 PM4800 4100 9.039 144.6	PM4800 (fine) 800 1.764 28.27	PM6000 PM6100 PM6 6100 13.45 215.1	PM11-N 11000 24.25 388.0	РМ15-N РМ16-N 16000 35.27 564.4	PM30-K PM34-K PM3000 32000 70.54 1129	PM34-K (fine) D-K 4000 8.818 141.1			
Range in g lb oz ozt	PM4000 PM4800 4100 9.039 144.6 131.8	PM4800 (fine) 800 1.764 28.27 25.73	PM6000 PM6100 PM6 13.45 215.1 196.1	PM11-N 11000 24.25 388.0 353.6	PM15-N PM16-N 16000 35.27 564.4 514.4	PM30-K PM34-K PM3000 32000 70.54 1129 1029	PM34-K (fine) D-K 4000 8.818 141.1 128.6			
Range in g lb oz ozt tl	PM4000 PM4800 4100 9.039 144.6 131.8 109.5	PM4800 (fine) 800 1.764 28.27 25.73 21.37	PM6000 PM6100 6100 13.45 215.1 196.1 162.9	PM11-N 11000 24.25 388.0 353.6 293.8	PM15-N PM16-N 16000 35.27 564.4 514.4 427.3	PM30-K PM34-K PM30000 32000 70.54 1129 1029 855	PM34-K (fine)40008.818141.1128.6106.8			
Range in g lb oz ozt tl GN	PM4000 PM4800 4100 9.039 144.6 131.8 109.5 63'27	PM4800 (fine) 800 1.764 28.27 25.73 21.37 12'342	PM6000 PM6100 PM6 13.45 215.1 196.1 162.9 94'137	PM11-N 11000 24.25 388.0 353.6 293.8 -	PM15-N PM16-N 16000 35.27 564.4 514.4 427.3 -	PM30-K PM34-K PM30000 32000 70.54 1129 1029 855 -	PM34-K (fine) D-K 4000 8.818 141.1 128.6 106.8 -			
Range in g lb oz ozt tl GN dwt	PM4000 PM4800 4100 9.039 144.6 131.8 109.5 63'27 2'636	PM4800 (fine) 800 1.764 28.27 25.73 21.37 12'342 514.4	PM6000PM6100610013.45215.1196.1162.994'1373'922	PM11-N 11000 24.25 388.0 353.6 293.8 - 7'073	PM15-N PM16-N 16000 35.27 564.4 514.4 427.3 - 10'288	PM30-K PM34-K PM3000 32000 70.54 1129 1029 855 - 20'576	PM34-K (fine)40008.818141.1128.6106.8-2'572			

Decimal places in secondary units

PM100	PM300	PM3000	PM6
PM200	PM600	PM6000	PM15-N
PM400	PM2000	PM11-N	PM30-K
PM480 ¹⁾	PM4000	PM16-N	
PM1200	PM4800 ¹⁾	PM34-K ¹⁾	
PM2500 ¹⁾	PM6100	PM30000-K	

g / dwt	0.000	0.00	0.0	0.
kg	not settable	0.00000	0.0000	0.000
lb	0.00000	0.0000	0.000	0.00
oz / ozt / tl	0.0000	0.000	0.00	0.0
GN	0.0	0.	not settable	not settable
ct / k / C.M.	0.00	0.0	0.	not settable

¹⁾ one decimal place less in coarse

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